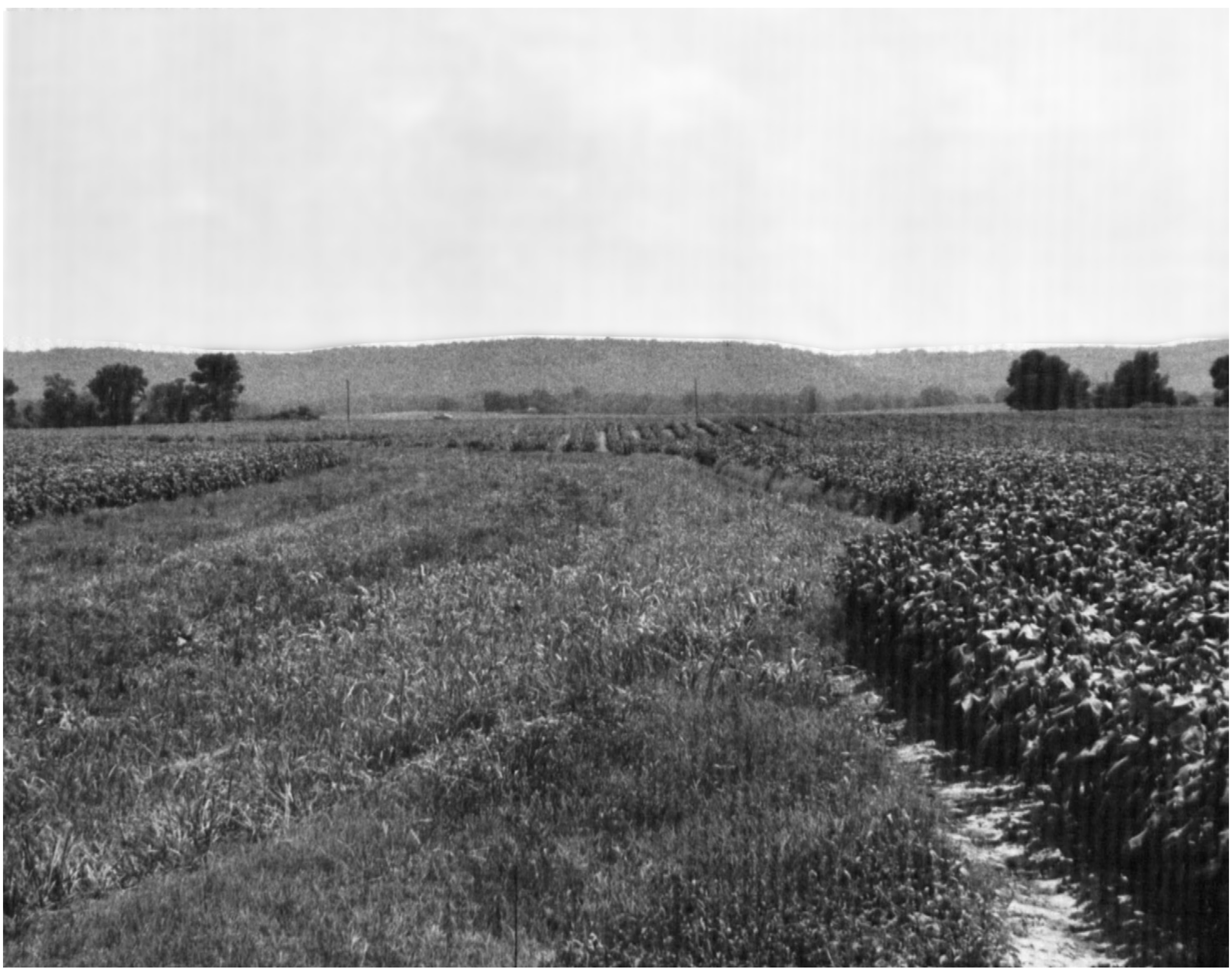
United States Department of Agriculture

Soil Conservation Service

In cooperation with Alabama Agricultural Experiment Station and Alabama Soil and Water Conservation Committee

Soil Survey of Colbert County, Alabama



How To Use This Soil Survey

General Soil Map

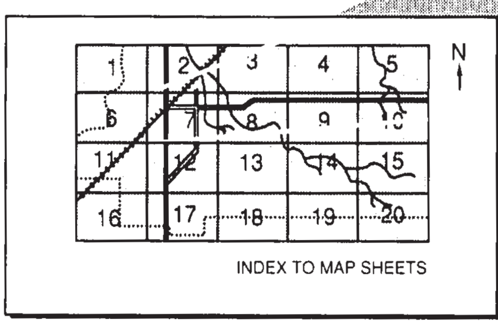
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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

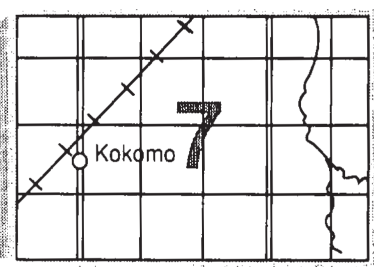
Detailed Soil Maps

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

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

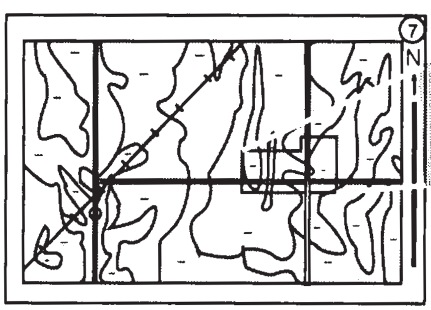


INDEX TO MAP SHEETS

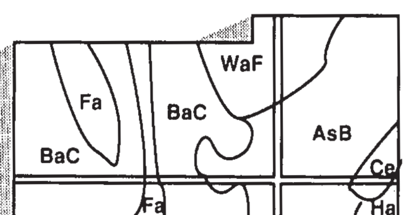


MAP SHEET

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 1985. Soil names and descriptions were approved in 1986. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1986. This soil survey was made cooperatively by the Soil Conservation Service and the Alabama Agricultural Experiment Station, the Alabama Soil and Water Conservation Committee, the Alabama Cooperative Extension Service, and the Colbert County Commission. It is part of the technical assistance furnished to the Colbert County Soil and Water Conservation District.

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

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

Cover: A cotton field in an area of Emory silt loam, 0 to 2 percent slopes, ponded, and Decatur silt loam, 2 to 6 percent slopes. The grassed waterway removes excess surface water from the field. An area of the Chisca-Nella-Nectar general soil map unit is in the background.

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Issued September 1994

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Summary of Tables

Foreword

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. 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.

Ernest V. Todd
State Conservationist
Soil Conservation Service

Soil Survey of
Colbert County, Alabama

By Charles D. Bowen, Soil Conservation Service

Fieldwork by Charles D. Bowen, James E. Bowman, Bobby C. Fox, and Milton Tuck

United States Department of Agriculture, Soil Conservation Service,
In cooperation with
the Alabama Agricultural Experiment Station, the Alabama Soil and Water Conservation Committee, the Alabama Cooperative Extension Service, and the Colbert County Commission

COLBERT COUNTY is in northwestern Alabama (fig. 1). The county has a total acreage of 399,170 acres, or 623.7 square miles. It is bounded on the west by Tishomingo County, Mississippi; on the north by Lauderdale County, Alabama; on the east by Lawrence County, Alabama; and on the south by Franklin County, Alabama. In 1980, the population of the county was 54,519 *(3)*. Tuscumbia, the county seat, had a population of 9,137, and the adjoining towns of Muscle Shoals and Sheffield had a population of 8,911 and 11,903, respectively.

This soil survey updates an earlier survey of Colbert County published in 1939 *(17)*. It provides additional information and larger maps, which show the soils in greater detail.

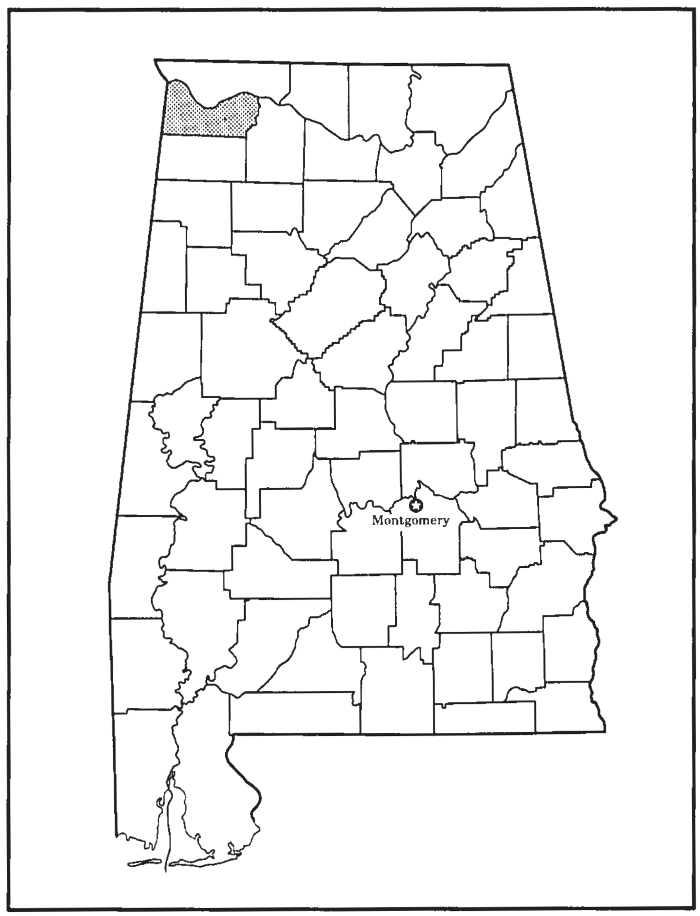

Figure 1.—Location of Colbert County in Alabama.

General Nature of the County

This section provides general information about the survey area. It describes transportation facilities; natural resources; history and development; physiography, relief, and drainage; geology; mineral resources; and climate.

Transportation Facilities

Railroad service in Colbert County runs from west to east through Cherokee, Barton, Tuscumbia, Sheffield, Muscle Shoals, and Leighton and south from Muscle Shoals through Littleville. A connector between two railroad lines crosses the Tennessee River at Florence.

Major highways in the county are U.S. Highway 72, which crosses the northern half of the county from west to east, and U.S. Highway 43, which runs north and south in the eastern part of the county. The Natchez Trace Parkway enters the county near Maud, in the southwestern part of the county, runs northeast, and crosses the Tennessee River north of Cherokee. Many state highways and paved county roads provide easy access to most parts of the county.

The Tennessee River is a navigable stream that furnishes water transportation. It connects with the Tennessee-Tombigbee Waterway, the Ohio River, and the Mississippi River and thus provides ready access to the Gulf and most inland waterway systems.

An airport at Muscle Shoals provides daily commercial flights. Charter flights are also available.

Natural Resources

Soil is the most important natural resource in the county. Livestock, crops, and timber are marketable products that depend on the soil.

Water supplies for municipal and industrial needs are ample. About 90 percent of the homes in Colbert County are served by a community or municipal water system. Pickwick and Wilson Reservoirs are excellent sources of water for domestic and irrigation uses. The community of Tuscumbia derives its water from a natural spring. Several wells for irrigation purposes have been drilled in the valley area.

The major minerals and rocks in the county are iron ore, asphalt, gravel, limestone, and bauxite.

History and Development

Colbert County was named for George Colbert, who was an early settler. Most of the area that is now Colbert County was originally inhabited by the Chickasaw Indians. The Cherokee and Shawnee tribes also inhabited parts of the area.

George Colbert built a house on the south side of the Tennessee River and ran a ferry on the Old Natchez Trace, which was a post route between Nashville, Tennessee, and Natchez, Mississippi. A modern bridge now spans the river at the site of the old ferry crossing.

Near the present site of Sheffield, upriver from the ferry crossing, Andrew Jackson once owned a large tract of land known as York Bluff. According to legend, Jackson envisioned establishing the Nation's capital there.

Helen Keller is probably the most famous native of Colbert County. Her birthplace in Tuscumbia is a national shrine.

Colbert County was first established in early 1867, but it was abolished later that same year. It was reestablished on December 9, 1869, taken from Franklin County. Its present boundaries were established in 1895, when the area east of County Line Road (the original boundary between Colbert and Lawrence Counties) and extending to Town Creek was annexed. At the same time, a large area was returned to Franklin County.

The area has historically been progressive. The first railroad in Alabama ran from Tuscumbia to the Tennessee River, and the first chartered college in Alabama was in the area that is now Colbert County.

Agriculture has always played an important role in the economy of Colbert County *(12)*. In 1969, there were 857 farms in the county. By 1982, this number had decreased to 686. The average farm size, however, increased from 210 acres in 1969 to 235 acres in 1982. Cotton and soybeans are the main crops. In 1969, 21,066 acres was used for cotton and 12,151 acres for soybeans. In 1982, 27,800 acres was used for cotton and 27,700 acres for soybeans *(2)*.

The acreage used for corn and grain sorghum has increased in recent years. Raising poultry, mainly broilers, is an important farming enterprise. Hogs and beef cattle are the main livestock.

Physiography, Relief, and Drainage

Colbert County is in the Limestone Valley, Sand Mountain, and upper Coastal Plains physiographic provinces. The Limestone Valley physiographic province is characterized by broad, gently sloping areas with semikarst topography. The Sand Mountain physiographic province is characterized by steep mountainsides and relatively broad plateaus. The upper Coastal Plain physiographic province is characterized by long, narrow, winding ridgetops and steep side slopes and a dendritic drainage pattern.

All of Colbert County drains into the Tennessee River. Some of the major creeks in the county are Town Creek, Spring Creek, Bear Creek, Little Bear Creek, Cane Creek, Rock Creek, and Buzzard Roost Creek.

Sinkholes occur throughout most parts of the county, but they are most numerous in the Limestone Valley physiographic province. They vary in size from one-fourth acre to several acres. Some of the sinkholes, such as Gnat Pond, east of Tuscumbia, hold water. The water level fluctuates widely from year to year in most of the sinkholes.

Elevation ranges from 397 feet above mean sea level in the Bear Creek area of Pickwick Reservoir to about

980 feet near Crooked Oak in the south-central part of the county.

Geology

Robert M. Crisler, geologist, Soil Conservation Service, helped prepare this section.

The geologic formations in Colbert County are of sedimentary origin and range in age from Mississippian to Cretaceous. They consist mainly of limestone, cherty limestone, sandstone, shale, and gravel. Geologic units that are extensive enough to be mapped in the survey area include Fort Payne Chert, Tuscumbia Limestone, the Gasper Formation, Bethel Sandstone, Ste. Genevieve Limestone, Hartselle Sandstone, the Golconda Formation, Cypress Sandstone, and Bangor Limestone of Mississippian age and the Tuscaloosa Group, undifferentiated, of Cretaceous age *(15)*.

The Fort Payne Chert is mostly hard, gray, crystalline limestone with thick beds of chert that range in color from white to gray. The formation crops out along the bluffs near the Tennessee River in the northeastern and northwestern parts of the county. Fullerton, Bodine, and Bewleyville soils are the dominant soils that formed in these geologic materials.

The Tuscumbia Limestone occurs in a wide belt in the northeastern and northwestern parts of the county. The formation is mostly hard, gray, crystalline limestone with hard lenses, bands, and nodules of chert. Decatur, Emory, and Etowah soils formed in these materials.

The Gasper Formation consists of grayish green shale with thin beds of limestone at the top and bottom of the formation. The Gasper Formation is overlain by the Bethel Sandstone, which in turn is overlain by the Ste. Genevieve Limestone. The Bethel Sandstone ranges in color from tan to gray, and the Ste. Genevieve Limestone ranges from light gray limestone at the bottom to olive green shale at the top. These three formations are distinct but are so thin that they are mapped together in Colbert County. They form a band from east to west across the central part of the county and are near the base of the hills and in stream valleys in the southwestern part. Chisca, Tupelo, and Colbert soils formed in these materials.

The Hartselle Sandstone, the Golconda Formation, and the Cypress Sandstone also are mapped together in Colbert County. The Cypress Sandstone is light gray to greenish gray, massive sandstone. It is overlain by olive gray, soft, calcareous shale and hard, grayish brown limestone of the Golconda Formation. Above the Golconda Formation is the tan, silty Hartselle Sandstone. These formations cap the wide upland belt that extends from the southeast corner of the county into the west-central part. Nectar, Nauvoo, and Wynnville soils formed in these materials.

In Colbert County, the Bangor Limestone consists of hard, gray, partly oolitic and partly crystalline limestone with some light gray, calcareous shale beds in the lower portion. This formation forms the ridges across the south-central part of the county. The major soils that formed in Bangor Limestone are Chisca and Barfield soils.

The Tuscaloosa Group is mainly gravel with silty sand, clay lenses, and some red silt. This material occurs as caps of wide ridges in the southwest one-fourth of the county and in a wide, continuous area in the northwest quadrant. Saffell, Pikeville, and Smithdale soils are the dominant soils that formed in this material.

Mineral Resources

Colbert County has extensive limestone deposits. Four quarries are currently in operation. The limestone is used as crushed or broken rock (riprap) or for agricultural lime (fig. 2). Asphaltic limestone is crushed and used as paving material. Sand and gravel are plentiful, but they are not extensively mined in the survey area. The Tuscaloosa Formation has extensive gravel deposits in the western half of the county, and sandstone that could be crushed for sand is available throughout the southern half of the county. A deposit of tripoli, a fine grained silicon-dioxide used for abrasives and silica brick, is in the southwestern part of the county. This material has not been mined.

Climate

In Colbert County, summers are hot in the valleys and slightly cooler in the hills. Winters are moderately cold. Rainfall is fairly heavy and is well distributed throughout the year. Snow falls nearly every winter, but the snow cover usually lasts only a few days.

Heavy rains, which can occur at any time of the year, and severe thunderstorms, which occur in summer, sometimes cause flash flooding, particularly in narrow valleys.

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

In winter, the average temperature is 42 degrees F and the average daily minimum temperature is 32 degrees. The lowest temperature on record, which occurred at Muscle Shoals on January 30, 1966, is -6 degrees. In summer, the average temperature is 79

Figure 2.—Crushed limestone mined from a quarry in an area of Tupelo-Colbert complex, 0 to 4 percent slopes.

degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Muscle Shoals on July 26, 1952, is 106 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 52 inches. Of this, about 24 inches, or 45 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 19 inches. The heaviest 1-day rainfall during the period of record was 5.71 inches at Muscle Shoals on September 13, 1979. Thunderstorms occur on about 57 days each year.

The average seasonal snowfall is 4 inches. The greatest snow depth at any one time during the period of record was 15 inches. On an average of only 2 days a year, at least 1 inch of snow is on the ground.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 65 percent of the time possible in summer and 35 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 8 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; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a 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 generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

Survey Procedures

The general procedures followed in making this soil survey are described in the "National Soil Survey

Handbook" of the Soil Conservation Service. The soil surveys of Colbert County published in 1909 *(18)* and 1939 *(17)* and the "Geologic Map of Colbert County, Alabama" *(15)* were among the references used.

Before the fieldwork began, preliminary boundaries of landforms were plotted stereoscopically on quad-centered aerial photographs at a scale of 1:80,000 and enlarged to a scale of 1:24,000. U.S. Geological Survey topographic maps and aerial photographs were studied to relate land and image features.

Traverses were made by foot and by vehicle, mostly at intervals of about one-fourth mile. They were made at closer intervals in areas of high variability. Soil examinations along the traverses were made 100 to 800 yards apart, depending on the landscape and the soil patterns *(13)*. Observations of landforms, uprooted trees, vegetation, roadbanks, and animal burrows were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and photo interpretation. The soil material was examined with the aid of a hand auger or a spade to a depth of about 6 feet or to bedrock if the bedrock was within a depth of 6 feet. The pedons described as typical were observed and studied in excavations.

A minimum of three delineations of each map unit were chosen to be representative of the map unit. These delineations were transected to determine the composition of the map unit and to record the kinds of vegetation. The point-intercept method of transecting *(14)* was used in open areas, and the random method of transecting *(16)* was used in forested areas and in areas of limited accessibility.

Samples for chemical and physical analyses were taken from the site of the typical pedon of the major soils in the survey area. The analyses were made by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama. The results of the analyses are stored in a computerized data file at the laboratory. The results and the laboratory procedures can be obtained from the laboratory.

After completion of the soil mapping on quad-centered aerial photographs, map unit delineations were transferred by hand to aerial photographs at a scale of 1:24,000. Surface drainage was mapped in the field. Cultural features were transferred from U.S. Geological Survey 7.5-minute series topographic maps and were recorded from visual observations.

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. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They 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 soil on the landscape.

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

General Soil Map Units

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. 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 soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map. It lists the suitability of each for major land uses and the soil properties that limit use.

Each map unit is rated for *cultivated crops, pasture and hayland, woodland, urban uses,* and *recreation areas.* Cultivated crops are those grown extensively in the survey area. Pasture and hayland are areas used for locally grown, improved grasses and legumes. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation uses are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas are used for nature study and as wilderness.

Dominantly Gently Sloping to Very Steep Soils That Are Well Drained and Somewhat Excessively Drained

1. Fullerton-Bodine-Decatur

Well drained and somewhat excessively drained soils that have a clayey or loamy subsoil; formed in material weathered from cherty limestone and limestone

The landscape is characterized by narrow, gently sloping and sloping ridgetops with sloping to very steep side slopes that are moderately dissected by drainageways. Areas of this map unit are adjacent to Wilson Reservoir and a portion of Pickwick Reservoir. Slopes range from 2 to 45 percent. The natural vegetation is mixed hardwoods and pine.

About 35 percent of the acreage of this unit has been cleared. Most of the cleared areas are on gently sloping and sloping ridgetops and side slopes. The main crops are cotton, soybeans, and grain sorghum. Sod crops are grown for hay and pasture. The uncleared acreage is mainly on the steep and very steep side slopes.

Areas of this map unit are moderately urbanized, especially adjacent to Wilson Reservoir. Roads are numerous in the urbanized areas. These roads do not conform to landscape patterns, but some roads in the less urbanized areas are parallel to ridges or cross drainageways.

This map unit makes up about 2 percent of the county. It is about 40 percent Fullerton soils, 30 percent Bodine soils, 10 percent Decatur soils, and 20 percent soils of minor extent.

The gently sloping to very steep Fullerton soils are on ridgetops and side slopes. Typically, the surface layer is brown cherty silt loam. The upper part of the subsoil is red cherty silty clay, and the lower part is red cherty clay.

The moderately steep to very steep Bodine soils are on side slopes. Typically, the surface layer is very dark grayish brown cherty silt loam. The subsurface layer is brown cherty silt loam. The upper part of the subsoil is reddish brown very cherty silty clay loam, and the lower part is brown very cherty silt loam.

The gently sloping and sloping Decatur soils are on ridgetops. Typically, the surface layer is dark reddish brown silt loam. The subsoil is dark red silty clay.

Of minor extent in this map unit are Barfield soils on the steep side slopes, Bewleyville soils on ridgetops and toe slopes, Etowah soils on high stream terraces, Chenneby soils along drainageways, and Emory and Guthrie soils in upland depressions.

The gently sloping soils on ridgetops, most of which are cleared, are well suited to cultivated crops, hay, and pasture. The sloping soils on ridgetops and side slopes

Figure 3.—An urbanized area of the Fullerton-Bodine-Decatur general soil map unit along Wilson Reservoir and the Tennessee River.

are well suited to hay and pasture. If the soils are tilled, the hazard of erosion is moderate in the gently sloping areas and severe in the sloping areas. Contour farming, terraces, diversions, grassed waterways, minimum tillage, and no-till farming can reduce soil loss from erosion.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, sweetgum, American sycamore, shortleaf pine, and loblolly pine. Because of the very steep slopes, the use of logging equipment is restricted and erosion is a hazard along the logging roads and skid trails.

The gently sloping and sloping soils are suited to most urban uses (fig. 3). The shrink-swell potential and restricted permeability are moderate limitations. The very steep areas are severely limited as sites for most urban uses because of the slope.

The gently sloping and sloping soils are moderately suited to intensive recreation areas. All of the soils in this map unit are well suited to extensive recreation areas. Also, they have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is very poor.

2. Bewleyville-Decatur-Emory

Well drained soils that have a loamy or clayey subsoil; formed in material weathered from cherty limestone, limestone, and alluvium

The landscape is characterized by broad, gently sloping and sloping ridges intermingled with depressions, many of which do not have surface drainage outlets. Drainageways are not prominent in most areas, and flood plains are narrow. Slopes range from 0 to 10 percent. The natural vegetation is mixed hardwoods and pine.

About 75 percent of the acreage of this unit has been cleared. Most cleared areas are in nearly level depressions or on gently sloping ridges. The cleared areas on the gently sloping ridges and sloping side slopes are used for pasture. The main crops are cotton, soybeans, corn, and grain sorghum. Sod crops are grown for hay and pasture. The uncleared areas are mainly on sloping or moderately sloping side slopes.

Areas of this map unit are moderately urbanized. Roads are numerous and generally are laid out in a semigrid pattern. Most areas are served by public water systems and have a high potential for increased urban development.

This map unit makes up about 4 percent of the county. It is about 45 percent Bewleyville soils, 25 percent Decatur soils, 10 percent Emory soils, and 20 percent soils of minor extent.

The gently sloping and sloping Bewleyville soils are on ridgetops and side slopes. Typically, the surface layer is dark grayish brown silt loam. The subsurface layer is dark brown silt loam. The upper part of the subsoil is yellowish red and red silt loam and clay loam, and the lower part is dark red clay loam.

The gently sloping and sloping Decatur soils are on ridgetops, knolls, and side slopes. Typically, the surface layer is dark reddish brown silt loam. The subsoil is dark red silty clay.

The nearly level Emory soils are in depressions. Typically, the surface layer is dark reddish brown silt loam. The upper part of the subsoil is dark reddish brown silt loam. Below this is a buried surface layer of dark reddish brown silt loam. The lower part of the subsoil is reddish brown and red silt loam and silty clay loam.

Of minor extent in this map unit are Dickson, Etowah, and Fullerton soils on ridgetops, side slopes, and toe slopes; Chenneby soils along drainageways; and Guthrie soils in depressions.

The nearly level soils in depressions and on gently sloping ridges and knolls are well suited to cultivated crops, hay, and pasture. The soils in sloping areas also are well suited to hay and pasture. If the soils are tilled, the hazard of erosion is moderate in the gently sloping areas and severe in the sloping areas. Erosion is not a serious hazard in the nearly level areas, but ponding is a slight hazard. Minimum tillage and no-till farming are the most effective erosion-control practices. Farming on the contour and installing terraces, diversions, and grassed waterways also help to control erosion in the more sloping areas.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, sweetgum, American sycamore, shortleaf pine, and loblolly pine. Erosion is a moderate hazard along the logging roads and skid trails in the sloping areas.

The gently sloping and sloping soils are suited to most urban uses. The shrink-swell potential and restricted permeability are moderate limitations. Ponding is a serious concern in the depressions.

The soils in this map unit are moderately suited to intensive recreation areas and well suited to extensive recreation areas. They have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is very poor.

3. Decatur-Fullerton-Emory

Well drained soils that have a clayey or loamy subsoil; formed in material weathered from cherty limestone, limestone, and alluvium

The landscape is characterized by broad, gently sloping and sloping ridges and knolls and strongly sloping side slopes intermingled with nearly level depressions. Drainageways are not well pronounced, and many depressions do not have surface drainage outlets. Slopes range from 0 to 15 percent. The natural vegetation is mixed hardwoods and pine.

About 90 percent of the acreage of this unit has been cleared. The main crops are cotton, soybeans, corn, and grain sorghum. Sod crops are grown for hay and pasture. The uncleared acreage is mainly in the sloping and strongly sloping areas and is used for windbreaks and as a source of wood.

Areas of this map unit are moderately urbanized. Roads are numerous and generally are laid out in a semigrid pattern. Most areas are served by public water systems and have a high potential for increased urban development.

This map unit makes up about 20 percent of the county. It is about 50 percent Decatur soils, 14 percent Fullerton soils, 13 percent Emory soils, and 23 percent soils of minor extent.

The gently sloping and sloping Decatur soils are on ridges. Typically, the surface layer is dark reddish brown silt loam. The subsoil is dark red silty clay.

The gently sloping to strongly sloping Fullerton soils are on ridgetops and side slopes. Typically, the surface layer is brown cherty silt loam. The upper part of the subsoil is red cherty silty clay loam, and the lower part is red cherty clay.

The nearly level Emory soils are in depressions. Typically, the surface layer is dark reddish brown silt loam. The upper part of the subsoil also is dark reddish brown silt loam. Below this is a buried surface layer of dark reddish brown silt loam. The lower part of the subsoil is reddish brown and red silt loam and silty clay loam.

Of minor extent in this map unit are Bewleyville, Capshaw, Chisca, Dickson, and Etowah soils on ridgetops, side slopes, and toe slopes; Chenneby soils along drainageways; and Guthrie soils in depressions.

The nearly level soils in depressions and the gently

Figure 4.—Homesite development in an area of prime farmland in the Decatur-Fullerton-Emory general soil map unit. Until recently this field was used for crops.

sloping soils on ridges and knolls are well suited to cultivated crops and to sod crops for hay and pasture. The sloping and strongly sloping areas are well suited to hay and pasture. If the soils are tilled, the hazard of erosion is moderate in the gently sloping areas and severe in the sloping and strongly sloping areas. Erosion is not a severe hazard in the nearly level areas, but ponding is a slight hazard. Contour farming, terraces, diversions, and grassed waterways are effective erosion-control practices, but they are generally not feasible because of the landscape pattern. Minimum tillage and no-till farming are the most effective methods of controlling erosion.

The soils in this unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, sweetgum, American sycamore, shortleaf pine, and loblolly pine. Erosion is a moderate hazard along logging roads and skid trails in the more sloping areas.

The gently sloping and sloping soils are suited to most urban uses (fig. 4). The shrink-swell potential, restricted permeability, and the slope are moderate limitations. Ponding is a serious concern in the depressions.

The soils in this unit are moderately suited or well suited to intensive recreation areas and well suited to extensive recreation areas. Also, they have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is very poor.

Dominantly Nearly Level to Strongly Sloping Soils That Are Well Drained, Moderately Well Drained, and Somewhat Poorly Drained

4. Chisca-Capshaw-Tupelo

Well drained, moderately well drained, and somewhat poorly drained soils that have a clayey subsoil; formed in material weathered from limestone and alkaline shale

The landscape is characterized by broad areas of nearly level to strongly sloping toe slopes, ridges, and terraces and broad depressed flats in the uplands (fig. 5). Drainageways are not well pronounced in most areas. Slopes range from 0 to 15 percent. The natural vegetation is mixed hardwoods and pine.

About 45 percent of the acreage of this unit has been cleared. Most of the cleared areas are on the nearly level flats and in gently sloping areas on ridges, terraces, and toe slopes. The cleared areas on the sloping and strongly sloping side slopes and toe slopes are used for pasture. The main crops are soybeans and grain sorghum. Sod crops are grown for pasture and hay.

Areas of this map unit are slightly urbanized. Roads are less numerous in the strongly sloping areas than in other areas, and most of the roads do not conform to landscape patterns.

This map unit makes up about 11 percent of the county. It is about 35 percent Chisca soils, 25 percent Capshaw soils, 9 percent Tupelo soils, and 31 percent soils of minor extent.

The sloping and strongly sloping Chisca soils are on ridges and toe slopes. Typically, the surface layer is dark grayish brown loam. The subsurface layer is yellowish brown loam. The upper part of the subsoil is yellowish red and red clay, and the lower part is mottled red, gray, and brown clay.

The gently sloping Capshaw soils are on ridges and toe slopes. Typically, the surface layer is dark brown silt loam. The upper part of the subsoil is yellowish brown silty clay loam, and the lower part is yellowish brown silty clay that has gray mottles.

The nearly level Tupelo soils are in depressions on

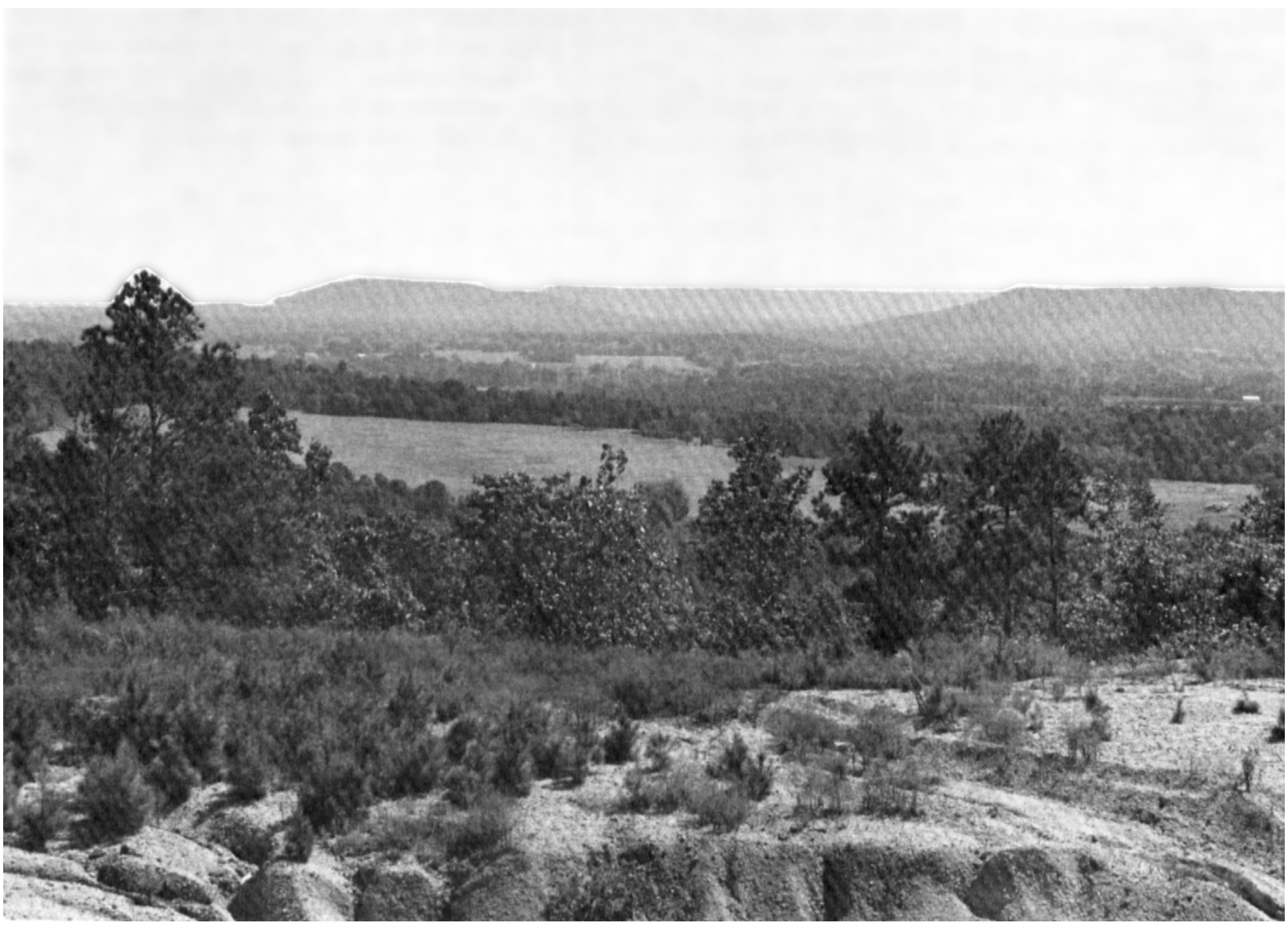

Figure 5.—A typical landscape of the Chisca-Capshaw-Tupelo general soil map unit. The Chisca-Nella-Nectar general soil map unit is in the background.

upland flats and terraces. Typically, the surface layer is dark grayish brown silt loam. The subsurface layer is brown silt loam. The upper part of the subsoil is yellowish brown silty clay loam and silty clay, and the lower part is gray silty clay that has yellowish brown and strong brown mottles.

Of minor extent in this map unit are Colbert, Decatur, and Etowah soils on ridges, terraces, and toe slopes; Chenneby soils along drainageways; and Emory and Guthrie soils in depressions.

The nearly level soils on flats and the gently sloping soils on ridges and toe slopes are suited to selected cultivated crops and well suited to hay and pasture. The sloping and strongly sloping soils on toe slopes are suited to hay and pasture. If the soils are tilled, the hazard of erosion is moderate in the gently sloping areas. Erosion is not a serious hazard in the nearly level areas, but row arrangement may be needed to remove surface water in some areas. Minimum tillage and no-till farming are the most effective methods of controlling erosion. Contour farming, terraces, diversions, and grassed waterways also help to control erosion.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are yellow-poplar, water oak, sweetgum, shortleaf pine, loblolly pine, and Virginia pine. Erosion is a moderate hazard along logging roads and skid trails in the sloping and strongly sloping areas. Wetness is a moderate concern in the flat areas.

The soils in this map unit are poorly suited to most urban uses. Restricted permeability is a severe limitation. The shrink-swell potential of the Chisca and Tupelo soils is high, and that of the Capshaw soils is moderate.

The soils in this map unit are moderately suited or poorly suited to intensive recreation areas and moderately suited to extensive recreation areas. They have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is fair to very poor.

Dominantly Gently Sloping to Very Steep Soils That Are Moderately Well Drained and Well Drained

5. Wynnville-Nectar-Nauvoo

Moderately well drained and well drained soils that have a loamy or clayey subsoil; formed in material weathered from sandstone and shale

The landscape is characterized by broad, gently sloping and sloping ridges and plateaus. The drainage pattern is well pronounced. Slopes range from 2 to 10 percent. The natural vegetation is mixed hardwoods and pine.

About 70 percent of the acreage of this unit has been cleared. The main crops are soybeans, cotton, corn, and grain sorghum. Sod crops are grown for hay and pasture.

Areas of this map unit are moderately urbanized. Roads generally do not conform to landscape patterns.

This map unit makes up about 6 percent of the county. It is about 40 percent Wynnville soils, 22 percent Nectar soils, 20 percent Nauvoo soils, and 18 percent soils of minor extent.

The gently sloping Wynnville soils are on relatively broad plateaus. Typically, the surface layer is dark grayish brown silt loam. The subsurface layer is brown silt loam. The upper part of the subsoil is yellowish brown loam. The next part is yellowish brown loam that has gray mottles. It is firm and brittle. Below this is loam that is mottled in shades of red and brown. The lower part of the subsoil is red sandy clay loam.

The sloping Nectar soils are on ridges and side slopes of plateaus. Typically, the surface layer is brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is strong brown loam. The next part is yellowish red clay or silty clay. The lower part is clay loam that is mottled in shades of brown and red.

The sloping Nauvoo soils are on ridges and side slopes of plateaus. Typically, the surface layer is dark brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The subsoil is yellowish red sandy clay loam.

Of minor extent in this map unit are Chisca soils on side slopes and Chenneby soils along drainageways.

The gently sloping and sloping soils on ridges and side slopes are well suited to row crops. All of the soils in this map unit are well suited to hay and pasture. Erosion is a moderate or severe hazard if the soils are tilled. Terraces, grassed waterways, cover crops, contour farming, and a system of crop rotation are necessary to maintain productivity and reduce the hazard of erosion. Minimum tillage and no-till farming are the most effective erosion-control practices.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, sweetgum, shortleaf pine, and loblolly pine. Erosion is a moderate hazard along logging roads and skid trails in the sloping areas.

The gently sloping areas and some of the sloping areas have severe limitations that affect residential and commercial development because of the depth to bedrock. The shrink-swell potential of the Nectar soils and the wetness of the Wynnville soils are moderate limitations affecting building foundations.

The soils in this map unit are moderately suited to intensive recreation areas and well suited to extensive recreation areas. Also, they have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is very poor.

6. Chisca-Nella-Nectar

Well drained soils that have a loamy or clayey subsoil; formed in material weathered from alkaline shale, limestone, sandstone, and shale

The landscape is characterized by strongly sloping to very steep mountainsides and many sandstone escarpments. Slopes range from 10 to 45 percent. The natural vegetation is mixed hardwoods and pine.

Only about 20 percent of the acreage of this unit has been cleared. Most of the cleared areas are on the strongly sloping ridges. Sod crops for hay and pasture are the principal crops.

Few dwellings are in areas of this map unit. Roads generally are on ridgetops and on the lower slopes, and connecting roads are mainly along drainageways or in gaps going up the mountainside.

This map unit makes up about 28 percent of the county. It is about 30 percent Chisca soils, 17 percent Nella soils, 16 percent Nectar soils, and 37 percent soils of minor extent.

The sloping to very steep Chisca soils are on the lower slopes and ridges. Typically, the surface layer is dark grayish brown loam. The subsurface layer is yellowish brown loam. The upper part of the subsoil is yellowish red and red clay. The lower part is red clay that is mottled in shades of gray and brown.

The strongly sloping to very steep Nella soils are in benchlike areas above the Chisca soils and below the Nectar soils, generally below areas of rock escarpments. Typically, the surface layer is dark grayish brown cobbly fine sandy loam. The subsurface layer is pale brown and yellowish brown cobbly fine sandy loam. The upper part of the subsoil is yellowish red cobbly sandy clay loam. The lower part is yellowish red cobbly clay loam.

The strongly sloping and moderately steep Nectar soils are on plateaus, the upper ridges, and side slopes. Typically, the surface layer is brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is strong brown loam. The next part is yellowish red clay or silty clay. The lower part is red clay loam that is mottled in shades of brown.

Of minor extent in this map unit are Barfield, Capshaw, Decatur, Etowah, Fullerton, and Wynnville soils on the lower slopes; Chenneby soils along drainageways; Emory soils in depressions; and Pikeville, Saffell, and Smithdale soils on the upper ridges and side slopes.

Only a small acreage of this map unit is suited to cultivated crops. The strongly sloping Nectar soils are suited to cotton, corn, soybeans, and grain sorghum and to sod crops, hay, and pasture, but a cropping system that provides maximum vegetative cover is needed. Minimum tillage and no-till farming are the most effective erosion-control practices. The Chisca soils are mostly in areas that are too steep for cultivated crops and sod crops. The Nella soils have cobbles on the surface that interfere with the use of equipment.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, yellow-poplar, shortleaf pine, and loblolly pine. Because of the very steep slopes, the use of logging equipment is restricted. Also, the clayey texture of the soils restricts the use of equipment during wet periods. Erosion is a severe hazard along roads and skid trails.

The soils in this map unit are very poorly suited to urban uses. The very steep slopes, the restricted permeability in the Chisca and Nectar soils, and the cobbles in the Nella soil are the main limitations.

The soils in this map unit are poorly suited to use as intensive or extensive recreation areas. They have poor or fair potential as habitat for openland wildlife, fair or good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

7. Saffell-Pikeville-Chisca

Well drained soils that have a loamy or clayey subsoil; formed in Coastal Plain marine sediments, alkaline shale, and limestone

The landscape is one of prominent relief. It is characterized by steep and very steep hills, narrow ridgetops, and very narrow drainageways. Slopes range from 6 to 45 percent. The natural vegetation is mixed hardwoods and pine.

About 15 percent of the acreage in this map unit has been cleared. Most of the cleared areas are on the sloping and strongly sloping ridges. The uncleared areas are on the very steep and steep side slopes, on the sloping and strongly sloping ridges, and in the very narrow drainageways.

This map unit is not highly urbanized. Most roads are on ridgetops or are parallel to drainageways.

This map unit makes up about 19 percent of the county. It is about 40 percent Saffell soils, 25 percent Pikeville soils, 10 percent Chisca soils, and 25 percent soils of minor extent.

The moderately steep to very steep Saffell soils are on side slopes. Typically, the surface layer is dark grayish brown gravelly sandy loam. The subsurface layer is brown gravelly sandy loam. The subsoil is reddish brown very gravelly loam.

The sloping to very steep Pikeville soils are on ridges and the upper slopes. Typically, the surface layer is dark grayish brown loam. The subsurface layer is yellowish brown loam. The upper part of the subsoil is yellowish red clay loam, and the lower part is gravelly clay loam and very gravelly clay loam.

The sloping to very steep Chisca soils are on the lower slopes. Typically, the surface layer is dark grayish brown loam. The subsurface layer is yellowish brown loam. The upper part of the subsoil is yellowish red or red clay. The lower part is red clay that is mottled in shades of gray and brown.

Of minor extent in this map unit are Savannah and Smithdale soils on ridgetops and Chenneby soils along drainageways.

Only a small acreage of this map unit is suited to cultivated crops. The soils on the sloping and strongly sloping ridges are well suited to sod crops for hay and pasture but are poorly suited to cultivated crops. If cultivated crops are grown, a cropping system that provides maximum vegetative cover is needed. Minimum tillage and no-till farming are the most effective erosion-control practices.

The soils in this map unit are well suited to trees, and productivity is moderately high. Common trees are southern red oak, post oak, chestnut oak, shortleaf pine, and loblolly pine. The very steep slopes restrict the use of logging equipment. Also, the clayey texture of the soils restricts the use of logging equipment during wet periods. Erosion is a severe hazard along roads and skid trails.

The soils on the sloping and strongly sloping ridges are moderately suited to most urban uses. The soils on steep and very steep slopes are very poorly suited to urban uses. The very slow permeability of the Chisca soils is a severe limitation on sites for septic tank absorption fields.

The soils in this map unit are moderately suited or poorly suited to use as intensive or extensive recreation areas. They have poor or fair potential as habitat for openland wildlife, fair or good potential as habitat for woodland wildlife, and very poor potential as habitat for wetland wildlife.

Nearly Level Soils That Are Somewhat Poorly Drained and Well Drained

8. Chenneby-Pruitton-Sullivan

Somewhat poorly drained and well drained soils that have a loamy subsoil; formed in alluvium

The landscape is characterized by nearly level, narrow flood plains, depressions, and low stream terraces. Slopes range from 0 to 2 percent. The natural vegetation is mixed hardwoods and pine.

About 70 percent of the acreage of this unit has been cleared. The main crops are cotton, soybeans, corn, and grain sorghum. Sod crops are grown for hay and pasture.

This unit includes very few urbanized areas. Roads generally are perpendicular to the drainageways.

This map unit makes up about 6 percent of the county. It is about 50 percent Chenneby soils, 16 percent Pruitton soils, 14 percent Sullivan soils, and 20 percent soils of minor extent.

Chenneby soils are on flood plains and in depressions. Typically, the surface layer is brown silt loam. The upper part of the subsoil is brown silt loam that has gray mottles. The lower part is silty clay loam that is mottled in shades of gray and brown.

Pruitton soils are on low stream terraces. Typically, the surface layer is brown silt loam. The upper part of the subsoil is dark brown silt loam or loam, and the lower part is dark brown clay loam.

Sullivan soils are on low stream terraces. Typically, the surface layer is dark brown silt loam. The upper part of the subsoil is dark brown silt loam and loam. Below this is a buried surface layer of dark yellowish brown fine sandy loam and a buried subsoil of dark brown loam or silt loam.

Of minor extent in this map unit are Capshaw, Etowah, and Savannah soils on high stream terraces and toe slopes; Emory and Guthrie soils in depressions; and Nugent soils on flood plains.

Most areas of the soils in this map unit are well suited to cultivated crops, hay, and pasture. Erosion is not a serious concern if the soils are tilled. Row arrangement and V- and W-shaped ditches are needed in some areas to remove surface water. Water is ponded for long periods of time in some of the depressions. Minimum tillage and no-till farming are not needed on these soils, but these practices can be used in areas where these soils are adjacent to soils on which erosion-control measures are needed.

The soils in this map unit are well suited to trees, and productivity is high. Common trees are white oak, water oak, sweetgum, American sycamore, yellow-poplar, shortleaf pine, and loblolly pine. Seasonal wetness in areas of the Chenneby soils restricts the use of logging equipment.

The soils in this map unit are very poorly suited to urban development because of the hazard of flooding and because of the wetness in areas of the Chenneby soils.

The soils in this map unit are moderately suited or poorly suited to intensive recreation areas and moderately suited or well suited to extensive recreation areas. They have good potential as habitat for openland and woodland wildlife. The potential as habitat for wetland wildlife is fair to very poor.

Gently Sloping And Sloping Soils That Are Well Drained and Areas of Urban Land

9. Decatur-Urban Land

Urban land and well drained soils that have a clayey subsoil; formed in material weathered from limestone

The landscape is characterized by areas of Decatur soils and areas where the soils have been altered and covered by streets, parking lots, or buildings.

This map unit makes up about 4 percent of the county. It is about 45 percent Decatur soils, 40 percent Urban land, and 15 percent soils of minor extent.

The gently sloping and sloping Decatur soils are on ridges and side slopes. Typically, the surface layer is dark reddish brown silt loam. The subsoil is dark red silty clay.

Urban land consists of areas covered by parking lots, roads, streets, or buildings.

Of minor extent in this map unit are Fullerton soils on ridges and side slopes, Etowah soils on terraces and toe slopes, Emory and Guthrie soils in depressions, and Chenneby soils along drainageways.

Small areas of the Decatur soils are used for cultivated crops. These soils are well suited to cotton, soybeans, corn, and grain sorghum and to sod crops for hay and pasture. Erosion is a moderate hazard if the soils are tilled. Minimum tillage and no-till farming are the most effective methods of controlling erosion. Contour farming, terraces, diversions, and grassed waterways can also reduce the hazard of erosion.

The soils in this map unit are well suited to the trees and shrubs commonly grown in the area.

The soils in this map unit are moderately suited to most urban uses. The shrink-swell potential is a moderate limitation. Ponding is a severe limitation in depressions.

The soils in this map unit are moderately suited to intensive recreation areas and well suited to extensive recreation areas. This unit generally is not managed for wildlife habitat.

Broad Land Use Considerations

The soils in Colbert County vary widely in their suitability for major land uses. Approximately 18 percent of the county is used for cultivated crops, mainly cotton, soybeans, grain sorghum, and corn. This cropland is scattered throughout the county, but there is very little cropland in general soil map units 1, 6, 7, and 9. The slope is the major limitation affecting crops in general soil map units 1, 6, and 7. Urban development restricts cultivation in general soil map unit 9. The soils in most of the other map units are well suited to crops. The hazard of erosion is the major management concern in general soil map units 1, 2, 3, 4, 5, 6, and 7, and flooding is a concern in general soil map unit 8. The soils used for cultivated crops are mainly Decatur, Chenneby, Bewleyville, Emory, Capshaw, Pruitton, and Sullivan soils.

Approximately 13 percent of the county is used for pasture. The soils in general soil map units 2, 3, 4, 5, and 8 are well suited to grasses and legumes. The major soils on stream terraces and flood plains are Chenneby, Pruitton, and Sullivan soils. Decatur, Fullerton, Bewleyville, Capshaw, Wynnville, Nectar, and Nauvoo soils are the major soils in the uplands.

About 61 percent of the county is woodland. The soils in general soil map units 1, 2, 3, 4, 5, and 8 are well suited to loblolly pine. The soils in general soil map unit 8 are well suited to hardwoods mixed with loblolly pine. The use of equipment is restricted because of the slope in general soil map units 6 and 7 and because of wetness in general soil map unit 8.

About 8 percent of the county is classified as urban or built-up land. In general, the gently sloping or sloping Bewleyville, Decatur, and Fullerton soils are well suited to most urban uses. These soils are mainly in general soil map units 2 and 3. The soils on stream terraces and flood plains, such as those in general soil map unit 8, are very poorly suited to urban development because of the hazard of flooding. General soil map units 1, 6, and 7 are hilly, and most of the soils in these units are poorly suited to urban development because of the slope and the clayey texture of the subsoil. Sites that are suitable for houses and small commercial buildings are generally available in these areas.

The soils range from poorly suited to well suited as sites for recreational uses, depending on the intensity of expected use and on soil properties. Most of the soils in general soil map units 1, 2, 3, and 5 are moderately suited to intensive recreational uses. The steep and very steep soils in general soil map units 1, 6, and 7 are poorly suited to intensive recreational uses. The soils in general soil map unit 8 are moderately suited or poorly suited to intensive recreational uses because of flooding and wetness. The soils in general soil map units 1, 2, 3, and 5 are well suited to extensive recreational uses, such as hiking or horseback riding. Small areas suitable for intensive uses may be available in general soil map units where most of the soils are poorly suited to recreational development.

The potential for use as openland and woodland wildlife habitat is generally good throughout the county. The soils in general soil map units 1, 2, 3, 4, 5, and 8 have good potential for use as habitat for openland wildlife, and most of the soils in map units 1, 2, 3, 4, 5, 6, 7, and 8 have good potential as habitat for woodland wildlife.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. 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 underlying material, 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 underlying material. They also can differ in slope, stoniness, salinity, 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, Decatur silty clay loam, 6 to 10 percent slopes, eroded, is a phase of the Decatur 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. Smithdale-Pikeville complex, 6 to 15 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. Nectar and Nauvoo fine sandy loams, 6 to 10 percent slopes, 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. Pits, nearly level, 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 5 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 potentials for many uses. The "Glossary" defines many of the terms used in describing the soils.

BaE—Barfield-Rock outcrop complex, 2 to 35 percent slopes. This map unit consists of the gently sloping to steep, shallow, well drained Barfield soil and areas of Rock outcrop. Hard limestone bedrock is exposed at the surface or is below a shallow mantle of soil. Individual areas of this unit range from about 5 to more than 40 acres in size and are irregular in shape. They are about 50 percent Barfield soil and 20 percent Rock outcrop. The Barfield soil and the Rock outcrop occur as areas so intricately mixed or so small that mapping them separately was not practical.

Typically, the surface layer of the Barfield soil is very dark brown silty clay loam about 5 inches thick. The upper 5 inches of the subsoil is very dark grayish brown silty clay. The lower 7 inches of the subsoil is olive brown clay. Hard limestone bedrock is at a depth of about 17 inches.

Important properties of the Barfield soil–

Permeability: Moderately slow
Available water capacity: Very low
Soil reaction: Slightly acid to mildly alkaline
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: 8 to 20 inches
Root zone: 8 to 20 inches
Depth to the water table: More than 6 feet
Flooding: None

Rock outcrop consists of exposures of hard limestone bedrock that range from a few square feet to as much as 3 acres in size.

Included in mapping are areas of Bodine, Chisca, and Colbert soils. Also included are soils that are similar to the Barfield soil but are deeper over bedrock or are underlain by alkaline shale. Included soils make up about 30 percent of the map unit.

Most areas of this unit are used as woodland.

This map unit is not suited to cultivated crops and is poorly suited to pasture and hay because of the Rock outcrop, the slope, and the depth to bedrock.

This map unit is not suited to the production of loblolly pine, but it is suited to eastern redcedar. On the basis of a 50-year site curve, the mean site index for eastern redcedar is 40. The understory vegetation is redbud and hackberry. The hazard of erosion is moderate on the Barfield soil. Logging roads and skid trails should be laid out on the contour as much as possible. Site preparation methods that minimize the disturbance of the soil and conservation practices that help to control erosion should be used. The equipment limitation is severe because of the Rock outcrop. Tracked equipment should be used. Seedling mortality is severe because of the depth to bedrock and the clayey texture of the Barfield soil. Increasing the number of trees planted helps to compensate for these limitations. The windthrow hazard is moderate because of the depth to bedrock and the clayey texture of the Barfield soil. Heavy thinning of the stands should be avoided.

This map unit is poorly suited to building site development. The depth to bedrock, a high shrink-swell potential, and the moderately slow permeability are severe limitations that are difficult to overcome.

This map unit is poorly suited to recreational development because of the depth to bedrock, the slope, and the clayey surface layer of the Barfield soil.

The capability subclass of the Barfield soil is VIIs, and the woodland ordination symbol is 4D. The capability subclass of the Rock outcrop is VIIIs; no woodland ordination symbol is assigned.

BeB—Bewleyville silt loam, 2 to 6 percent slopes. This gently sloping, very deep, well drained soil is on ridges and uneven side slopes in the limestone valleys. Individual areas are irregular in shape and range from 3 to more than 50 acres in size.

Typically, the surface layer is very dark grayish brown and dark brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 22 inches, is yellowish red silt loam. The lower part to a depth of about 72 inches is red and dark red clay loam.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Decatur, Dickson, Etowah, and Fullerton soils and areas of ponded soils in depressions. Also included are soils that are similar to the Bewleyville soil but are yellowish in the upper part of the subsoil and small areas of Bewleyville soils that have slopes of less than 2 percent or more than 6 percent. Included soils make up about 15 percent of the map unit.

Most areas of the Bewleyville soil are used for cultivated crops or for pasture.

This soil is well suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If the soil is used for cultivated crops, the hazard of erosion is moderate or severe. Minimum tillage or no-till farming can greatly reduce soil loss. Because of the uneven side slopes, terraces are difficult to install and maintain and contour farming is not practical. In areas where these practices are feasible, however, they are effective in reducing soil loss from erosion, especially in combination with winter cover crops. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. Row crops can be grown each year if good conservation practices are applied.

This soil is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The moderate permeability is a limitation on sites for septic tank absorption fields. The shrink-swell potential is a slight limitation on sites for dwellings without basements and a moderate limitation on sites for dwellings with basements. The slope is a limitation on sites for small commercial buildings. Low strength is a severe limitation on sites for local roads and streets. Proper design and installation can help to overcome some of these limitations.

This soil has good potential for recreational development. The slope is a limitation affecting playgrounds.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

BeC—Bewleyville silt loam, 6 to 10 percent slopes. This sloping, very deep, well drained soil is on ridges and uneven side slopes in the limestone valleys. Individual areas are irregular in shape and range from 3 to more than 40 acres in size.

Typically, the surface layer is very dark grayish brown and dark brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 22 inches, is yellowish red silt loam. The lower part to a depth of about 72 inches is red and dark red clay loam.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bodine, Decatur, Etowah, and Fullerton soils and areas of poorly drained soils in drainageways. Also included are soils that are similar to the Bewleyville soil but are yellowish in the upper part of the subsoil. Included soils make up about 20 percent of the map unit.

Most areas of the Bewleyville soil are used for cultivated crops or for pasture.

This soil is well suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If the soil is used for cultivated crops, the hazard of erosion is severe. Minimum tillage or no-till farming can greatly reduce soil loss. Because of the uneven side slopes, terraces are difficult to install and maintain and contour farming is not practical. In areas where these practices are feasible, however, they are effective in reducing soil loss from erosion, especially in combination with winter cover crops. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. An adequate cropping system consists of 2 years of close-growing crops and 2 years of row crops.

This soil is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The slope and the moderate permeability are limitations on sites for septic tank absorption fields. The slope is a moderate limitation on sites for dwellings without basements. The slope and the shrink-swell potential are moderate limitations on sites for dwellings with basements. The slope is a severe limitation on sites for small commercial buildings, and low strength is a limitation on sites for local roads and streets. Proper design and installation can help to overcome these limitations.

This soil has fair potential for recreational development. The slope is a limitation affecting camp areas, picnic areas, and playgrounds. The severe hazard of erosion is a concern if the soil is used for paths and trails.

The capability subclass is IIIe, and the woodland ordination symbol is 8A.

CaB—Capshaw silt loam, 2 to 6 percent slopes. This gently sloping, deep, well drained soil is on ridges and short, uneven side slopes in the limestone valleys. Individual areas are irregular in shape and range from 5 to more than 50 acres in size.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 20 inches, is yellowish brown silty clay loam. Below this, to a depth of 33 inches, is yellowish brown silty clay loam mottled with light brownish gray. The lower part of the subsoil, to a depth of 53 inches, is yellowish brown silty clay mottled with light gray. The underlying material to a depth of 65 inches or more is mottled yellowish brown, light gray, and yellowish red silty clay.

Important soil properties—

Permeability: Slow
Available water capacity: High
Soil reaction: Strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 4 to 5 feet
Root zone: 48 to 60 inches
High water table: At a depth of 3.5 to 5.0 feet from December through March
Flooding: None

Included with this soil in mapping are areas of Chenneby, Chisca, Colbert, Decatur, Etowah, and Tupelo soils. Some included areas have slopes of less than 2 percent or more than 6 percent, and a few areas have a surface layer of gravelly silt loam. Also included are small areas of poorly drained or ponded soils in depressions. Included soils make up about 15 percent of the map unit.

The Capshaw soil is used mostly for cultivated crops or for pasture.

This soil is suited to corn, soybeans, and small grain and to grasses and legumes for hay and pasture. Cotton can be grown, but planting is frequently delayed because of the cold nature of the soil. Planting on low beds helps to overcome this problem. If this soil is used for cultivated crops, the hazard of erosion is moderate. Minimum tillage and no-till farming help to control erosion. Terraces and contour farming are effective in reducing soil loss from erosion, especially in conjunction with grassed waterways, field borders, and winter cover crops. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. If good management and conservation practices are applied, row crops can be grown each year.

This soil is well suited to the production of loblolly pine. Yellow-poplar and red oak can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength, the shrink-swell potential, wetness, and the slow permeability are limitations affecting building site development. If onsite disposal of sewage is required, the slow permeability is the most difficult limitation to overcome. The other limitations can be overcome by proper design and installation.

This soil has slight or moderate limitations that affect recreational development. The slow permeability is a limitation affecting camp areas, picnic areas, and playgrounds. The slope is an additional limitation on sites for playgrounds. The soil has slight limitations that affect paths and trails.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

CbA—Chenneby silt loam, 0 to 2 percent slopes, occasionally flooded. This nearly level, very deep, somewhat poorly drained soil is on flood plains. It is occasionally flooded in winter and early spring. Individual areas range from about 3 to more than 200 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The upper part of the subsoil, to a depth of 31 inches, is brown silt loam that has gray, grayish brown, and brown mottles. The lower part, to a depth of 46 inches, is mottled light olive brown, gray, and strong brown silty clay loam. The underlying material to a depth of 65 inches or more is gray silty clay loam.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: At a depth of 1.0 to 2.5 feet from January through March
Flooding: Occasional

Included with this soil in mapping are areas of Emory, Guthrie, Pruitton, and Sullivan soils. Also included are soils that have a surface layer of sandy loam or loam and small areas of soils that have a reddish brown surface layer. Included soils make up about 15 percent of the map unit.

The Chenneby soil is used mostly as woodland or for pasture. Some of the larger areas are used for cultivated crops.

This soil is suited to cotton, corn, and soybeans and to grasses and legumes for hay and pasture. If cultivated crops are grown, erosion is not a serious hazard. The wet, cold nature of the soil often delays planting. Row arrangement improves surface drainage. When used in combination with V- and W-shaped ditches, it can remove excess surface water from most fields. Planting on low beds helps the soil to warm up earlier in the spring. Growing winter cover crops and returning crop residue to the soil improve fertility, reduce crusting, and increase the rate of water infiltration in areas where conventional tillage systems are used. No-till farming and minimum tillage generally are not needed on this soil, but these practices can be used in areas where this soil is adjacent to soils on which erosion-control measures are needed. Row crops can be grown each year if good conservation practices are applied.

This soil is well suited to the production of loblolly pine. On the basis of a 50-year site curve, the mean site index for loblolly pine is 100. The understory vegetation is mainly longleaf uniola, muscadine, poison oak, dogwood, huckleberry, greenbrier, panicums, Virginia creeper, and honeysuckle. The main limitations affecting woodland management are the equipment limitation, seedling mortality, and plant competition. The high water table restricts the use of equipment to periods when the soil is dry. Seedling mortality is caused by wetness. Seedlings can be planted on beds, or the planting rate can be increased. Plant competition may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The flooding, the wetness, and low strength are severe limitations affecting building site development. Overcoming these limitations is generally not economically feasible.

The wetness and the flooding are moderate or severe limitations affecting recreational development.

The capability subclass is IIw, and the woodland ordination symbol is 11W.

CeA—Chenneby silt loam, 0 to 2 percent slopes, ponded. This nearly level, very deep, somewhat poorly drained soil is in concave areas that have inadequate surface drainage. Individual areas range from about 3 to 40 acres in size.

Typically, the surface layer is brown silt loam about 7 inches thick. It has a few grayish mottles. The upper part of the subsoil, to a depth of 30 inches, is brown silt loam that has gray and brownish gray mottles. The lower part, to a depth of 50 inches, is silty clay loam that is mottled in shades of olive, brown, and gray. The underlying material to a depth of 65 inches or more is gray silty clay loam.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: 1.0 foot above to 1.5 feet below the surface from December through June
Flooding: None

Included with this soil in mapping are areas of Chenneby, Guthrie, Pruitton, and Sullivan soils. Also included are areas that remain ponded for long periods of time. Included areas make up about 20 percent of the map unit.

The Chenneby soil is used mostly as woodland or for pasture. Some small areas are used for cultivated crops.

This soil is suited to corn and soybeans and to grasses and legumes for hay and pasture. It is not well suited to cotton because planting is frequently delayed. Establishing surface drainage outlets to remove ponded water allows for more predictable planting dates and thus improves the suitability of the soil for cotton. If this soil is cultivated, erosion is not a problem. In most places row arrangement in combination with V- and W-shaped ditches can remove surface water. Planting on low beds helps the soil to warm up earlier in the spring. In places where installing surface drainage outlets is not economically feasible, the soil is suitable for trees or grasses.

This soil is well suited to the production of loblolly pine. On the basis of a 50-year site curve, the mean site index for loblolly pine is 100. The understory vegetation is mainly longleaf uniola, muscadine, poison oak, dogwood, huckleberry, greenbrier, panicums, Virginia creeper, and honeysuckle. The main limitations affecting woodland management are the equipment limitation, seedling mortality, and plant competition. The high water table restricts the use of equipment to periods when the soil is dry. Seedling mortality is caused by wetness. Seedlings can be planted on beds, or the planting rate can be increased. Plant competition may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength and the ponding are severe limitations affecting building site development. Overcoming these limitations generally is not economically feasible.

The ponding is a severe limitation affecting recreational development.

The capability subclass is IVw, and the woodland ordination symbol is 11W.

ChD—Chisca loam, 6 to 15 percent slopes. This sloping or strongly sloping, deep, well drained soil is on ridges and uneven side slopes in the limestone valleys. Individual areas range from 10 to 100 acres in size and are irregular in shape.

Typically, the surface layer is dark grayish brown loam about 2 inches thick. The subsurface layer is yellowish brown loam about 3 inches thick. The upper part of the subsoil, to a depth of about 15 inches, is yellowish red clay. The lower part, to a depth of 23 inches, is red clay that has strong brown mottles. Below

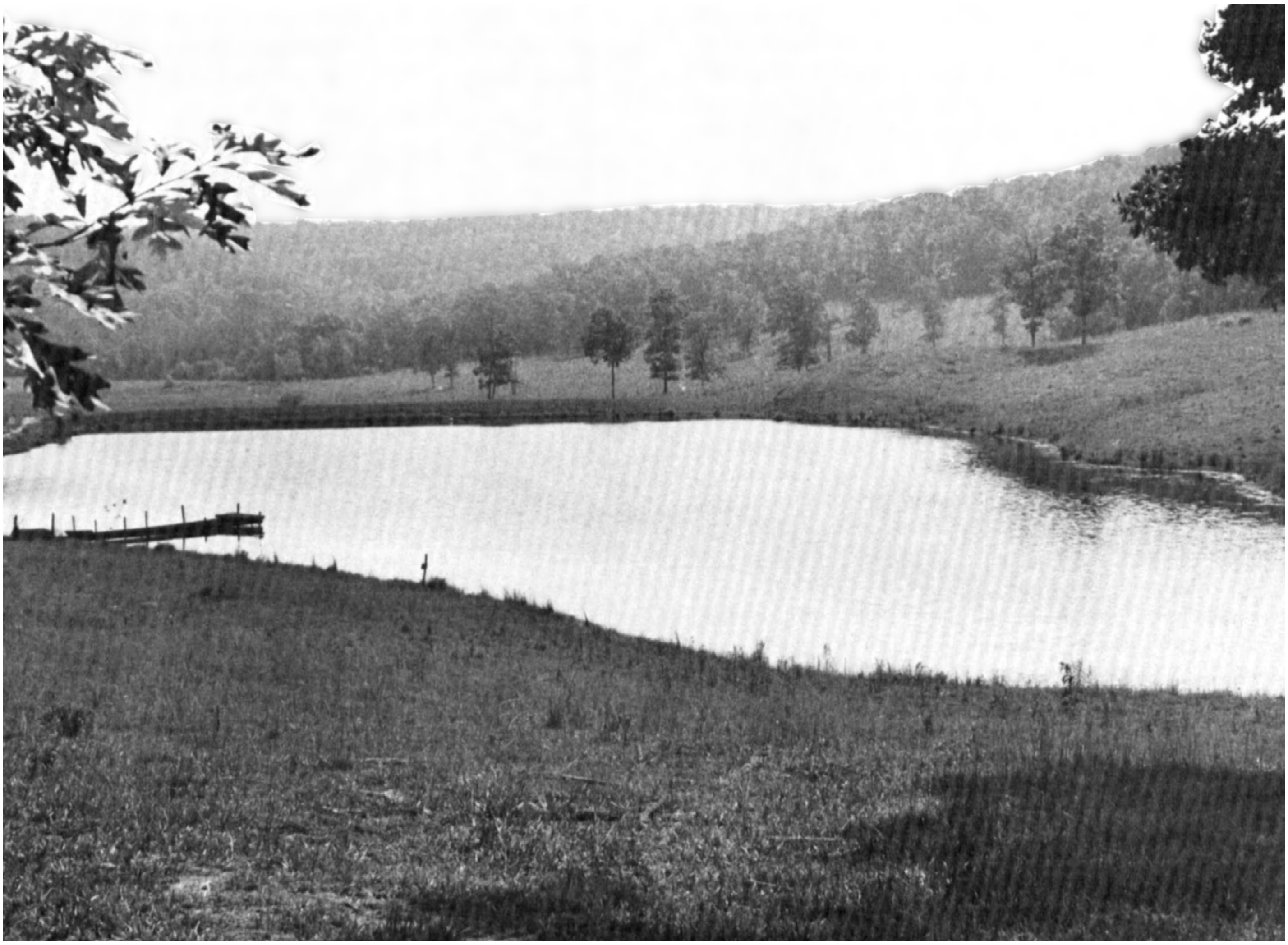

Figure 6.—Fescue pasture and a farm pond in an area of Chisca loam, 6 to 15 percent slopes. The Chisca-Nella-Nectar general soil map unit is in the background.

this, to a depth of 32 inches, is red clay that has light brownish gray mottles. The underlying material is clay about 23 inches thick. It is mottled in shades of red, gray, and brown. Weathered shale bedrock is at a depth of about 55 inches.

Important soil properties—

Permeability: Very slow
Available water capacity: Moderate
Soil reaction: Extremely acid to strongly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Chenneby, Colbert, Decatur, and Fullerton soils. Also included are small areas of poorly drained soils in drainageways and areas that have slopes of less than 6 percent or more than 15 percent. Included areas make up about 15 percent of the map unit.

Most areas of the Chisca soil are used as woodland. A few small areas are used for pasture or cultivated crops.

This soil is suited to selected grasses and legumes for hay and pasture (fig. 6). It is poorly suited to row crops because of the slope and the hazard of erosion.

This soil is suited to the production of loblolly pine. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85. The understory vegetation is mainly greenbrier, muscadine, panicums, persimmon, blackberry, lespedeza, bluestem, honeysuckle, and longleaf uniola. The main limitations affecting woodland management are the equipment limitation, the windthrow hazard, and plant competition. The high content of clay restricts the use of equipment to periods when the soil is dry. The windthrow hazard can be reduced by avoiding heavy thinning of the stands. Plant competition may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

A high shrink-swell potential, low strength, and the very slow permeability are severe limitations affecting building site development. These limitations are difficult to overcome.

The restricted permeability severely limits this soil as a site for recreational development. The slope is an additional limitation that affects some kinds of recreational development.

The capability subclass is VIe, and the woodland ordination symbol is 8C.

CnF—Chisca-Nella-Nectar complex, 10 to 45 percent slopes. This map unit consists of the deep, strongly sloping to very steep, well drained Chisca soil on the lower side slopes and ridges; the very deep, strongly sloping to very steep, well drained Nella soil on the middle slopes; and the deep, sloping to moderately steep, well drained Nectar soil on the upper slopes and ridgetops. The three soils occur as areas so intricately mixed or so small that mapping them separately was not practical. They are on valley walls, mountainsides, and ridges throughout the southern part of the county and in portions of the western part. In many areas ledges, escarpments, and outcrops of sandstone form an interface between the Nella and Nectar soils. The Nella soil is below the interface, and in many places it is less sloping than either the Chisca or the Nectar soil. It is in benchlike areas on the landscape. Individual areas of this map unit range from 10 to several hundred acres in size. They are about 44 percent Chisca and similar soils, 23 percent Nella and similar soils, and 15 percent Nectar and similar soils. Because of the rough topography, many areas are not easily accessible.

Typically, the surface layer of the Chisca soil is dark grayish brown loam about 2 inches thick. The subsurface layer is yellowish brown loam about 3 inches thick. The subsoil, to a depth of about 15 inches, is yellowish red clay. Below this, to a depth of 32 inches, is red clay that has many strong brown mottles in the upper part and many gray mottles in the lower part. The underlying material is mottled red, brown, olive, and gray clay grading to fractured shale at a depth of about 55 inches.

Important properties of the Chisca soil—

Permeability: Very slow
Available water capacity: Moderate
Soil reaction: Extremely acid to strongly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 30 to 50 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Nella soil is dark grayish brown cobbly fine sandy loam about 3 inches thick. The subsurface layer is pale brown and yellowish brown cobbly fine sandy loam about 8 inches thick. The subsoil extends to a depth of 75 inches or more. It is yellowish red cobbly sandy clay loam in the upper part and yellowish red cobbly clay loam in the lower part.

Important properties of the Nella soil—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Nectar soil is brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of 12 inches, is strong brown loam. The lower part, to a depth of 38 inches, is yellowish red clay or silty clay. Below this is mottled red, brown, and gray clay loam that has about 25 percent, by volume, sandstone and shale fragments. Soft sandstone bedrock is at a depth of about 50 inches.

Important properties of the Nectar soil—

Permeability: Moderately slow
Available water capacity: High
Soil reaction: Extremely acid to medium acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are ledges, escarpments, and outcrops of sandstone bedrock. Also included are areas of Barfield, Nauvoo, and Saffell soils, areas of a loamy soil that is shallow over sandstone bedrock, and areas of poorly drained soils in drainageways. Included areas make up about 18 percent of the map unit.

The soils in this map unit are used primarily as woodland. A few small areas are used for pasture or cultivated crops.

These soils are not suited to cultivated crops because of the slope and the cobbly surface in some areas. These limitations also make establishing and maintaining pastures difficult, but some small areas are suitable for pasture. The extent of the suitable areas should be determined if pastures are planned.

These soils are suited to the production of loblolly pine. Sweetgum, white oak, and yellow-poplar can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 85 on the Chisca soil, 80 on the Nella soil, and 90 on the Nectar soil. The understory vegetation is mainly dogwood, greenbrier, huckleberry, sumac, muscadine, panicums, bluestem, honeysuckle, Alabama supplejack, and lespedeza. Erosion is a moderate hazard on all of the soils. Logging roads and skid trails should be laid out on the contour as much as possible. Site preparation methods that minimize the disturbance of the soils should be used, and conservation practices are needed to control erosion. The equipment limitation is severe on the Chisca soil and moderate on the Nella and Nectar soils. The high content of clay in the Chisca soil restricts the use of equipment to periods when the soil is dry. Tracked equipment should be used in the steeper areas of all three soils. The windthrow hazard is moderate on the Chisca soil because of the clayey subsoil. Heavy thinning of the stands should be avoided. Plant competition is moderate on all of the soils. Competition from undesirable plants may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

These soils have low potential for building site development. The slope, the restricted permeability of the Chisca and Nectar soils, the cobbly surface of the Nella soil, and the high shrink-swell potential of the Chisca soil are difficult to overcome, except in scattered small areas. The extent of the suitable areas should be determined before the soils are used as building sites.

These soils are severely limited as sites for recreational development because of the slope and the restricted permeability.

The capability subclass of all three soils is VIIe. The woodland ordination symbol is 8C for the Chisca soil, 8R for the Nella soil, and 9R for the Nectar soil.

DaB—Decatur silt loam, 2 to 6 percent slopes. This gently sloping, very deep, well drained soil is on broad convex ridges that have complex slopes. Individual areas range from about 5 to more than 200 acres in size and are irregular in shape.

Typically, the surface layer is dark reddish brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of about 16 inches, is dark reddish brown silty clay loam. Below this to a depth of 80 inches or more is dark red silty clay.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Emory, Etowah, and Fullerton soils. Generally, Bewleyville and Fullerton soils are slightly higher on the landscape than the Decatur soil, and Emory and Etowah soils are slightly lower. Also included are areas of a soil that is similar to the Decatur soil but does not have the original surface layer; areas of Decatur soils that have a surface layer of silty clay loam; small areas of poorly drained or ponded soils in depressions; and small areas that have slopes of more than 6 percent or less than 2 percent. Included areas make up about 15 percent of the map unit.

Most areas of the Decatur soil are used for cultivated crops or for pasture.

This soil is well suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture (fig. 7). If cultivated crops are grown, the hazard of erosion is moderate or severe. Minimum tillage or no-till farming can greatly reduce soil loss. Because of the complex slopes, terraces are difficult to install and maintain and contour farming is not practical. In areas where these practices are feasible, however, they are effective in reducing soil loss from erosion, especially in combination with winter cover crops. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. In many areas on knolls, points of ridges, and side slopes, the surface layer has been thinned by erosion and plowing has mixed the remaining surface layer with the subsoil, which results in a more clayey texture. Such areas are generally less than 2 acres in size, but they make up 30 to 40 percent of some fields. Applications of lime and

Figure 7.—An area of Decatur silt loam, 2 to 6 percent slopes, used for pasture. The Saffell-Pikeville-Chisca general soil map unit is in the background.

fertilizer are needed to maintain or increase yields in these areas. Row crops can be grown each year if good conservation practices are applied.

This soil is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength and the shrink-swell potential are the major limitations affecting local roads and streets and building site development. These limitations can be overcome by proper design and installation.

This soil has good potential for recreational development. The slope is a moderate limitation on sites for playgrounds.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

DaC2—Decatur silty clay loam, 6 to 10 percent slopes, eroded. This sloping, very deep, well drained soil is on ridges with uneven side slopes. Individual areas range from about 5 to more than 40 acres in size and are irregular in shape.

Typically, the surface layer is dark reddish brown silty clay loam about 4 inches thick. The subsoil to a depth of 80 inches or more is dark red silty clay.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid

Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Chenneby, Chisca, Emory, Etowah, and Fullerton soils and soils that are similar to the Decatur soil but have a yellowish red subsoil. Also included are areas of poorly drained or ponded soils in depressions. Included soils make up about 15 percent of the map unit.

Most areas of the Decatur soil are used for cultivated crops or for pasture. A few small areas are used as woodland.

This soil is fairly well suited to the crops commonly grown in the area. Erosion is a severe hazard if cultivated crops are grown because of the short, complex slopes. Conventional erosion-control measures are not practical. Minimum tillage or no-till farming in combination with cover crops can help to control erosion. Most areas of this soil are eroded, and plowing has mixed the remaining surface layer with the subsoil. Returning crop residue to the soil and growing cover crops improve tilth, increase the rate of water infiltration, help to control runoff, and reduce crusting. Adding organic matter to the soil improves fertility and increases the water-holding capacity of the soil.

This soil is suited to grasses and legumes for hay and pasture. A vegetative cover should be maintained throughout most of the year to reduce the hazard of further erosion.

This soil is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength, the shrink-swell potential, and the slope are moderate limitations affecting building site development. These limitations can be overcome by proper design and installation.

The clayey surface layer and the slope are severe limitations affecting most kinds of recreational development.

The capability subclass is IVe, and the woodland ordination symbol is 7C.

DeB—Decatur-Urban land complex, 2 to 8 percent slopes. This map unit consists of the gently sloping and sloping, very deep, well drained Decatur soil and areas of Urban land on uplands. Individual areas are 20 acres or more in size and are somewhat symmetrical in shape. They are about 45 percent Decatur and similar soils and 40 percent Urban land. Some areas have small sinkholes. The Decatur soil and the Urban land occur as areas so intricately mixed or so small that mapping them separately was not practical.

Typically, the surface layer of the Decatur soil is dark reddish brown silt loam about 6 inches thick. The subsoil to a depth of 80 inches or more is dark red clay.

Important properties of the Decatur soil—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Urban land consists of areas that are covered by buildings, houses, streets, driveways, parking lots, and other structures.

Included in mapping are areas of Bewleyville, Chenneby, Emory, Etowah, Fullerton, Pruitton, and Sullivan soils. Also included are areas of altered soils created by cutting and filling. Included areas make up about 15 percent of the map unit.

This map unit is used mainly for residential, commercial, or industrial development. Some small areas that have not been developed are either cultivated or are idle land.

This map unit is only moderately suited to urban development because of the moderate permeability, low strength, and the shrink-swell potential of the Decatur soil. Septic tank absorption fields do not function properly because of the restricted permeability. Increasing the size of the absorption field can compensate for the restricted permeability. Special design of local roads and streets and of buildings is needed to overcome the low strength and the shrink-swell potential.

No capability subclass or woodland ordination symbol is assigned.

DeD—Decatur-Urban land complex, 8 to 15 percent slopes. This map unit consists of the moderately sloping and strongly sloping, very deep, well drained Decatur soil and areas of Urban land on uplands. Individual areas are 10 acres or more in size and are somewhat irregular in shape. They are about 45 percent Decatur and similar soils and 40 percent Urban land. Some areas have small sinkholes. The Decatur soil and the Urban land occur as areas so intricately mixed or so small that mapping them separately was not practical.

Typically, the surface layer of the Decatur soil is dark reddish brown silty clay loam about 4 inches thick. The subsoil to a depth of 80 inches or more is dark red clay.

Important properties of the Decatur soil—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Urban land consists of areas that are covered by buildings, houses, streets, driveways, parking lots, and other structures.

Included in mapping are areas of Chenneby, Emory, Etowah, Fullerton, Pruitton, and Sullivan soils. Also included are areas of altered soils created by cutting and filling. Included soils make up about 15 percent of the map unit.

This map unit is used mainly for residential, commercial, or industrial development. Some small areas that have not been developed are either cultivated or are idle land.

This map unit is only moderately suited to urban development because of the moderate permeability, low strength, and the moderate shrink-swell potential of the Decatur soil. Septic tank absorption fields do not function properly because of the restricted permeability. Increasing the size of the absorption field can compensate for the restricted permeability. Special design of local roads and streets and of buildings is needed to overcome the low strength and the shrink-swell potential.

No capability subclass or woodland ordination symbol is assigned.

DkA—Dickson silt loam, 0 to 3 percent slopes. This nearly level and gently sloping, very deep, moderately well drained soil is on uplands and on terraces in the limestone valleys. Slopes are smooth and slightly convex. Individual areas range from about 5 to more than 50 acres and are irregular in shape.

Typically, the surface layer is dark yellowish brown silt loam about 7 inches thick. The upper part of the subsoil, to a depth of 24 inches, is dark yellowish brown silt loam. The next part, to a depth of 44 inches, is a fragipan of dark yellowish brown silt loam intermingled in pockets and bands with firm, pale brown and brownish gray material that has a red interior. Below this to a depth of 60 inches or more is red silty clay loam that is mottled in shades of gray and brown.

Important soil properties—

Permeability: Moderate above the fragipan and slow in the fragipan
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone (depth to the fragipan): 24 to 44 inches
High water table: Perched at a depth of 2 to 3 feet from January through April
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Chenneby, Emory, and Etowah soils and small areas of poorly drained soils in depressions. Also included is a soil that is similar to the Dickson soil but does not have a fragipan. Included soils make up about 15 percent of the map unit.

Most areas of the Dickson soil are used for cultivated crops or for pasture. Some areas are wooded and support mostly mixed hardwoods.

This soil is suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If the soil is used for cultivated crops, the hazard of erosion is slight. A seasonal high water table is perched at a depth of 2 to 3 feet during the winter and early spring. Row arrangement is needed in some places to improve surface drainage, and planting on low beds helps the soil to warm up earlier in the spring. In the gently sloping areas, contour farming, terraces, and contour stripcropping can reduce the hazard of erosion. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. If good conservation practices are applied, this soil can be cultivated each year.

This soil is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Wetness is a moderate limitation affecting building site development. It can generally be overcome by proper design and installation. It is a severe limitation, however, on sites for dwellings with basements. The restricted permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields. Generally, an alternative sewage disposal system is needed. Low strength is a severe limitation on sites for local roads and streets.

The wetness and the restricted permeability are moderate limitations on sites for camp areas and playgrounds. This soil has only slight limitations that affect paths and trails.

The capability subclass is IIw, and the woodland ordination symbol is 8A.

Dp—Dumps. This map unit consists of about 75 acres on the Tennessee Valley Authority Reservation where dross from fertilizer production has been dumped. Slopes range from gently sloping to very steep.

Included in mapping are small areas of Fullerton and Decatur soils. These soils make up about 10 percent of the map unit.

Vegetation is very sparse. Some areas support a few black locust and American sycamore trees. Scattered clumps of Johnsongrass, goldenrod, and other forbs are the main vegetation.

The capability subclass is VIIIs. No woodland ordination symbol is assigned.

EmA—Emory silt loam, 0 to 2 percent slopes, ponded. This nearly level, very deep, well drained soil is in irregularly shaped depressions, some of which have no surface drainage outlets. The soil is ponded for brief periods during winter and early spring. Individual areas range from about 3 to more than 20 acres in size.

Typically, the surface layer is dark reddish brown silt loam about 8 inches thick. The subsoil, to a depth of 24 inches, is dark reddish brown silt loam. Below this, to a depth of 34 inches, is a buried surface layer of dark reddish brown silt loam. The next layer, to a depth of 52 inches, is reddish brown silt loam. Below this to a depth of 78 inches or more is red silty clay loam.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or medium acid
Organic matter content: Moderate
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: Perched at the surface to 1 foot above the surface for brief periods during December through April
Flooding: None

Included with this soil in mapping are small areas of Chenneby, Decatur, and Etowah soils and soils that are similar to the Emory soil but do not have a buried surface layer or subsoil. Also included are small areas of poorly drained soils and areas of Emory soils that are ponded for long or very long periods. Included soils make up about 15 percent of the map unit.

Most areas of the Emory soil are used for cultivated crops or for pasture. Some small areas support mixed hardwoods.

This soil is well suited to cotton (fig. 8), corn, soybeans, and small grain and to grasses and legumes for hay and pasture. The hazard of erosion is not a concern in cultivated areas. A surface or subsurface drainage system is needed in many areas to remove excess surface water, but suitable outlets are not available in some places. Minimum tillage or no-till farming generally is not needed on this soil, but these systems can be used in areas where this soil is adjacent to soils on which erosion-control measures are needed. Returning crop residue to the soil helps to maintain good tilth and increases the rate of water infiltration. Row crops can be grown each year.

This soil is well suited to the production of loblolly pine. Yellow-poplar, black walnut, and American sycamore can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation is mainly longleaf uniola, poison ivy, dogwood, honeysuckle, greenbrier, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

In areas that have no surface drainage outlets or that have insufficient outlets, ponding is a severe limitation affecting building site development. In many places this limitation can be overcome by installing a surface or subsurface drainage system. Where this limitation can be overcome, the soil has moderate limitations on sites for septic tank absorption fields because of the restricted permeability and for dwellings with basements because of wetness. If the ponding can be overcome, the soil has only slight limitations on sites for dwellings without basements. Low strength is a severe limitation on sites for local roads and streets. This soil is a good source of topsoil.

Because of the ponding, this soil is severely limited as a site for any kind of recreational development. If the soil can be adequately drained, however, the limitations are only slight.

Figure 8.—Cotton in an area of Emory silt loam, 0 to 2 percent slopes, ponded.

The capability subclass is IIw, and the woodland ordination symbol is 9A.

EnA—Emory-Urban land complex, 0 to 1 percent slopes. This map unit consists of the nearly level, very deep, well drained Emory soil in concave areas and areas of Urban land on uplands. Some areas have small sinkholes. Individual areas of this unit range from 5 to more than 20 acres in size and are irregular in shape. They are about 45 percent Emory soil and 40 percent Urban land. The Emory soil and the Urban land occur as areas so intricately mixed or so small that mapping them separately was not practical.

Typically, the surface layer of the Emory soil is dark reddish brown silt loam about 7 inches thick. The subsoil, to a depth of 25 inches, is dark reddish brown silt loam. Below this, to a depth of 32 inches, is a buried surface layer of dark reddish brown silt loam. The next layer, to a depth of 50 inches, is reddish brown silt loam. Below this to a depth of 72 inches or more is red silty clay loam.

Important properties of the Emory soil—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or medium acid
Organic matter content: Moderate
Natural fertility: Medium

Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: At a depth of 5 to 6 feet from December through April
Flooding: None

Urban land consists of areas that are covered by houses, streets, driveways, and parking lots.

Included in mapping are Chenneby, Decatur, Etowah, Guthrie, Pruitton, and Sullivan soils. Also included are small areas of soils that have been altered by grading and filling, soils in small depressions that may be ponded for short periods, or poorly drained soils. Included soils make up about 15 percent of the map unit.

This map unit is used mainly for residential, commercial, or industrial development. Some small areas have not been developed and are either cultivated or idle land.

The Emory soil is severely or moderately limited as a site for most kinds of urban development because of ponding, the restricted permeability, and low strength. The ponding is a severe limitation on sites for residential or commercial buildings. In many areas a surface or subsurface drainage system can be installed. Before construction begins, excess surface water should be removed and the area should be filled with suitable soil material. The ponding and the restricted permeability are severe limitations if the soil is used for onsite sewage disposal systems. In most areas these limitations cannot be overcome. The ponding and the low strength are severe limitations on sites for local roads and streets. These limitations are difficult and costly to overcome.

No capability subclass or woodland ordination symbol is assigned.

EtB—Etowah silt loam, 2 to 6 percent slopes. This gently sloping, very deep, well drained soil is in convex areas on high stream terraces, alluvial fans, and toe slopes. Individual areas range from about 3 to more than 40 acres in size and are irregular in shape.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil, to a depth of 32 inches, is yellowish red silty clay loam. Below this to a depth of 70 inches or more is yellowish red clay loam that has few or common strong brown mottles.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Decatur, Dickson, and Emory soils; small areas of ponded soils in depressions; and areas that have slopes of less than 2 percent or more than 6 percent. Also included is a soil that is similar to the Etowah soil but has some fragic qualities in the subsoil below a depth of 24 inches. Included areas make up about 15 percent of the map unit.

The Etowah soil is used mainly for cultivated crops or for pasture. A few small areas support mixed hardwoods and pine.

This soil is well suited to cotton, corn, soybeans (fig. 9), and small grain and to grasses and legumes for hay and pasture. If the soil is used for cultivated crops, the hazard of erosion is moderate. Minimum tillage or no-till farming is the most effective method of reducing soil loss from erosion. Contour farming, terraces, and contour stripcropping are also effective in reducing soil loss when used in conjunction with grassed waterways and field borders. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration in areas where conventional tillage methods are used. Row crops can be grown each year if good conservation practices are applied.

This soil is well suited to the production of loblolly pine. Yellow-poplar, black walnut, and American sycamore can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation is mainly longleaf uniola, poison oak, dogwood, honeysuckle, greenbrier, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength and the restricted permeability are the major limitations on sites for urban development, and low strength is a moderate limitation on sites for local roads and streets. These limitations can be overcome by proper design and installation. The restricted permeability is a moderate limitation affecting onsite sewage disposal systems. In most areas it can be overcome by increasing the size of the absorption field.

This soil has good potential for recreational development. The slope and small stones are moderate limitations on sites for playgrounds. No major limitations affect other recreational uses.

The capability subclass is IIe, and the woodland ordination symbol is 9A.

Figure 9.—Etowah silt loam, 2 to 6 percent slopes, and Decatur silt loam, 2 to 6 percent slopes, used for soybeans. In the background is an industrial complex.

FaB—Fullerton cherty silt loam, 2 to 6 percent slopes. This gently sloping, very deep, well drained soil is on ridges. Individual areas range from about 3 to more than 20 acres in size and are irregular in shape.

Typically, the surface layer is brown cherty silt loam about 6 inches thick. The upper part of the subsoil, to a depth of about 25 inches, is red cherty silty clay. Below this to a depth of 75 inches or more is red cherty clay.

Important soil properties—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Bodine, and Decatur soils. Also included are small areas of poorly drained soils in drainageways. Included soils make up about 15 percent of the map unit.

The Fullerton soil is used mainly for cultivated crops or for pasture. Some small areas support mixed hardwoods and pine.

This soil is suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If cultivated crops are grown, the hazard of erosion is moderate. Terraces and contour farming help to control erosion. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. Row crops can be grown each year if good management practices are applied.

This soil is well suited to the production of loblolly pine. Yellow-poplar and red oak can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 75. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength, the shrink-swell potential, and the moderate permeability are the major limitations on sites for residential or commercial development. These limitations can be overcome by proper design and installation.

The small stones are severe limitations on sites for recreational development.

The capability subclass is IIe, and the woodland ordination symbol is 7A.

FaD—Fullerton cherty silt loam, 6 to 15 percent slopes. This sloping and strongly sloping, very deep, well drained soil is on ridges and side slopes. Individual areas range from about 3 to more than 40 acres in size and are irregular in shape.

Typically, the surface layer is brown cherty silt loam about 6 inches thick. The upper part of the subsoil, to a depth of about 19 inches, is red cherty silty clay. Below this to a depth of 75 inches or more is red cherty clay.

Important soil properties—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with this soil in mapping are areas of Bewleyville, Bodine, and Decatur soils. Also included are small areas of poorly drained soils in drainageways. Included soils make up about 15 percent of the map unit.

Most areas of the Fullerton soil are used for pasture and hay or for cultivated crops. Some areas support mixed hardwoods and pine.

This soil is suited to grasses and legumes for hay and pasture. It is poorly suited to cultivated crops. If conventional tillage methods are used, the hazard of erosion is severe in most areas. In the less sloping areas, contour farming, terraces, and contour stripcropping are effective in reducing soil loss. In some fields no-till farming is needed. A vegetative cover should be maintained throughout most of the year. If conventional tillage methods are used and good conservation practices are applied, a good cropping system consists of 3 years of sod and 1 year of row crops.

This soil is well suited to the production of loblolly pine. Yellow-poplar and red oak can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 75. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Low strength, the shrink-swell potential, the slope, and the moderate permeability are the major limitations on sites for residential or commercial development. These limitations can be overcome by proper design and installation.

Small stones and the slope are severe limitations on sites for recreational development.

The capability subclass is IVe, and the woodland ordination symbol is 7A.

FbF—Fullerton-Bodine complex, 15 to 45 percent slopes. This map unit consists of very deep, well drained and somewhat excessively drained soils on moderately steep to very steep side slopes. Individual areas range from about 20 to more than 200 acres in size and are irregular in shape. They are about 45 percent Fullerton soil and 35 percent Bodine soil. The two soils occur as areas so intricately mixed that mapping them separately was not practical.

Typically, the surface layer of the Fullerton soil is brown cherty silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 19 inches, is red cherty silty clay. The next part, to a depth of 36 inches, is red cherty clay. The lower part to a depth of 75 inches or more is yellowish red cherty clay that has common red and brown mottles.

Important properties of the Fullerton soil—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low

Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Bodine soil is very dark grayish brown cherty silt loam about 3 inches thick. The subsurface layer is brown cherty silt loam about 5 inches thick. The subsoil, to a depth of 31 inches, is brown and yellowish red very cherty silt loam. The next layer, to a depth of 52 inches, is yellowish red extremely cherty silty clay loam. Below this to a depth of 75 inches or more is strong brown extremely cherty silty clay loam.

Important properties of the Bodine soil—

Permeability: Moderately rapid
Available water capacity: Low
Soil reaction: Extremely acid to strongly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are small areas of Barfield, Bewleyville, and Decatur soils on ridgetops and the upper slopes, a few small areas of limestone outcrops, and small areas of poorly drained soils in drainageways. Also included is a soil that is similar to the Fullerton soil but has more silt in the upper part of the subsoil. Included areas make up about 20 percent of the map unit.

Most areas of the Fullerton and Bodine soils support mixed hardwoods and pine. A few small areas are used for pasture or cultivated crops.

These soils are not suited to row crops, hay, or pasture. Erosion is a severe hazard if the soils are cultivated. The slope and the droughty nature of the Bodine soil are limitations affecting most of the commonly grown crops.

These soils are suited to the production of loblolly pine. Red oak and yellow-poplar can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 75 on the Fullerton soil and 80 on the Bodine soil. The understory vegetation is mainly dogwood, poison oak, muscadine, panicums, longleaf uniola, sumac, and greenbrier. The major limitations affecting woodland management are the severe hazard of erosion, the severe equipment limitation, seedling mortality, and plant competition. Logging roads and skid trails should be laid out on the contour as much as possible. Site preparation methods that minimize the disturbance of the soil should be used, and conservation practices are needed to control erosion. The equipment limitation is caused by the steep slopes. Tracked equipment should be used. The seedling mortality rate is moderate on the Bodine soil because of droughtiness. Increasing the number of trees planted helps to compensate for the seedling mortality rate. Competition from undesirable plants may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Although the slope is a limitation affecting building site development, several areas have been developed around Wilson Reservoir. If these soils are used for onsite sewage disposal, the effluent may surface downslope from the field lines. Where deep cuts are made for roadbeds or homesites, vegetation is difficult to establish because of the high content of coarse fragments in the soils. The cherty material is used as fill material and as a base for roads and streets. Several borrow pits are in areas of these soils.

The slope and the small stones are severe limitations on sites for recreational development.

The capability subclass of the Fullerton soil is VIIe, and that of the Bodine soil is VIIs. The woodland ordination symbol is 7R for the Fullerton soil and 8R for the Bodine soil.

GuA—Guthrie silt loam, 0 to 2 percent slopes, frequently flooded. This nearly level, very deep, poorly drained soil is on upland flats and in depressions. Some areas do not have surface drainage outlets. Individual areas range from about 3 to more than 40 acres in size and are irregular in shape.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is light brownish gray silt loam about 3 inches thick. The subsoil, to a depth of about 30 inches, is light brownish gray and gray silt loam and silty clay loam. Below this to a depth of 66 inches or more is a fragipan of gray silty clay loam that is mottled in shades of brown.

Important soil properties—

Permeability: Moderate above the fragipan and slow in the fragipan
Available water capacity: High
Soil reaction: Extremely acid or very strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone (depth to the fragipan): 20 to 40 inches
High water table: Perched at a depth of 0.5 to 1.0 foot from January through April
Flooding: Frequent

Included with this soil in mapping are small areas of Chenneby soils and a soil that is similar to the Guthrie soil but has more clay in the subsoil. Included soils make up about 15 percent of the map unit.

The Guthrie soil is used mainly for cultivated crops or as woodland. Some small areas are used for pasture.

If adequately drained, this soil is suited to corn, soybeans, and wheat and to grasses and legumes for hay and pasture. Planting row crops on low beds helps to overcome the wetness and the cold nature of the soil. If the soil is used for row crops, erosion generally is not a hazard. Planting is frequently delayed because of the wetness.

This soil is suited to the production of loblolly pine. Water oak and sweetgum can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly longleaf uniola, poison oak, Virginia creeper, honeysuckle, and greenbrier. The major limitations affecting woodland management are the equipment limitation, seedling mortality, the windthrow hazard, and plant competition. The seasonal wetness restricts the use of equipment to periods when the soil is dry. The moderate seedling mortality rate is caused by wetness. Planting on beds or increasing the number of seedlings planted helps to overcome this limitation. The moderate windthrow hazard is caused by the seasonal high water table and the restricted root zone. Heavy thinning of the stands should be avoided. Competition from undesirable plants may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The flooding, the restricted permeability, and the wetness are severe limitations affecting building site development. These limitations are difficult and costly to overcome.

The wetness and the flooding are severe limitations on sites for recreational development.

The capability subclass is Vw, and the woodland ordination symbol is 8W.

NNC—Nectar and Nauvoo fine sandy loams, 6 to 10 percent slopes. This map unit consists of the deep, sloping, well drained, moderately slowly permeable Nectar soil and the deep, sloping, well drained, moderately permeable Nauvoo soil. Generally, these soils are in long and relatively narrow areas on ridgetops, the upper side slopes, and plateaus. Areas range from 3 to more than 60 acres in size. The two soils occur in random patterns. Individual delineations may be made up of the Nectar or the Nauvoo soil, or they may be made up of both soils.

Typically, the surface layer of the Nectar soil is brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of 12 inches, is strong brown loam. The next part, to a depth of 38 inches, is yellowish red clay or silty clay that is mottled below a depth of 20 inches. The lower part of the subsoil, to a depth of 46 inches, is mottled pale brown, yellowish red, and strong brown clay loam. It is mixed with material from the underlying layer. The upper few inches of the underlying material is gravelly clay loam that is mottled in shades of red, brown, and gray. Soft sandstone bedrock is at a depth of about 50 inches.

Important properties of the Nectar soil—

Permeability: Moderately slow
Available water capacity: High
Soil reaction: Extremely acid to medium acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Nauvoo soil is dark grayish brown fine sandy loam about 2 inches thick. The subsurface layer is brown fine sandy loam about 8 inches thick. The subsoil, to a depth of about 41 inches, is yellowish red sandy clay loam. The underlying material is soft sandstone bedrock.

Important properties of the Nauvoo soil—

Permeability: Moderate
Available water capacity: Moderate or high
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are areas of Wynnville and Capshaw soils. Also included are soils that are less than 30 inches deep over weathered sandstone, small areas of poorly drained soils in drainageways, and some areas that have slopes of less than 6 percent or more than 10 percent. Included areas make up about 15 percent of the map unit.

The Nectar and Nauvoo soils are used mostly for pasture or as woodland. Some small, less sloping areas are used for cultivated crops.

These soils are suited to cotton, corn, soybeans, and small grain and to grasses and legumes for pasture and hay. If cultivated crops are grown, the hazard of erosion is severe. Minimum tillage or no-till farming can greatly reduce soil loss. Because of the complex slopes, terraces are difficult to install and maintain in most fields and contour farming is not practical. In areas where these practices are feasible, however, they are effective in controlling erosion, especially in combination with grassed waterways and winter cover crops. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. If conventional tillage methods are used in combination with terraces, contour farming, and grassed waterways, an adequate cropping system consists of 2 years of row crops and 2 years of sod.

These soils are well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90 on both soils. The understory vegetation is mainly honeysuckle, dogwood, persimmon, greenbrier, longleaf uniola, huckleberry, bluestem, sumac, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The Nectar soil is severely limited as a site for septic tank absorption fields because of the moderately slow permeability. The slope and the depth to bedrock are moderate limitations affecting this use in areas of the Nauvoo soil. The shrink-swell potential of the Nectar soil and the slope are moderate limitations on sites for dwellings. The slope is a severe limitation on sites for small commercial buildings. Low strength is a moderate or severe limitation affecting local roads and streets. The Nauvoo soil has a higher potential for building site development than the Nectar soil. The extent of the Nauvoo soil should be determined if development is planned in any area of these soils.

The slope is a moderate limitation on sites for campgrounds and picnic areas and a severe limitation on sites for playgrounds. The soils have only slight limitations that affect paths and trails.

The capability subclass of both soils is IIIe, and the woodland ordination symbol is 9A.

NuA—Nugent fine sandy loam, 0 to 2 percent slopes, occasionally flooded. This nearly level, very deep, excessively drained soil is on flood plains. It is not very extensive in the county. The largest areas are along Bear and Cripple Deer Creeks in the western part of the county, and small areas are along some of the other creeks. Individual areas range from about 3 to more than 100 acres in size and are generally parallel to the streams.

Typically, the surface layer is dark grayish brown fine sandy loam about 9 inches thick. The underlying material extends to a depth of 65 inches or more. The upper part, to a depth of 19 inches, is dark brown fine sandy loam. The lower part is dark yellowish brown, yellowish brown, and brown loamy fine sand and sand. It has some streaks and pockets of pale brown sand below a depth of 40 inches and streaks and pockets of light brownish gray loamy sand below a depth of 50 inches.

Important soil properties—

Permeability: Moderately rapid
Available water capacity: Low
Soil reaction: Very strongly acid to slightly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: At a depth of 3.5 to 6.0 feet from January through April
Flooding: Occasional

Included with this soil in mapping are areas of Chenneby, Sullivan, and Pruitton soils and soils in small depressions that are ponded for extended periods. Included soils make up about 10 percent of the map unit.

The Nugent soil is used mostly as woodland. Some small areas are used for pasture and hay or for cultivated crops.

This soil is suited to selected grasses and legumes. The hybrid bermudagrasses and sericea lespedeza grow well when properly managed. Because of the droughty nature of the soil, it is not suited to cotton, corn, or soybeans unless irrigation water is available. Erosion is not a problem in cultivated areas. Applying lime and fertilizer more frequently and in smaller quantities than on soils that contain more clay minimizes the loss of nutrients through leaching and thus ensures a more constant supply of plant nutrients during the growing season.

This soil is suited to the production of loblolly pine. Water oak and sweetgum can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation is mainly muscadine, longleaf uniola, poison ivy, and greenbrier. The main limitations affecting woodland management are the equipment limitation and seedling mortality. The content of sand restricts the type of equipment that can be used. Using low-pressure ground equipment helps to overcome this limitation. Seedling mortality is caused by the droughty nature of the soil. Increasing the number of seedlings planted helps to compensate for the seedling mortality rate.

The flooding is a severe hazard on building sites and on sites for recreational development. Generally, overcoming the flooding is not economically feasible.

The capability subclass is IIIs, and the woodland ordination symbol is 9S.

Pt—Pits, nearly level. This map unit consists of small excavated areas that have been mined for gravel, chert, and limestone and as fill material for use at other locations. Most areas have at least one vertical wall 10 to 75 feet high, and in some places piles of debris are 10 to 50 feet high. Individual areas range from 5 to 25 acres in size and are circular or rectangular in shape.

Vegetation is sparse. Some older areas support a small number of pines, sumac, and maple and beggarweed, little bluestem, pokeweed, and various other forbs and grasses. Most areas of this unit are being actively mined.

The capability subclass is VIIIs. No woodland ordination symbol is assigned.

PUA—Pruitton and Sullivan silt loams, 0 to 2 percent slopes, occasionally flooded. These very deep, well drained, nearly level soils are on flood plains. They are occasionally flooded for brief periods. The two soils occur as areas large enough to be mapped separately, but they were mapped together because of the present and expected use of the soils and the similarity of their characteristics. Some areas are made up mostly of the Pruitton soil, some are made up mostly of the Sullivan soil, and some contain both soils in varying proportions. Individual areas of this map unit are irregular in shape but are dominantly long and narrow. They range from 5 to 50 acres in size. They are about 45 percent Pruitton soil and 40 percent Sullivan soil.

Typically, the surface layer of the Pruitton soil is brown silt loam about 7 inches thick. The upper part of the subsoil, to a depth of 13 inches, is dark brown silt loam. The next part, to a depth of 34 inches, is dark brown loam. The lower part, to a depth of 43 inches, is dark brown clay loam. The underlying material to a depth of 61 inches or more is brown very cherty sandy loam and clay loam.

Important properties of the Pruitton soil—

Permeability: Moderately rapid
Available water capacity: High
Soil reaction: Very strongly acid to medium acid
Organic matter content: Moderate
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: Occasional

Typically, the surface layer of the Sullivan soil is dark brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 18 inches, is dark brown silt loam. The lower part, to a depth of 54 inches, is alternating layers of dark brown loam, fine sandy loam, and silt loam. The underlying material to a depth of 65 inches or more is dark brown silt loam.

Important properties of the Sullivan soil—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid to neutral
Organic matter content: Moderate
Natural fertility: Medium
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table: At a depth of 4 to 6 feet from December through March
Flooding: Occasional

Included with these soils in mapping are soils that are similar to the Sullivan soil but have more silt in the subsoil. Also included are small areas of Chenneby, Nugent, and Savannah soils and areas of poorly drained or ponded soils in depressions. Included soils make up about 15 percent of the map unit.

The Pruitton and Sullivan soils are used mainly for cultivated crops. Some small areas are used for pasture or support mixed hardwoods.

These soils are suited to cotton, corn, and soybeans and to grasses and legumes for hay and pasture. They are suited to small grain, but the risk of flood damage is greater during the time of year these crops are grown. If these soils are used for row crops, erosion is not a serious hazard. Row arrangement is needed to improve surface drainage, and when used in combination with V- and W-shaped ditches, it can remove excess surface water from most fields. Growing winter cover crops and returning crop residue to the soil improve fertility, reduce crusting, and increase the rate of water infiltration if conventional tillage methods are used. Minimum tillage or no-till farming generally is not needed on these soils, but these practices can be used in areas where these soils are adjacent to soils on which erosion-control measures are needed. Row crops can be grown each year if good conservation practices are applied.

These soils are well suited to the production of loblolly pine. Yellow-poplar, white oak, and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

These soils have poor potential for building site development because of the flooding. Overcoming the flooding generally is not economically feasible. Fill material is generally needed if these soils are used as building sites.

These soils have slight limitations that affect picnic areas and paths and trails and moderate limitations that affect playgrounds. They are severely limited as sites for camp areas because of the flooding.

The capability subclass of both soils is IIw, and the woodland ordination symbol is 9A.

SaF—Saffell-Pikeville complex, 15 to 45 percent slopes. This map unit consists of the very deep, well drained Saffell soil on moderately steep to very steep side slopes and the very deep, well drained Pikeville soil on steep and moderately steep upper side slopes and ridgetops. The two soils occur as areas so intricately mixed or so small that mapping them separately was not practical. The soils generally occur at the higher elevations. In many of the very steep areas, outcrops of conglomerate rock are near the interface of the Saffell and Pikeville soils. Individual areas of these soils range from about 10 to several hundred acres in size. They are irregular in shape and have a dendritic drainage pattern. They are about 52 percent Saffell and similar soils and 24 percent Pikeville and similar soils.

Typically, the surface layer of the Saffell soil is dark grayish brown gravelly sandy loam about 3 inches thick. The subsurface layer is brown gravelly sandy loam about 7 inches thick. The upper part of the subsoil, to a depth of 13 inches, is brown gravelly sandy loam. The lower part, to a depth of 52 inches, is reddish brown very gravelly loam. The underlying material to a depth of 65 inches or more is brown extremely gravelly sandy loam.

Important properties of the Saffell soil—

Permeability: Moderate
Available water capacity: Low
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Pikeville soil is dark grayish brown loam about 2 inches thick. The subsurface layer is yellowish brown loam about 4 inches thick. The upper 2 inches of the subsoil is brown loam. The next 15 inches is yellowish red clay loam. Below this, to a depth of 61 inches, is yellowish red gravelly clay loam. The lower part of the subsoil to a depth of 80 inches or more is yellowish red very gravelly clay loam.

Important properties of the Pikeville soil—

Permeability: Moderate or moderately rapid
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are areas of Chenneby soils along narrow drainageways, areas of Chisca soils on the lower side slopes and in saddles between ridges, areas of Savannah and Smithdale soils on ridgetops, areas of poorly drained soils in drainageways, and areas that have slopes of less than 15 percent. In some places, stone lines 2 to 3 inches thick of siltstone or sandstone are in the subsoil and underlying material. In other places, conglomerate more than 3 inches thick is in the subsoil and underlying material. Included areas make up about 24 percent of the map unit.

The Saffell and Pikeville soils are used primarily as woodland. Some small, less sloping areas are used for pasture.

These soils are not suited to cultivated crops because of the hazard of erosion and the slope, which limits the use of equipment. In general, the soils are poorly suited to pasture. Some of the less sloping areas, however, have some potential for use as pasture. Pasture species that are adapted to the soils should be selected for planting.

These soils are suited to the production of loblolly pine. Chestnut oak and shortleaf pine can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 70 on the Saffell soil and 80 on the Pikeville soil. The understory vegetation is mainly dogwood, honeysuckle, blackberry, poison oak, sassafras, muscadine, persimmon, greenbrier, bluestem, and lespedeza. The main limitations affecting woodland management are the hazard of erosion, the equipment limitation, seedling mortality, and plant competition. Logging roads and skid trails should be laid out on the contour as much as possible. Site preparation methods that minimize the disturbance of the soils should be used, and conservation practices are needed to control erosion. The equipment limitation is severe because of the slope. Tracked equipment should be used in the steeper areas. The seedling mortality rate is moderate because of the droughtiness of the Saffell soil. Increasing the number of trees planted helps to compensate for the seedling mortality rate. Competition from undesirable plants may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The slope is the main limitation on sites for residential development. In most areas grading, cutting, and filling are needed on sites for local roads and streets and for dwellings. If conventional septic tank absorption fields are used for sewage disposal, the downslope seepage of effluent is a potential problem. Some of the included areas have potential as sites for dwellings. The extent of the suitable areas should be determined before development is begun. The gravelly underlying material in the Saffell and Pikeville soils is used as construction material, especially as material for highways.

The slope and small stones are severe limitations that affect recreational development.

The capability subclass of both soils is VIIe. The woodland ordination symbol is 6F for the Saffell soil and 8R for the Pikeville soil.

ShB—Savannah loam, 1 to 5 percent slopes. This nearly level and gently sloping, very deep, moderately well drained soil is on high stream terraces. Individual areas range from about 3 to more than 40 acres in size.

Typically, the surface layer is dark yellowish brown loam about 6 inches thick. The upper part of the subsoil is yellowish brown loam about 16 inches thick. The lower part is a fragipan. The upper 12 inches of the fragipan is yellowish brown loam that has grayish brown mottles. The lower part of the fragipan to a depth of 65 inches or more is mottled yellowish brown, yellowish red, and light brownish gray sandy loam.

Important soil properties—

Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone (depth to the fragipan): 16 to 28 inches
High water table: Perched at a depth of 1.5 to 3.0 feet from January through March
Flooding: None

Included with this soil in mapping are areas of Pikeville and Smithdale soils and small areas of poorly drained soils in depressions. Also included is a soil that is similar to the Savannah soil but has more silt in the subsoil above the fragipan. Included soils make up about 15 percent of the map unit.

The Savannah soil is used mainly for cultivated crops. Some small areas are used for pasture or as woodland.

This soil is suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If cultivated crops are grown, the hazard of erosion is slight or moderate. Contour farming, terraces, and contour stripcropping in combination with winter cover crops are effective in controlling erosion. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. Row crops can be grown each year if good management practices are applied.

This soil is well suited to the production of loblolly pine. Yellow-poplar, red oak, and sweetgum can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Wetness and the restricted permeability are moderate or severe limitations affecting building site development. Generally, these limitations can be overcome by proper design and installation of building foundations. If onsite sewage disposal is needed, a system other than septic tank absorption fields should be used.

The wetness and the restricted permeability are moderate or severe limitations on sites for recreational development.

The capability subclass is IIe, and the woodland ordination symbol is 8W.

SpD—Smithdale-Pikeville complex, 6 to 15 percent slopes. This map unit consists of very deep, well drained soils on sloping and strongly sloping ridges and side slopes. The two soils occur as areas so intricately mixed or so small that mapping them separately was not practical. Individual areas range from about 10 to several hundred acres in size and are irregular in shape. They are about 40 percent Smithdale soil and 35 percent Pikeville soil.

Typically, the surface layer of the Smithdale soil is dark grayish brown loam about 2 inches thick. The subsurface layer is yellowish brown loam about 5 inches thick. The upper part of the subsoil, to a depth of

30 inches, is brown sandy loam and red sandy clay loam. The lower part to a depth of 65 inches or more is red sandy loam that has yellow and brown mottles.

Important properties of the Smithdale soil—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Typically, the surface layer of the Pikeville soil is dark grayish brown loam about 2 inches thick. The subsurface layer is yellowish brown loam about 4 inches thick. The upper part of the subsoil is brown loam about 2 inches thick. The next part is yellowish red clay loam about 15 inches thick. Below this, to a depth of 61 inches, is yellowish red gravelly clay loam. The lower part of the subsoil to a depth of 80 inches or more is yellowish red very gravelly clay loam.

Important properties of the Pikeville soil—

Permeability: Moderate or moderately rapid
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are areas that have slopes of less than 6 percent and areas of poorly drained soils in drainageways. Also included are small areas of Savannah soils on the smoother and broader ridgetops and small areas of Saffell soils on the steeper side slopes. Included soils make up about 25 percent of the map unit.

Most areas of the Smithdale and Pikeville soils are on long, winding, irregularly shaped ridgetops and are used primarily as woodland.

Some of the smoother areas of these soils are suited to soybeans and small grain and to grasses and legumes for hay and pasture. If these soils are used for row crops, the hazard of erosion is severe. Contour farming, terraces, and contour stripcropping can reduce the hazard of erosion, but these methods are not practical because of the irregular shape of the areas. Minimum tillage and no-till farming are the most effective erosion-control measures on these soils. If good management practices are applied, 1 year of row crops can be grown in rotation with 3 years of sod crops.

These soils are suited to the production of loblolly pine. Shortleaf pine and Virginia pine can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80 on both soils. The understory vegetation is mainly muscadine, persimmon, sassafras, huckleberry, dogwood, poison ivy, sumac, greenbrier, bluestem, and lespedeza. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation (fig. 10).

The slope and the restricted permeability are moderate limitations affecting building site development. These limitations can be overcome by proper design and installation.

The slope is the main limitation on sites for recreational development.

The capability subclass of both soils is IVe, and the woodland ordination symbol is 8A.

TnD—Typic Udorthents-Nectar complex, 6 to 15 percent slopes. This map unit consists of areas that have been surface mined for iron ore and asphalt and areas of the Nectar soil. Individual areas range from about 5 to more than 100 acres in size. They are about 70 percent Typic Udorthents and 20 percent Nectar soil. Slopes range from 6 to 15 percent. In some places vertical cuts are 50 feet high or higher, and individual piles of spoil have slopes of more than 15 percent. The Typic Udorthents and the Nectar soil occur as areas so intricately mixed or so small that mapping them separately was not practical.

Typic Udorthents consist of uneven accumulations of overburden or of material removed during surface mining. They occur as piles of spoil material intermingled with excavated areas. The areas are generally rectangular in shape. Typically, the soil material is clayey and has thin lenses of loamy material. In some areas the soils contain coarse fragments throughout.

Typically, the surface layer of the Nectar soil is brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of 12 inches, is strong brown loam. Below this, to a depth of 38 inches, is yellowish red clay and silty clay. The underlying material is mottled red, brown, and gray gravelly clay loam that contains about 25 percent, by volume, fragments of sandstone and shale. Soft sandstone bedrock is at a depth of about 50 inches.

Figure 10.—An area of Smithdale-Pikeville complex, 6 to 15 percent slopes, being prepared for a planting of loblolly pine.

Important properties of the Nectar soil—

Permeability: Moderately slow
Available water capacity: High
Soil reaction: Extremely acid to medium acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 40 to 60 inches
Root zone: 40 to 60 inches
Depth to the water table: More than 6 feet
Flooding: None

Included with these soils in mapping are areas of Chisca, Nauvoo, and Wynnville soils. Included soils make up about 10 percent of the map unit.

Most areas of this map unit are wooded.

This map unit is not suited to cultivated crops or to pasture and hay. Extensive land smoothing and shaping are needed to prepare the soils for crops and pasture. Surface runoff ranges from rapid to ponded on the clayey Udorthents and from moderate to rapid on the Nectar soil. If the soils are not protected by a vegetative cover, the hazard of sheet, rill, or gully erosion is severe.

This map unit is well suited to the production of loblolly pine. Yellow-poplar and black walnut can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90 on the Nectar soil. The understory vegetation is mainly honeysuckle, dogwood, persimmon, greenbrier, longleaf uniola, huckleberry, bluestem, sumac, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The Nectar soil has moderate limitations that affect building site development. The clayey Udorthents have a very uneven surface that requires a considerable amount of site preparation. Restricted permeability and low strength also are limitations. In most places overcoming these limitations is not economically feasible.

The slope, the restricted permeability, and the variability of the Udorthents are moderate or severe limitations that affect recreational development.

The capability subclass of the Typic Udorthents is VIIs, and that of the Nectar soil is IVe. The Typic Udorthents are not assigned a woodland ordination symbol. The woodland ordination symbol of the Nectar soil is 9A.

TuB—Tupelo-Colbert complex, 0 to 4 percent slopes. This map unit consists of very deep and deep, somewhat poorly drained and moderately well drained soils on broad, nearly level upland flats and on gently sloping ridges in the limestone valleys. Individual areas range from about 5 to more than 100 acres in size and are irregular in shape. They are about 55 percent Tupelo soil and 35 percent Colbert soil. The two soils occur as areas so intricately mixed or small that mapping them separately was not practical.

Typically, the surface layer of the Tupelo soil is dark grayish brown and brown silt loam about 7 inches thick. The subsoil extends to a depth of 46 inches. It is yellowish brown silty clay loam in the upper part, yellowish brown silty clay in the next part, and mottled yellowish brown, light brownish gray, and strong brown silty clay in the lower part. The underlying material to a depth of 60 inches or more is gray silty clay that is mottled in shades of brown and yellow.

Important properties of the Tupelo soil—

Permeability: Slow
Available water capacity: High
Soil reaction: Very strongly acid to medium acid in the surface layer, strongly acid or medium acid in the subsoil and substratum
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: More than 60 inches
Root zone: More than 60 inches
High water table At a depth of 1 to 2 feet from November through March
Flooding: None

Typically, the surface layer of the Colbert soil is dark grayish brown silt loam about 3 inches thick. The subsurface layer is pale brown silt loam about 5 inches thick. The upper part of the subsoil is strong brown silty clay loam about 7 inches thick. The next part, to a depth of 26 inches, is strong brown silty clay that has a few gray and red mottles. Below this, to a depth of 36 inches, is yellowish brown clay that has red and gray mottles. The lower part of the subsoil, to a depth of 44 inches, is mottled gray, red, and brown silty clay. The underlying material is light olive brown clay that is mottled in shades of gray and brown. Limestone bedrock is at a depth of about 55 inches.

Important properties of the Colbert soil—

Permeability: Very slow
Available water capacity: High
Soil reaction: Very strongly acid to slightly acid
Organic matter content: Moderately low
Natural fertility: Low
Depth to bedrock: 40 to 72 inches
Root zone: 40 to 72 inches
High water table: Perched at a depth of 3.5 to 5.0 feet from December through March
Flooding: None

Included with these soils in mapping are areas of Capshaw and Chisca soils on ridges and toe slopes and Chenneby soils in narrow drainageways. Also included are small areas of Tupelo soils at the lower elevations that are flooded for short periods and small areas of poorly drained soils in depressions. Included soils make up about 10 percent of the map unit.

The Tupelo and Colbert soils are used mainly for pasture or for cultivated crops. Some small areas support mixed hardwoods and pine.

These soils are suited to corn and soybeans and to grasses and legumes for hay and pasture. They are poorly suited to cotton because of the cold, wet nature of the soils, which often delays planting. Planting on low beds helps the soils to warm up earlier in the spring. Row arrangement and V- and W-shaped ditches are needed to remove excess surface water in many fields. In other places contour farming is needed to prevent excessive soil loss. Row crops can be grown each year if good conservation practices are applied. Because of the high content of clay in the subsoil, the soils can be worked within only a narrow range in moisture content. The seasonal high water table delays seedbed preparation in early spring. Tilth is generally fair. Returning crop residue to the soil helps to maintain tilth, and growing winter cover crops can improve tilth. The penetration of plant roots is somewhat hindered by the clayey subsoil, and in some areas plowpans have formed. Plowpans can be prevented or eliminated by chiseling.

These soils are well suited to the production of loblolly pine. Sweetgum and water oak can also be grown on the Tupelo soil, and shortleaf pine can be grown on the Colbert soil. On the basis of a 50-year site curve, the mean site index for loblolly pine is 90 on the Tupelo soil and 80 on the Colbert soil. The understory vegetation is mainly huckleberry, American beautyberry, poison ivy, longleaf uniola, sumac, honeysuckle, dogwood, panicums, and greenbrier. The main management concern is the equipment limitation. The wetness and the high content of clay restrict the use of equipment to periods when the soils are dry. Seedling mortality is moderate on the Tupelo soil because of wetness. Planting on beds or increasing the number of seedlings helps to overcome this limitation. Plant competition is severe on the Tupelo soil and moderate on the Colbert soil. It may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

The wetness, the restricted permeability, and the shrink-swell potential are severe limitations affecting building site development. The restricted permeability is also a severe limitation on sites for septic tank absorption fields. Also, flooding is a hazard in some areas of the Tupelo soil. Overcoming these limitations is generally not economically feasible.

The wetness and the restricted permeability are moderate or severe limitations on sites for recreational development.

The capability subclass of the Tupelo soil is IIIw, and the woodland ordination symbol is 6W. The capability subclass of the Colbert soil is IIIe, and the woodland ordination symbol is 8C.

Ub—Urban land, 0 to 5 percent slopes. This map unit consists primarily of high-density residential areas and commercial and industrial developments. Generally, these areas have been graded and smoothed. In most areas, the original soils have been altered beyond recognition or are covered by buildings or pavement. The original soils were altered by cutting and filling, shaping and grading, compacting, or covering with concrete and asphalt. Individual areas of this unit generally are less than 50 acres in size. They are in the Muscle Shoals, Sheffield, and Tuscumbia area.

Included in mapping are small areas of unaltered soils, mostly Decatur, Emory, Etowah, and Guthrie soils. These soils make up less than 15 percent of the map unit.

Onsite investigation and testing are needed to determine the suitability of this unit for any uses.

The capability subclass is VIIIs. No woodland ordination symbol is assigned.

WnB—Wynnville silt loam, 2 to 6 percent slopes. This gently sloping, very deep, moderately well drained soil is on broad plateaus. Individual areas range from about 5 to more than 100 acres in size and are irregular in shape.

Typically, the surface layer is brown silt loam about 2 inches thick. The subsurface layer is yellowish brown loam about 5 inches thick. The upper part of the subsoil, to a depth of 23 inches, is yellowish brown loam. The next part, to a depth of 46 inches, is a fragipan. The upper part of the fragipan is yellowish brown loam that has yellowish red mottles. The lower part is mottled red, brown, and gray loam. Below this to a depth of 68 inches or more is red sandy clay loam that has brown and gray mottles.

Important soil properties—

Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate
Soil reaction: Extremely acid to strongly acid
Organic matter content: Low
Natural fertility: Low
Depth to bedrock: 48 to more than 60 inches
Root zone (depth to the fragipan): 18 to 36 inches
High water table: Perched at a depth of 1.5 to 2.5 feet from December through February
Flooding: None

Included with this soil in mapping are areas of Nectar and Nauvoo soils and areas of a poorly drained soil in depressions. Also included is a soil that is similar to the Wynnville soil but has less clay in the subsoil above the fragipan. Included soils make up about 15 percent of the map unit.

The Wynnville soil is used mainly for cultivated crops or for pasture. Some small areas are wooded.

This soil is suited to cotton, corn, soybeans, and small grain and to grasses and legumes for hay and pasture. If cultivated crops are grown, the hazard of erosion is moderate. Minimum tillage or no-till farming is the most effective method of reducing soil loss in cultivated areas. Contour farming, terraces, and contour stripcropping can also help to control erosion. Returning crop residue to the soil and growing winter cover crops improve fertility, reduce crusting, and increase the rate of water infiltration. If good conservation practices are applied, this soil can be cultivated each year.

This soil is well suited to the production of loblolly pine. Yellow-poplar, red oak, and sweetgum can also be grown. On the basis of a 50-year site curve, the mean site index for loblolly pine is 80. The understory vegetation is mainly honeysuckle, dogwood, persimmon, longleaf uniola, blackberry, sedge, Virginia creeper, and muscadine. The main limitation affecting woodland management is plant competition, which may hinder natural or artificial reforestation. Competing vegetation can be controlled by proper site preparation.

Wetness is a moderate limitation affecting building site development. It can be overcome by proper design and installation. The restricted permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields. Generally, an alternative sewage disposal system is needed.

The wetness, the restricted permeability, the slope, and small stones are limitations on sites for some kinds of recreational development.

The capability subclass is IIe, and the woodland ordination symbol is 8A.

Prime Farmland

In this section, prime farmland is defined and the soils in Colbert County that are considered prime farmland are listed.

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.

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 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 6 percent.

The map units in Colbert County that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. 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 5. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. If applicable, the need for these measures is indicated in parentheses after the map unit name in the following list. Onsite evaluation is necessary to determine if the limitations have been overcome by corrective measures.

The soils identified as prime farmland in Colbert County are:

BeB	Bewleyville silt loam, 2 to 6 percent slopes
CaB	Capshaw silt loam, 2 to 6 percent slopes
CbA	Chenneby silt loam, 0 to 2 percent slopes, occasionally flooded
CeA	Chenneby silt loam, 0 to 2 percent slopes, ponded (where drained)
DaB	Decatur silt loam, 2 to 6 percent slopes
DkA	Dickson silt loam, 0 to 3 percent slopes
EmA	Emory silt loam, 0 to 2 percent slopes, ponded (where drained)
EtB	Etowah silt loam, 2 to 6 percent slopes
FaB	Fullerton cherty silt loam, 2 to 6 percent slopes
PUA	Pruitton and Sullivan silt loams, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
ShB	Savannah loam, 1 to 5 percent slopes
TuB	Tupelo-Colbert complex, 0 to 4 percent slopes (where drained)
WnB	Wynnville silt loam, 2 to 6 percent slopes

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 bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

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

Crops and Pasture

Kenneth M. Rogers, conservation agronomist, Soil Conservation Service, helped prepare this section.

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

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

In 1982, approximately 63,900 acres in Colbert County was used as cropland and 53,100 acres was used as pastureland *(22)*. In 1983, approximately 20,200 acres of cotton, 3,800 acres of corn, 17,400 acres of soybeans, and 12,400 acres of wheat was planted and 12,500 acres of hay was harvested *(2)*. A small acreage in the southern part of the county is used for truck crops. Most of the cropland is in the eastern part of the county, near Cherokee, and in the western part along Bear Creek. In the southern part of the county, the cropland is on ridgetops and gently sloping side slopes.

The potential for increased production of food and fiber is good. Yields could be increased on land currently being cultivated if the most current technology is applied. This soil survey can help land users make sound management decisions and facilitate the application of crop production technology.

Field crops suited to the soils and climate of Colbert County include many that are not commonly grown because of economic considerations. Cotton and soybeans are the main row crops. Grain sorghum, corn, vegetable crops, and similar crops can be grown when economic conditions are favorable. Wheat is the only close-growing crop planted for grain production, but barley, oats, and rye could also be grown. Specialty crops grown in the county include cucumbers, sweet corn, peas, okra, melons, sod, and alfalfa. Many of the soils in the survey area, including Bewleyville, Etowah, Decatur, and Wynnville soils, are well suited to specialty crops, and a large acreage of these crops could be grown if economic conditions were favorable. Additional information regarding specialty crops can be obtained from the local office of the Cooperative Extension Service or the Soil Conservation Service.

Soil erosion is a major concern on about two-thirds of the cropland in Colbert County. In areas where the slope is more than 2 percent, erosion is a potential hazard. Bewleyville, Etowah, Decatur, Fullerton, and Wynnville soils are some of the sloping soils presently being cultivated that are subject to accelerated erosion.

Soil erosion can significantly reduce production and can result in the pollution of streams. Productivity is reduced as the surface layer erodes and more of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Decatur and Fullerton soils, and on soils that have a fragipan that restricts rooting depth, such as Dickson, Savannah, and Wynnville soils. Control of erosion on farmland minimizes the pollution of streams and improves the quality of water for municipal and recreational uses and for fish and wildlife.

Erosion-control practices provide a protective plant cover, increase the rate of water infiltration, and help to control runoff. A cropping system that keeps plant cover and crop residue on the surface for extended periods can hold soil losses to amounts that will not reduce the productive capacity of the soils. Incorporating grass and legume forage crops in the cropping system helps to control erosion in sloping areas. These crops also improve soil tilth for the crops that follow in the rotation, and legumes increase nitrogen levels in the soils.

In most areas of Decatur soils and some areas of Bewleyville and Fullerton soils, slopes are so complex and undulating that contour farming and terraces are not practical. On these soils, cropping systems that provide a substantial vegetative cover are required to control erosion unless a system of conservation tillage is applied.

Applying a system of conservation tillage and leaving crop residue on the surface increase the rate of water infiltration and help to control runoff and erosion. Using a no-till method of planting is effective in reducing the hazard of erosion in sloping areas (fig. 11). This practice is suitable on most of the soils in the survey area.

Terraces and diversions help to control runoff and erosion. They are most practical on deep, well drained soils that have uniform slopes, such as Etowah, Dickson, Nectar, Nauvoo, and Wynnville soils. Grassed waterways or underground tile outlets are essential in areas where terraces and diversions are installed. Diversions can be used to intercept surface runoff from hilly uplands and divert the water around the fields to vegetated disposal areas.

Contour farming is a very effective erosion-control method on cultivated cropland when used in conjunction with a water-disposal system. It is best suited to soils that have smooth, uniform slopes, such as Dickson, Etowah, and Wynnville soils.

Soil blowing is a hazard in early spring in most areas in the valleys, especially if the soils are dry and are not protected by a plant cover. The hazard of erosion is generally highest after the seedbed has been prepared, after planting, and when the crop plants are small. Tillage methods that leave crop residue on the surface reduce the hazard of soil blowing. Conventional planting practices should utilize an implement that scratches the surface and leaves a rough, irregular pattern. Also, strips of close-growing crops are effective as windbreaks. Where possible, seedbed preparation should be delayed until after the month of March, which is usually windy. Additional information regarding the design of erosion-control practices is available at the local office of the Soil Conservation Service.

Colbert County has an adequate amount of rainfall for the commonly grown crops. Prolonged periods of drought are rare, but the distribution of rainfall during spring and summer results in droughty periods during the growing season in most years. Irrigation may be needed during these periods to reduce plant stress. Most of the soils in the county that are commonly used for cultivated crops are suitable for irrigation, but the amount of water applied should be regulated to prevent excessive runoff. Some soils, such as Capshaw, Colbert, and Tupelo soils, have a slow rate of water infiltration that limits their suitability for irrigation.

Most of the soils in the county that are used for crops have a surface layer of silt loam that is dark in color and low in organic matter content. Regular additions of crop residue, manure, and other organic material can improve soil structure and reduce crusting, thereby improving the rate of water infiltration.

Natural fertility is low in most of the soils in Colbert County. On all of the soils, applications of agricultural limestone are needed to neutralize soil acidity. The crops grown in the county respond well to applications of fertilizer. Levels of available phosphorus and potash are generally low in most of the soils. However, some fields may have a buildup of phosphorus or potassium because of past applications of large quantities of commercial fertilizer. Applications of lime and fertilizer should be based on the results of soil tests. Leaching is a problem on sandy soils, such as Nugent soils. Higher rates of nitrogen should be used on these soils, and the nitrogen should be applied in split applications. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil wetness is a problem on Chenneby, Emory,

Figure 11.—These soybeans in an area of Decatur silt loam, 2 to 6 percent slopes, were planted in wheat stubble using a no-till planting system.

Guthrie, and Tupelo soils. A drainage system is needed in areas of these soils to reduce the harmful effects of excess soil wetness.

Tall fescue (fig. 12) and hybrid bermudagrass are the main perennial grasses grown for pasture and hay in Colbert County. Rye, ryegrass, oats, and wheat are grown as annual cool-season grass forage. Millets, sorghums, and hybrid forage sorghums provide most of the annual warm-season grass forage. These annuals are normally grown on cropland for temporary grazing and for hay. Arrowleaf clover, crimson clover, and other cool-season forage legumes are suited to most of the soils in the county, especially if agricultural limestone is applied in proper amounts. Alfalfa, a warm-season legume, is well suited to well drained soils, such as Bewleyville, Etowah, and Decatur soils.

Several management practices are needed on all soils that are used for pasture and hay production. Such practices include proper grazing management, control of weeds, proper fertilization, rotation grazing, and scattering of animal droppings. Overgrazing, low fertilization rates, and acid soils are the three greatest problems associated with pasture management in the county. They can result in weak plants and poor stands that are quickly infested with weeds. Maintaining a good, dense cover of the desired pasture species helps to prevent the establishment of weeds.

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.

Figure 12.—A fescue pasture in an area of Decatur silt loam, 2 to 6 percent slopes.

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. 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 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.

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, rangeland, 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 the yields table.

Landscaping and Gardening

Kenneth M. Rogers, conservation agronomist, Soil Conservation Service, helped prepare this section.

The land in residential areas is used primarily as homesites and for driveways and streets. Remaining areas of each lot are commonly used for lawns, which enhance the appearance of the home; as gardens for vegetables or flowers and shrubs; as orchards for fruits and nuts; for recreational uses; as habitat for animals and birds; for trees, which provide shade and promote energy conservation; for vegetation and structures designed to abate noise, enhance privacy, and provide protection from the wind; and for septic tank absorption fields. Because the outdoor areas are used for several purposes, careful planning and a good understanding of the soils are important.

This section contains general soil-related information for landscaping and gardening. Other information, especially that which is not directly related to the soils, may be obtained from the local office of the Cooperative Extension Service, the Soil Conservation Service, and from private businesses that provide landscaping and related services. The amount of soil information needed for some areas is beyond the scope of this survey and is more detailed than the map scale used. For this reason, onsite investigation is recommended.

Most of the soils in the residential areas of Colbert County have been disturbed to some degree during construction of houses, streets, driveways, and utility services. This construction involved cutting and filling, grading, and excavating. As a result, soil properties are more variable and less predictable than they are in undisturbed areas. Onsite examination is necessary in planning land uses for soils in disturbed areas.

Some of the poorest media for plant growth are soils of the Chisca, Capshaw, and Wynnville series that have had the surface layer removed during grading. The exposed dense, firm subsoil restricts root penetration, absorbs little rainfall, and results in excessive runoff. These conditions are common where these and similar soils are mapped as complexes with Urban land. Incorporating organic matter into the soil improves tilth and the rate of water infiltration and provides a more desirable rooting medium. Areas that are subject to intensive foot traffic should be covered with gravel or a mulch, such as pine bark or wood chips.

Some soils, such as Guthrie and Tupelo soils, are wet. The wetness limits the selection of plants to those that are tolerant of a high moisture content in the soil. Several methods can be used to minimize the effect of soil wetness. Installing underground tile drains can lower the water table in permeable soils. Bedding the surface layer of slowly permeable soils, such as Capshaw, Colbert, and Tupelo soils, helps to provide a satisfactory root zone for some plants.

Some soils, such as Chenneby, Pruitton, and Sullivan soils, are on flood plains. Most plants used for gardening and landscaping can be grown on these soils, but consideration should be given to the effects of floodwater. Surface drainage is a management concern because urban uses result in increased surface runoff rates, which increase the frequency and severity of flooding. Advice and assistance in solving drainage problems can be obtained from the Soil Conservation Service, municipal and county engineering departments, and private engineering companies.

The depth to bedrock and the content of rock fragments in the soil affect the kinds of plants that can be grown. Cutting and filling can expose the bedrock and decrease the depth of the root zone of plants. Barfield soils are naturally shallow over bedrock, and removal of any soil material further affects the root zone. Some soils, such as Bodine, Fullerton, and Saffell soils, contain many coarse fragments, especially in the lower part of the profile. Root growth is adversely affected, and available water capacity is reduced as the content of rock fragments increases. In many disturbed areas, broken concrete, brick, and other debris are buried under the soil material. In these areas, the soil is generally too thin or of insufficient quality to support the desired plant growth. In most cases, additions of topsoil are needed to provide an adequate rooting medium for plants, especially in areas used for landscaping and gardening.

Natural fertility is low in most of the soils in Colbert County. Most of the soils are strongly acid or very strongly acid. Additions of ground limestone are needed to neutralize the acidity of most of the soils. The original surface layer contains the most plant nutrients and the most favorable pH for the majority of plants. In many areas, fertility of the surface layer has been improved by applications of lime and fertilizer. If the surface layer is removed during construction, the remaining soil is very acid and is extremely low in available plant nutrients. Also, many nutrients are unavailable for plant growth in acid soil conditions. Disturbed soils generally need large amounts of lime and fertilizer, which should be applied according to the results of soil tests and the type of plants grown. Information on sampling for soil testing can be obtained from the Cooperative Extension Service, the Soil Conservation Service, and local nurseries.

In the following paragraphs, some of the plants that are used in landscaping and gardening and some management relationships between the plants and the soils are described. Information in this section should be supplemented by consultations with specialists in the Cooperative Extension Service, the Soil Conservation Service, and private landscaping and gardening businesses.

The grasses used for landscaping in Colbert County are mainly vegetatively propagated species, such as zoysiagrass and hybrid bermudagrass, and seeded species, such as fescues, common bermudagrass, and bluegrass. Grasses commonly used for short-term cover include ryegrass, rye, wheat, sudangrass, and millet.

The vegetatively propagated plants are usually planted as sprigs, plugs, or sod. Additions of topsoil may be needed before planting in some areas. Also, lime and fertilizer should be applied and incorporated into the soil. The plants should be placed in close contact with the soil, and the plantings should be watered to ensure the establishment of the root system. Certain strains of zoysiagrass are moderately shade tolerant. The strains of hybrid bermudagrass are fast growing, but they are not as tolerant of shade as the zoysiagrass.

Common perennial grasses that are established by seeding include the cool-season fescues and bluegrasses and the warm-season common bermudagrass. Lime and fertilizer should be applied before seeding and incorporated into the soil. Proper planting depth is important when grasses are established from seed.

Short-term vegetative cover is used to protect the soil at construction sites or to provide cover between the planting seasons of the desired grass species. The most commonly used grasses for short-term cover are ryegrass for cool seasons and sudangrass or millet for warm seasons. These species are annuals and die after the growing season. Periodical applications of lime and fertilizer are needed on all types of grasses. The kinds and amounts of lime and fertilizer to apply should be based on the results of soil tests.

Vines can be used to provide vegetative cover in moderately shaded areas and on steep slopes that cannot be mowed. Ground ivy and periwinkle can be used for ground cover. These plants also can be used in areas where rock outcrop occurs and on walls and fences. All of these plants are propagated vegetatively, usually from potted plants or sprigs.

Mulches can be used for ground cover in areas where traffic is too heavy for grass cover, in areas where shrubs and flowers are desired with additional ground cover, and in densely shaded areas. Mulches provide effective ground cover. They also provide immediate cover for erosion control in areas where no live vegetation is desired. Effective mulches include pine straw, small grain straw, hay, composted grass clippings, wood chips, pine bark, rocks, and several manufactured materials. The type of mulch to use depends to some extent on the hazard of erosion. Mulches also can be used to conserve soil moisture and control weeds around trees, shrubs, and flowers.

Shrubs are used primarily to enhance the appearance of homesites. They also can be used to control traffic. They can be effective in dissipating the energy from raindrops and from runoff from roofs of houses. Most native and adapted species add variety to residential settings. Reaction to acidity and fertility levels vary greatly among shrub types.

Vegetable and flower gardens are important to many individuals and businesses. However, the soils in areas where homes and businesses are established may not be suited to vegetables and flowers. Soils that have been disturbed by construction may not be productive unless topsoil is applied. Soils that have slopes of more than 8 percent have poor potential for vegetable gardening because of the hazard of erosion if the soils are tilled. Generally, soils on steep slopes have a thin surface layer. Flower gardening is possible on steep slopes, however, if mulches are used to help control erosion.

Gardens in which composted tree leaves and grass clippings have been incorporated into the soil generally are fertile and friable and have good moisture content. Additional information on vegetable crops is included under the heading "Crops and Pasture."

Most garden plants grow best in soils that have a pH level between 5.5 and 6.5. The fertility level should be high. Many gardeners apply too much fertilizer or have used fertilizers with the wrong combination of plant nutrients. Soil testing is the only effective way to determine how much and what type of fertilizer to apply. Soil testing information can be obtained from the local office of the Cooperative Extension Service or the Soil Conservation Service or from retail fertilizer businesses.

Trees are important in homesite landscaping. Information on relationships between soils and trees is available in the section "Woodland Management and Productivity." Special assistance in urban forestry can be obtained from the Alabama Forestry Commission.

Woodland Management and Productivity

Jerry L. Johnson, forester, Soil Conservation Service, helped prepare this section.

Forestry is an important industry in the survey area, and forest products make up a significant portion of the economy *(1)*. Colbert County has 213,400 acres of commercial forest land. This acreage makes up about 53 percent of the total land area of the county. Forest acreage decreased by about 4 percent from 1972 to 1982, primarily because of the conversion of forest land to cropland. Private landowners own 90 percent of the forest land in the county. Of this privately owned acreage, about 25 percent is owned by farmers. The forest industry manages 5 percent of the forest land, and the remaining 5 percent is made up of other public forest land *(20)*.

The forest types in Colbert County include 32,000 acres of loblolly-shortleaf pine, 32,000 acres of oak-pine, 133,400 acres of oak-hickory, and 16,000 acres of oak-gum-cypress. The woodland in the county includes 53,300 acres of sawtimber, 96,000 acres of poletimber, and 64,000 acres of seedlings and saplings.

About 170,700 acres in the county is best suited to pines, and 43,000 acres is best suited to hardwoods. About 16,000 acres is on bottom land. On about 101,300 acres, the site index is 80 or higher for loblolly pine *(20)*.

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, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils 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.

Table 7 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of the soils for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a fragipan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, W, D, C, S, and F.

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 or 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, stoniness, 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 for 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, 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, if stoniness restricts the use of ground-based equipment, 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, rock fragments in the surface layer, 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 or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

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 first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

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 estimates of the productivity of the soils in this survey are based on published data *(6, 7, 8, 9, 10, 19).*

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 has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders 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, stones, or boulders 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 free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or 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 and few or no stones or boulders on the surface.

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 and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Robert E. Waters, biologist, Soil Conservation Service, helped prepare this section.

Because of its geographic location, climate, land use, and other characteristics, the survey area supports a variety of game animals, nongame animals, and furbearers. Common game species include bobwhite quail, cottontail rabbit, various species of ducks and geese, gray squirrel, mourning dove, white-tailed deer, and wild turkey. Common nongame wildlife include blackbirds, bluebirds, bluejays, cardinals, crows, egrets, herons, mockingbirds, sparrows, thrushes, vireos, warblers, woodpeckers, and snakes. Common furbearers include beaver, bobcat, coyote, fox, mink, muskrat, otter, and raccoon. The endangered red-cockaded woodpecker also inhabits the survey area.

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, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, oats, sorghums, barley, millets, cowpeas, and sunflowers.

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, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are tall fescue (fig. 13), orchardgrass, lovegrass, bahiagrass, bermudagrass, dallisgrass, Johnsongrass, clover, lespedeza (fig. 14), vetches, 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, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are dewberry, blackberry, crotons, pokeweed, partridge pea, crabgrass, and paspalum.

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, the available water capacity, and wetness. Examples of these plants are oak, yellow-poplar, cherry, sweetgum, persimmon, sassafras, sumac, hawthorn, dogwood, hickory, black walnut, viburnum, beech, and hackberry.

Figure 13.—A wildlife food plot of fescue grass in an area of Smithdale-Pikeville complex, 6 to 15 percent slopes.

Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are pyracantha, holly, dogwood, 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, cedar, and cypress.

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, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, 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 depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, beaver ponds, and other ponds.

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. Wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, mockingbird, killdeer, blackbird, field sparrow, cottontail, and red fox.

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

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

Aquaculture

H.D. Kelly, biologist, Soil Conservation Service, helped prepare this section.

Aquaculture is the controlled production and harvest of animals or plants grown in or on water. In Colbert County, catfish farming (channel catfish) and sport fish

Figure 14.—A wildlife food plot of bicolor lespedeza in an area of Smithdale-Pikeville complex, 6 to 15 percent slopes.

production (bass and bream) are the most common types of aquaculture. The channel catfish, *Ictalurus punctatus*, is produced either in cages in ponds or in open ponds. Open-pond culture is the most common method used in the county. The county currently has about 25 acres of catfish ponds and about 300 acres of bass and bream ponds. Other species of fish are being considered for pond production, and the growth of fish farming should provide an excellent source of additional income for some landowners.

Some of the tables included with this survey can help in evaluating potential pond sites. In table 13, for example, the soil limitations affecting pond reservoir areas and embankments, dikes, and levees are given. Indications of flooding frequency and water table levels are given in table 16. These tables and the detailed soil maps can help in evaluating a selected location for its pond-building and water-retaining potential. Once the pond site is selected, however, additional soil borings should be made.

An understanding of soil characteristics is important in determining the potential of a pond site. Capshaw, Colbert, Dickson, Guthrie, and Tupelo soils are generally suited to pond construction.

The construction of buildings and the accessibility of the area are important considerations in evaluating a pond site. Depending upon the size and planned use of the site, road systems must be planned to accommodate harvest trucks. Large trucks are used in commercial operations. Feed trucks or similar equipment also require suitable access to the fish farm. If the farm is planned for fingerling production, a hatchery building will probably be on the site. Other buildings may be needed to store equipment or feed. Table 10 gives soil limitations affecting roads and building sites.

The quality of water in a pond is influenced by the soil. Several variables of water quality affect the production of fish. Total alkalinity, for example, is directly influenced by the soil. Total alkalinity values ranging from 30 to 150 parts per million are preferred. Fish production can be acceptable in ponds that have a low alkalinity level—less than 20 parts per million—provided that the fish are well fed. Other complicating factors, however, affect fish production when alkalinity values are below 20 parts per million. The application of agricultural lime can often prevent production problems associated with low alkalinity values.

The soil in pond basins should be analyzed before the basins are limed and filled with water. The amount of lime needed should be based on the results of the analysis, and the lime should be applied before the ponds are filled with water. Thereafter, annual applications of lime, even in ponds full of water, should consist of 20 to 25 percent of the original application to maintain desirable levels of alkalinity. The importance of proper alkalinity levels cannot be overemphasized. Most of the soils that are suitable for pond construction in Colbert County require applications of lime.

The source and amounts of water to be used should also be considered when evaluating a site for a pond or a fish farm. For example, if runoff water is to be used, the watershed must also be evaluated. Technical assistance in solving site and production problems is available from the local office of the Soil Conservation Service or the Cooperative Extension Service.

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, and 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, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, 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 kinds 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 the depth to bedrock or to a very firm, dense layer; stone content; 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 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, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a slowly permeable layer, large stones, 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. Depth to bedrock or to a slowly permeable layer, a high water table, flooding, large stones, 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, depth to a high water table, depth to bedrock or to a slowly permeable layer, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, 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, a high water table, depth to bedrock or to a slowly permeable layer, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is 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, depth to bedrock or to a slowly permeable layer, flooding, large stones, and content of organic matter.

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

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

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

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, 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, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel 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 bedrock or 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 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 large stones, 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, few cobbles and stones, 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, slopes of 15 to 25 percent, or many stones. 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, many stones, 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 and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation 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 rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They 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, soils that have an appreciable amount of gravel or stones, 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 a large amount of gravel or stones, 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 and for embankments, dikes, and levees. 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 and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a slowly permeable layer, large stones, 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, sodium, or sulfur. 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 construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the depth of the root zone 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, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or 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. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, 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.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 19.

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 *(5)* and the system adopted by the American Association of State Highway and Transportation Officials *(4)*.

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.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 19.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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, liquid limit, and plasticity index generally are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits 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 the 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.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

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 (fig. 15). 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

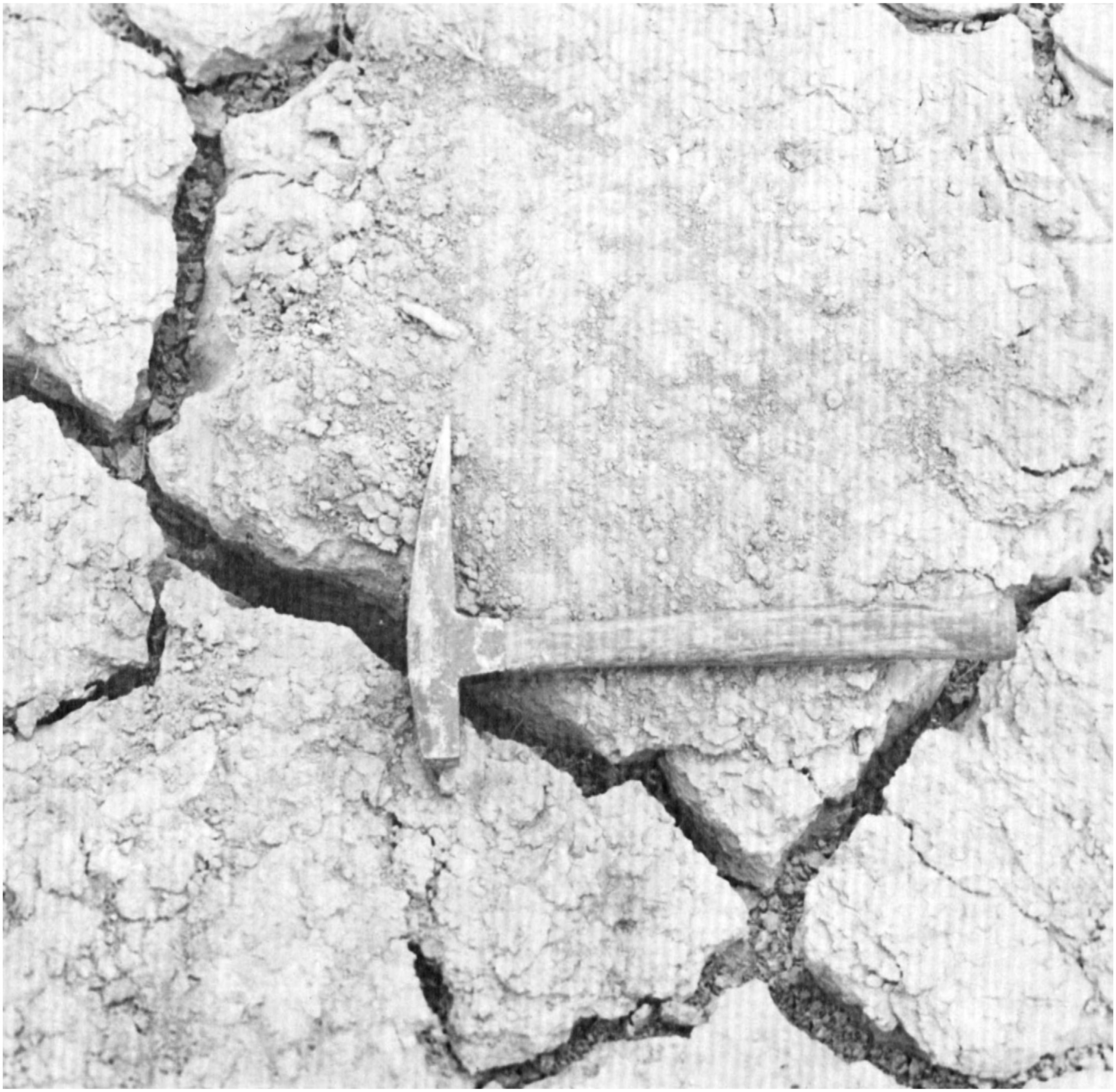

Figure 15.—Soils of the Chisca series have a clayey subsoil, which cracks during dry periods. The volume change is caused by shrinkage resulting from loss of soil moisture. If these soils become wet again, they will swell and the cracks will disappear.

percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. 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 chiefly of clays that have a high shrink-swell potential, 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.

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 gravel, 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.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

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 creates 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.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Agronomy and Soils Clay Mineralogy Laboratory, Auburn University, Auburn, Alabama.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(23).*

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Extractable bases—method of Hajek, Adams, and Cope *(11).*

Extractable acidity—method of Hajek, Adams, and Cope *(11).*

Cation-exchange capacity—sum of cations (5A3a).

Cation-exchange capacity—ammonium chloride (5A7a).

Base saturation—method of Hajek, Adams, and Cope *(11).*

Reaction (pH)—1:1 water dilution (8C1f).

Engineering Index Test Data

Table 19 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the Alabama Highway Department, Bureau of Materials and Testing, Montgomery, Alabama.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(21)*. 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 20 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 Ultisol.

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 Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

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 Paleudults (*Pale*, meaning excessive development, plus *udult*, the suborder of the Ultisols 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 Paleudults.

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, siliceous, thermic Typic Paleudults.

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 underlying material 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" *(24)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(21)*. Unless otherwise stated, 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."

Barfield Series

The Barfield series consists of shallow, well drained, moderately slowly permeable soils on uplands. These soils formed in material weathered from limestone. Slopes range from 2 to 35 percent. The soils are clayey, mixed, thermic Lithic Hapludolls.

Barfield soils are associated on the landscape with Bodine, Chisca, Colbert, and Fullerton soils. These associated soils are deeper over bedrock than the Barfield soils and have an argillic horizon. Bodine and Fullerton soils are in the higher positions on the landscape. Chisca soils are in landscape positions similar to or slightly lower than those of the Barfield soils. Colbert soils are in the lower positions on the landscape.

Typical pedon of Barfield silty clay loam, in an area of Barfield-Rock outcrop complex, 2 to 35 percent slopes; approximately 0.8 mile northwest of Chapel Hill Church on U.S. Highway 72; 4,200 feet north and 200 feet west of the southeast corner of sec. 9, T. 4 S., R. 12 W.

A—0 to 5 inches; very dark brown (10YR 2/2) silty clay loam; weak medium granular structure; firm; many fine roots; few wormcasts; few limestone channers; neutral; clear smooth boundary.

Bw1—5 to 10 inches; very dark grayish brown (10YR 3/2) silty clay; moderate medium angular blocky structure; firm; common fine roots; few limestone channers; clear smooth boundary.

Bw2—10 to 17 inches; olive brown (2.5Y 4/4) clay; moderate medium angular blocky structure; firm; few fine roots; few limestone channers; abrupt wavy boundary.

R—17 inches; hard limestone bedrock.

The depth to limestone bedrock ranges from 8 to 20 inches. Reaction ranges from slightly acid to mildly alkaline throughout the profile. The content of coarse fragments, mainly limestone, ranges from 2 to 15 percent in the A horizon and from 5 to 25 percent in the Bw horizon.

The A horizon has hue of 2.5Y or 10YR and value and chroma of 2 or 3. It is silty clay loam or silty clay.

The Bw horizon has hue of 2.5Y or 10YR, value of 2 to 5, and chroma of 2 to 6. It is silty clay or clay.

The C horizon, if it occurs, has colors and textures similar to those of the Bw horizon.

Bewleyville Series

The Bewleyville series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in a thin mantle of silty material and the underlying clayey or loamy material. Slopes range from 2 to 10 percent. The soils are fine-silty, siliceous, thermic Typic Paleudults.

Bewleyville soils are associated on the landscape with Chenneby, Decatur, Dickson, Etowah, and Guthrie soils. Chenneby soils are somewhat poorly drained and are in drainageways. They do not have an argillic horizon. Decatur soils are clayey. They are in landscape positions similar to or slightly lower than those of the Bewleyville soils. Dickson and Guthrie soils are less well drained than the Bewleyville soils and are in the lower landscape positions and in depressions. They have a fragipan. Etowah soils are fine-loamy. They are in the slightly lower positions on the landscape.

Typical pedon of Bewleyville silt loam, 2 to 6 percent slopes, in a wooded area about 9 miles east of Muscle Shoals; 2,600 feet west and 2,000 feet south of the northeast corner of sec. 23, T. 3 S., R. 9 W.

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; many fine roots; very strongly acid; abrupt wavy boundary.

A2—1 to 6 inches; dark brown (7.5YR 4/4) silt loam; common medium distinct yellowish red (5YR 4/6) mottles; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bt1—6 to 11 inches; yellowish red (5YR 4/6) silt loam; common medium distinct dark brown (7.5YR 4/4) and red (2.5YR 4/6) mottles; weak fine and medium subangular blocky structure; friable; few fine and medium roots; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—11 to 22 inches; yellowish red (5YR 4/6) silt loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—22 to 32 inches; red (2.5YR 4/6) clay loam; moderate fine and medium subangular blocky structure; friable; few medium and coarse roots; thin discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt4—32 to 44 inches; dark red (2.5YR 3/6) clay loam; few medium distinct dark brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; thin continuous clay films on faces of most peds; strongly acid; gradual wavy boundary.

Bt5—44 to 72 inches; dark red (2.5YR 3/6) clay loam; common medium prominent yellowish brown (10YR 5/6) and very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; friable; thin continuous clay films on faces of most peds; about 2 percent fine chert gravel; about 2 percent fine manganese concretions; strongly acid.

Thickness of the solum is 72 inches or more. Reaction is strongly acid or very strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon generally has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. Some pedons have a thin A1 horizon that has value of 3 and chroma of 2.

The upper part of the Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam. The lower part of the Bt horizon has hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 6 to 8. It is clay, clay loam, or silty clay loam. The content of coarse fragments ranges from 0 to 10 percent.

Bodine Series

The Bodine series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on uplands. These soils formed in material weathered from cherty limestone. Slopes range from 15 to 45 percent. The soils are loamy-skeletal, siliceous, thermic Typic Paleudults.

Bodine soils are associated on the landscape with Bewleyville, Decatur, Etowah, and Fullerton soils. These associated soils contain fewer fragments of chert than the Bodine soils. Bewleyville soils are fine-silty. They are in the lower positions on the landscape. Decatur and Fullerton soils are clayey. Etowah soils are fine-loamy. Decatur and Etowah soils are in the lower positions on the landscape. Fullerton soils are in landscape positions similar to those of the Bodine soils.

Typical pedon of Bodine cherty silt loam, in an area of Fullerton-Bodine complex, 15 to 45 percent slopes; 1,000 feet south of Wilson Lake and 165 feet east of Gargis Hollow; 2,500 feet north and 1,000 feet west of the southeast corner of sec. 8, T. 3 S., R. 9 W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) cherty silt loam; weak medium granular structure; friable; many fine roots; about 20 percent fragments of chert; strongly acid; abrupt smooth boundary.

E—3 to 8 inches; brown (10YR 4/3) cherty silt loam; weak medium granular structure; friable; common fine roots; about 20 percent fragments of chert; very strongly acid; abrupt smooth boundary.

BE—8 to 12 inches; brown (7.5YR 4/4) very cherty silt loam; weak medium subangular blocky structure; friable; common fine roots; about 35 percent fragments of chert; very strongly acid; clear smooth boundary.

Bt1—12 to 31 inches; yellowish red (5YR 5/6) very cherty silty clay loam; weak medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of some peds; about 60 percent fragments of chert; very strongly acid; gradual smooth boundary.

Bt2—31 to 52 inches; yellowish red (5YR 5/6) extremely cherty silty clay loam; weak medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of some peds; about 75 percent fragments of chert; very strongly acid; gradual smooth boundary.

Bt3—52 to 75 inches; strong brown (7.5YR 5/6) extremely cherty silty clay loam; weak medium subangular blocky structure; friable; few thin discontinuous clay films on faces of some peds; about 80 percent fragments of chert; very strongly acid.

Thickness of the solum and the depth to limestone bedrock are more than 60 inches. The content of coarse fragments ranges from 20 to 50 percent, by volume, in the A and E horizons and from 35 to 80 percent in the B horizon. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. It is cherty silt loam, cherty loam, or the very cherty analogs of these textures.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is cherty silt loam, cherty loam, or the very cherty analogs of these textures.

Most pedons have a BE horizon. This horizon has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. It is cherty silt loam, cherty loam, or the very cherty analogs of these textures.

The Bt horizon has hue of 5YR to 10YR and value and chroma of 4 to 6. It is very cherty silt loam, very cherty silty clay loam, very cherty loam, very cherty clay loam, or the extremely cherty analogs of these textures.

Capshaw Series

The Capshaw series consists of deep, moderately well drained, slowly permeable soils on uplands. These soils formed in clayey alluvium. Slopes range from 2 to 6 percent. The soils are fine, mixed, thermic Ultic Hapludalfs.

Capshaw soils are associated on the landscape with Chenneby, Chisca, Colbert, Decatur, Etowah, and Tupelo soils. Chenneby soils do not have an argillic horizon. They are in drainageways. Chisca soils are very fine textured. Decatur and Etowah soils have redder hue than the Capshaw soils and are better drained. Chisca, Colbert, Decatur, and Etowah soils are in the higher positions on the landscape. Tupelo soils are in the slightly lower positions on the landscape.

Typical pedon of Capshaw silt loam, 2 to 6 percent slopes, 1 mile south of Alabama Highway 20 on County Line Road and 1.2 miles east of Cottontown Road, on the north bank of the road; 1,000 feet east and 20 feet north of the southwest corner of sec. 29, T. 4 S., R. 9 W.

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

Bt1—8 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; few thin discontinuous clay films on faces of some peds; few black concretions (iron and manganese oxides); strongly acid; clear smooth boundary.

Bt2—20 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; many coarse distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct clay films on faces of most peds; common brown and black concretions (iron and manganese oxides); strongly acid; gradual smooth boundary.

Bt3—33 to 51 inches; yellowish brown (10YR 5/6) silty clay; common medium distinct light gray (10YR 6/1) and few medium distinct yellowish red (5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct discontinuous clay films on faces of most peds; common brown and black concretions (iron and manganese oxides); strongly acid; gradual smooth boundary.

C—51 to 65 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/2), and yellowish red (5YR 4/6) silty clay; massive; very firm; common black and brown concretions (iron and manganese oxides); medium acid.

Thickness of the solum ranges from 40 to 60 inches. The depth to limestone bedrock ranges from 4 to 7 feet. Reaction is strongly acid or medium acid in the A and Bt horizons and ranges from medium acid to mildly alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 8. It is silty clay loam, silty clay, or clay. It has few or common mottles in shades of gray, brown, and red in the lower part.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2, or it is mottled in shades of gray, brown, and red and has no dominant matrix color. It is silty clay or clay.

Chenneby Series

The Chenneby series consists of very deep, somewhat poorly drained, moderately permeable soils on flood plains and in depressions. These soils formed in silty alluvium. Slopes range from 0 to 2 percent. The soils are fine-silty, mixed, thermic Fluvaquentic Dystrochrepts.

Chenneby soils are associated on the landscape with Bewleyville, Capshaw, Decatur, Dickson, Emory, Etowah, Fullerton, Guthrie, Pruitton, and Sullivan soils. All of the associated soils, except for the poorly drained Guthrie soils, are better drained than the Chenneby soils. Bewleyville, Capshaw, Decatur, Dickson, Etowah, and Fullerton soils have an argillic horizon. They are in the highest positions on the landscape. Emory soils are well drained and are in depressions. Pruitton and Sullivan soils are in drainageways in the higher landscape positions. Guthrie soils are in depressions. They have a fragipan.

Typical pedon of Chenneby silt loam, 0 to 2 percent slopes, occasionally flooded, 4.1 miles north of Cherokee School; 2,420 feet north and 165 feet east of the southwest corner of sec. 1, T. 3 S., R. 14 W.

Ap—0 to 8 inches; brown (7.5YR 4/4) silt loam; weak fine granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

Bw1—8 to 17 inches; brown (10YR 5/3) silt loam; few fine faint grayish brown and common medium faint brown (7.5YR 4/4) mottles; weak fine subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Bw2—17 to 31 inches; brown (10YR 5/3) silt loam; many medium distinct gray (5Y 6/1) and common fine faint brown mottles; weak fine medium subangular blocky structure; few fine roots; very strongly acid; clear smooth boundary.

Bw3—31 to 46 inches; mottled light olive brown (2.5Y 5/4), gray (5Y 6/1), and strong brown (7.5YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; very strongly acid; gradual smooth boundary.

Cg—46 to 65 inches; gray (5Y 5/1) silty clay loam; few fine prominent strong brown (7.5YR 5/6) mottles; massive; firm; very strongly acid.

Thickness of the solum ranges from 40 to 65 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 or 4, or it is mottled in shades of brown, gray, and olive and has no dominant matrix color. It is silt loam or silty clay loam.

The Cg horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 or 2. It has few to many mottles in shades of brown and olive. It is silt loam or silty clay loam.

Chisca Series

The Chisca series consists of deep, well drained, very slowly permeable soils on uplands. These soils formed in clayey, alkaline shale residuum. Slopes range from 6 to 45 percent. The soils are very fine, montmorillonitic, thermic Vertic Hapludalfs.

Chisca soils are associated on the landscape with Capshaw, Chenneby, Colbert, Decatur, Nella, Pikeville, Saffell, and Tupelo soils. All of the associated soils are less clayey in the argillic horizon than the Chisca soils. Capshaw, Colbert, Decatur, and Tupelo soils are in the lower positions on the landscape. Nella, Pikeville, and Saffell soils are in the higher positions. Chenneby soils are in drainageways.

Typical pedon of Chisca loam, 6 to 15 percent slopes, 1 mile south of Frankfort Road from U.S. Highway 72 at Tuscumbia and 0.4 mile east on Henderson Point Road, on the south bank of the road; 1,800 feet east and 300 feet north of the southwest corner of sec. 20, T. 4 S., R. 11 W.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; many fine roots; about 2 percent, by volume, fine and medium angular sandstone gravel; few wormcasts; very strongly acid; clear smooth boundary.

A2—2 to 5 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; common fine roots; about 2 percent, by volume, fine and medium angular sandstone gravel; few wormcasts; strongly acid; abrupt smooth boundary.

Bt1—5 to 13 inches; yellowish red (5YR 4/6) clay; strong medium angular and subangular blocky structure; firm, slightly plastic; few fine and medium roots; thin continuous distinct clay films on faces of some peds; about 2 percent, by volume, medium angular sandstone gravel; few old cracks filled with brown loam; very strongly acid; clear smooth boundary.

Bt2—13 to 23 inches; red (2.5YR 4/6) clay; many medium distinct strong brown (7.5YR 5/6) mottles; strong medium angular and subangular blocky structure; very firm, plastic; few fine and medium roots; thin continuous distinct clay films on faces of most peds; about 1 percent, by volume, fine and medium angular sandstone gravel; common pressure faces; very strongly acid; gradual smooth boundary.

BC—23 to 32 inches; red (2.5YR 4/6) clay; many large prominent light brownish gray (10YR 6/2) and few medium distinct strong brown (7.5YR 5/6) mottles; weak coarse angular and subangular blocky structure; very firm, plastic; few fine and medium roots; thin continuous faint clay films on faces of some peds; common pressure faces; few nonintersecting slickensides; very strongly acid; gradual smooth boundary.

C1—32 to 44 inches; mottled red (2.5YR 5/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) clay; massive; very firm; many intersecting slickensides forming wedge-shaped aggregates; strongly acid; clear smooth boundary.

C2—44 to 55 inches; light olive brown (2.5Y 5/4) clay; common medium distinct light gray (10YR 7/1) mottles; few shale fragments; massive; very firm; many intersecting slickensides forming wedge-shaped aggregates; medium acid; clear irregular boundary.

Cr—55 to 65 inches; mottled brown and gray, weathered, fractured shale; shale rock structure; hard; moderately alkaline; calcareous.

Thickness of the solum ranges from 20 to 50 inches. The depth to soft, alkaline shale bedrock ranges from 40 to 60 inches. Some pedons have thin layers of limestone overlying the shale bedrock. Reaction ranges from extremely acid to strongly acid in the A, Bt, and BC horizons, except in areas where the surface layer has been limed. Reaction ranges from very strongly acid to moderately alkaline in the C horizon and from neutral to moderately alkaline in the Cr horizon.

The A horizon has hue of 10YR to 2.5Y, value of 3 to 5, and chroma of 2 to 6. It is silt loam, loam, fine sandy loam, sandy loam, silty clay loam, or clay loam.

Some pedons have an E or BE horizon. This horizon is less than 5 inches thick. It has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. It is silt loam, loam, fine sandy loam, sandy loam, silty clay loam, or clay loam.

The upper part of the Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8. The lower part has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 to 8 and has common or many mottles in shades of red, gray, or brown, or it is mottled in shades of yellow, brown, red, and gray and has no dominant matrix color. In some pedons the upper part of the Bt horizon has a thin layer of silty clay loam.

The BC horizon or the CB horizon, if it occurs, has hue of 2.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 and has common or many mottles in shades of red, gray, or brown, or it is mottled in shades of yellow, brown, red, or gray and has no dominant matrix color.

The C horizon, if it occurs, has hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 6 and has common or many mottles in shades of red, gray, or brown, or it is mottled in shades of yellow, brown, red, or gray and has no dominant matrix color. It is clay or silty clay. The content of cobbles, channers, or flagstones of limestone ranges, by volume, from 0 to 10 percent. The content of gravel or channers of shale ranges, by volume, from 0 to 50 percent.

The Cr horizon is generally weathered alkaline shale. In some pedons it has channers or flagstones of limestone.

Colbert Series

The Colbert series consists of deep or very deep, moderately well drained, slowly permeable soils on uplands. These soils formed in material weathered from argillaceous limestone or shaly limestone. Slopes range from 0 to 4 percent. The soils are fine, montmorillonitic, thermic Vertic Hapludalfs.

Colbert soils are associated on the landscape with Capshaw, Chisca, Chenneby, Decatur, Emory, Etowah, and Tupelo soils. Capshaw, Chenneby, and Emory soils are less clayey than the Colbert soils. Chisca and Decatur soils are redder than the Colbert soils. Also, Chisca soils are more clayey. Tupelo soils are less well drained than the Colbert soils. Capshaw soils are in landscape positions similar to those of the Colbert soils. Chenneby soils are in drainageways. Chisca, Decatur, and Etowah soils are in the higher positions on the landscape. Emory and Tupelo soils are in depressions.

Typical pedon of Colbert silt loam, in an area of Tupelo-Colbert complex, 0 to 4 percent slopes; 2.7 miles south of the intersection of U.S. Highway 72 and Woodmont Avenue in Tuscumbia, 75 feet north of County Road 55, in a wooded area; SE¼NW¼ sec. 28, T. 4 S., R. 11 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; few fine and medium roots; very strongly acid; clear smooth boundary.

A2—3 to 8 inches; pale brown (10YR 6/3) silt loam; weak medium granular structure; friable; common fine and medium roots; friable; very strongly acid; abrupt smooth boundary.

Bt1—8 to 15 inches; strong brown (7.5YR 5/6) silty clay loam; strong medium angular and subangular blocky structure; firm; thin continuous clay films on faces of most peds; few medium roots; few old cracks filled with brown silt loam; strongly acid; clear smooth boundary.

Bt2—15 to 26 inches; strong brown (7.5YR 5/6) silty clay; few fine distinct light gray (10YR 7/2) and few medium distinct yellowish red (5YR 5/6) mottles; strong coarse angular and subangular blocky structure; very firm, plastic; thin continuous clay films on faces of most peds; few medium roots; few pressure faces; strongly acid; gradual smooth boundary.

Bt3—26 to 36 inches; yellowish brown (10YR 5/6) clay; common medium distinct light gray (10YR 7/2) and many medium distinct yellowish red (5YR 5/6) mottles; moderate coarse angular and subangular blocky structure; very firm, plastic; thin continuous clay films on faces of peds; few fine roots; few pressure faces; very strongly acid; gradual smooth boundary.

Bt4—36 to 44 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/2), and yellowish red (5YR 5/6) silty clay; weak coarse subangular blocky structure; very firm, sticky and very plastic; thin continuous clay films on faces of peds; few fine roots; common pressure faces; few nonintersecting slickensides; very strongly acid; gradual smooth boundary.

C—44 to 55 inches; light olive brown (2.5Y 5/4) clay; many medium distinct gray (N 5/0) and common medium distinct yellowish brown (10YR 5/3) mottles; massive; very firm, sticky and very plastic; about 2 percent, by volume, manganese concretions; about 2 percent, by volume, limestone fragments 2 to 20 millimeters in size; common pressure faces; few nonintersecting and intersecting slickensides; neutral; abrupt irregular boundary.

R—55 inches; limestone bedrock.

Thickness of the solum ranges from 40 to 60 inches. The depth to limestone bedrock ranges from 40 to more than 72 inches. Reaction ranges from very strongly acid to slightly acid in the A and Bt horizons. It ranges from slightly acid to mildly alkaline in the BC, CB, and C horizons.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is loam, silt loam, or silty clay loam. Most pedons that have an A horizon of silty clay loam are in eroded areas.

The E horizon, if it occurs, is less than 5 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 2 to 6. It is silt loam.

The upper part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8. It is silty clay loam, silty clay, or clay. The lower part of the Bt horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8 and has few to many mottles in shades of red, gray, and brown, or it is mottled in shades of yellow, red, gray, and brown and has no dominant matrix color. It is silty clay or clay.

The C horizon or the CB or BC horizon, if it occurs, has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 to 8. It is silty clay or clay. Nodules of calcium carbonate, manganese concretions, and limestone fragments 2 to 30 millimeters in size make up 0 to 5 percent, by volume, of the horizon.

In some pedons a thin Cr horizon of shaly material is above the bedrock.

Decatur Series

The Decatur series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in material weathered from limestone. Slopes range from 2 to 10 percent. The soils are clayey, kaolinitic, thermic Rhodic Paleudults.

Decatur soils are associated on the landscape with Bewleyville, Chenneby, Dickson, Emory, Etowah, and Fullerton soils. Bewleyville soils are in slightly higher landscape positions than the Decatur soils. Also, they have less clay in the upper part of the subsoil. The somewhat poorly drained Chenneby soils are in depressions and drainageways. The moderately well drained Dickson soils have a fragipan. They are in slightly lower landscape positions than the Decatur soils. Emory soils are in depressions and drainageways. They have less clay in the upper part of the subsoil than the Decatur soils. Etowah soils are in slightly lower landscape positions than the Decatur soils. Also, they have less clay in the subsoil. Fullerton soils do not have a dark red subsoil. They are in the higher positions on the landscape.

Typical pedon of Decatur silt loam, 2 to 6 percent slopes, about 4.5 miles north of Cherokee; NW¼SW¼ sec. 2, T. 3 S., R. 14 W.

Ap—0 to 6 inches; dark reddish brown (5YR 3/4) silt loam; weak medium granular structure; many fine roots; slightly acid; abrupt smooth boundary.

Bt1—6 to 18 inches; dark red (2.5YR 3/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few medium dusky red (2.5YR 3/2) stains on faces of some peds; distinct clay films on faces of most peds; medium acid; clear wavy boundary.

Bt2—18 to 29 inches; dark red (2.5YR 3/6) silty clay; strong medium angular and subangular blocky structure; firm; few fine roots; continuous clay films on faces of peds; few dusky red (2.5YR 3/2) stains on faces of some peds; strongly acid; gradual wavy boundary.

Bt3—29 to 53 inches; dark red (2.5YR 3/6) silty clay; strong medium angular and subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of peds; few medium brown concretions; few small fragments of chert; strongly acid; gradual wavy boundary.

Bt4—53 to 64 inches; dark red (2.5YR 3/6) silty clay; strong medium angular and subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of peds; few fragments of chert; few fine red concretions; strongly acid; gradual wavy boundary.

Bt5—64 to 80 inches; dark red (10YR 3/6) silty clay; strong medium angular and subangular blocky structure; very firm; few fine roots; thin continuous clay films on faces of peds; few small fragments of chert; few red concretions; strongly acid.

Thickness of the solum is more than 72 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 2.5YR or 5YR, value of 2 or 3, and chroma of 2 to 4. It is typically silt loam or silty clay loam, but the range includes silty clay in severely eroded areas.

The Bt horizon has hue of 10R or 2.5YR, value of 3, and chroma of 4 to 6. It is silty clay loam, silty clay, or clay in the upper part and silty clay or clay in the lower part. The content of chert fragments or gravel ranges from 0 to 10 percent throughout the Bt horizon.

Dickson Series

The Dickson series consists of very deep, moderately well drained, slowly permeable soils on uplands. These soils formed in a thin mantle of silty material and the underlying clayey limestone residuum. Slopes range from 0 to 3 percent. The soils are fine-silty, siliceous, thermic Glossic Fragiudults.

Dickson soils are associated on the landscape with Bewleyville, Chenneby, Decatur, Etowah, and Guthrie soils. The well drained Bewleyville, Decatur, and Etowah soils do not have a fragipan. They are in the higher positions on the landscape. The somewhat poorly drained Chenneby soils are in drainageways. They do not have a fragipan. Guthrie soils are poorly drained and are in depressions.

Typical pedon of Dickson silt loam, 0 to 3 percent slopes, about 3 miles east of Muscle Shoals; 20 feet north and 600 feet west of the southeast corner of sec. 23, T. 3 S., R. 10 W.

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

Bw1—7 to 15 inches; brown (10YR 4/4) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common fine pores; medium acid; clear smooth boundary.

Bw2—15 to 24 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; abrupt wavy boundary.

Bx/E—24 to 36 inches; yellowish brown (10YR 5/4) silt loam (B); common fine and medium prominent red (2.5YR 4/6) mottles; moderate very coarse prisms parting to moderate medium subangular blocky structure; firm, brittle in 60 percent of cross section; few fine roots between prisms; common medium pores; thin discontinuous clay films on faces of peds; pale brown (10YR 6/3) silt loam (E) coatings on faces of peds; common soft to hard black nodules (iron and manganese oxides); strongly acid; clear wavy boundary.

Bx—36 to 44 inches; pale brown (10YR 6/3) silt loam; common fine and medium prominent red (2.5YR 4/6) and common coarse distinct dark yellowish brown (10YR 4/4) mottles; moderate very coarse prisms parting to moderate medium subangular blocky structure; firm, brittle in 70 percent of cross section; few fine roots between prisms; common medium pores; thin discontinuous clay films on faces of peds; yellowish brown (10YR 4/4) silt loam in vertical seams that are 3 to 10 inches apart and ½ inch to 2 inches wide; strongly acid; clear wavy boundary.

2Bt—44 to 60 inches; red (2.5YR 5/6) silty clay loam; many coarse prominent light brownish gray (10YR 6/2) and common coarse distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; strongly acid.

Thickness of the solum is 60 inches or more. Depth to the fragipan ranges from 20 to 36 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

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 to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The Bx horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6. It is silt loam or silty clay loam. The E part of the Bx/E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4.

The 2Bt horizon has hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 6 to 8. It has mottles in shades of red, yellow, brown, and gray. It is silty clay loam, silty clay, or clay. The content of chert fragments ranges from 0 to 35 percent.

Emory Series

The Emory series consists of very deep, well drained, moderately permeable soils in upland depressions and in drainageways. These soils formed in alluvium. Slopes range from 0 to 2 percent. The soils are fine-silty, siliceous, thermic Fluventic Umbric Dystrochrepts.

Emory soils are associated on the landscape with Bewleyville, Chenneby, Decatur, Dickson, Etowah, Fullerton, and Guthrie soils. All of these associated soils, except Chenneby and Guthrie soils, are in higher positions on the landscape than the Emory soils. Chenneby and Guthrie soils are less well drained than the Emory soils and are in the lowest positions on the landscape. Bewleyville, Decatur, Dickson, Etowah, Fullerton, and Guthrie soils have an argillic horizon.

Typical pedon of Emory silt loam, 0 to 2 percent slopes, ponded, 0.5 mile northwest of the intersection of Sixth Street and County Line Road; NW¼SE¼ sec. 1, T. 4 S., R. 10 W.

Ap—0 to 8 inches; dark reddish brown (5YR 3/3) silt loam; weak medium granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

Bw—8 to 24 inches; dark reddish brown (5YR 3/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Ab—24 to 34 inches; dark reddish brown (5YR 3/3) silt loam; moderate fine and medium granular structure; friable; few fine roots; medium acid; clear smooth boundary.

Btb1—34 to 52 inches; reddish brown (5YR 4/3) silt loam; weak medium subangular blocky structure; friable; few thin discontinuous clay films on faces of some peds; medium acid; clear wavy boundary.

Btb2—52 to 78 inches; red (2.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few thin discontinuous clay films on faces of most peds; few angular fragments of chert; strongly acid.

Thickness of the solum is 60 inches or more. The depth to buried horizons ranges from 20 to 36 inches. Reaction is strongly acid or medium acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2 to 4.

The Bw horizon has hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 3 or 4. It is silt loam or silty clay loam.

The Ab horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4. It is silt loam or silty clay loam.

The Btb horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silty clay loam, clay loam, silty clay, or clay. The content of chert fragments ranges from 0 to 10 percent, by volume.

Etowah Series

The Etowah series consists of very deep, well drained, moderately permeable soils on high stream terraces, alluvial fans, and toe slopes. These soils formed in alluvium. Slopes range from 2 to 10 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudults.

Etowah soils are associated on the landscape with Bewleyville, Capshaw, Chenneby, Decatur, Dickson, Emory, Pruitton, and Sullivan soils. Bewleyville soils are more silty than the Etowah soils, and Decatur soils are more clayey and have a dark red subsoil. Decatur soils are in the slightly higher positions on the landscape. Capshaw and Dickson soils are less well drained than the Etowah soils. Chenneby soils are subject to occasional flooding. They are in the lower positions on the landscape. Chenneby, Pruitton, and Sullivan soils are in drainageways and are subject to flooding. Emory soils are in depressions and are subject to ponding.

Typical pedon of Etowah silt loam, 2 to 6 percent slopes, east of Reynolds Aluminum Company, Lister Hill Plant; 1,400 feet north and 2,000 feet east of the southwest corner of sec. 27, T. 3 S., R. 10 W.

Ap—0 to 8 inches; dark brown (7.5YR 3/2) silt loam; weak medium granular structure; slightly compacted in the lower 2 inches; friable; common fine roots; few wormcasts; strongly acid; abrupt smooth boundary.

Bt1—8 to 23 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few wormcasts; few thin clay films on faces of some peds; common spots of dark brown (7.5YR 3/2) silt loam; very strongly acid; clear smooth boundary.

Bt2—23 to 32 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few wormcasts; few thin clay films on faces of some peds; very strongly acid; clear smooth boundary.

Bt3—32 to 47 inches; yellowish red (5YR 4/6) clay loam; few medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few thin clay films on faces of some peds; few fragments of chert; very strongly acid; gradual smooth boundary.

Bt4—47 to 70 inches; yellowish red (5YR 4/6) clay loam; common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few thin clay films on faces of some peds; few fragments of chert; very strongly acid.

Thickness of the solum is more than 60 inches. The depth to bedrock is more than 6 feet. The content of chert fragments ranges from 0 to 10 percent, by volume. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3, and chroma of 2 to 4.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is silty clay loam or clay loam.

Fullerton Series

The Fullerton series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in material weathered from cherty limestone. Slopes range from 2 to 45 percent. The soils are clayey, kaolinitic, thermic Typic Paleudults.

Fullerton soils are associated on the landscape with Bewleyville, Bodine, Chenneby, Decatur, Dickson, Emory, and Guthrie soils. Bodine soils have more than 35 percent coarse fragments in the control section. They are in landscape positions similar to those of the Fullerton soils. Bewleyville, Chenneby, Dickson, Emory, and Guthrie soils are fine-silty. Decatur soils have a dark red solum. Chenneby soils are in drainageways. Emory and Guthrie soils are in depressions. Bewleyville, Decatur, and Dickson soils are in the slightly lower positions on the landscape.

Typical pedon of Fullerton cherty silt loam, 6 to 15 percent slopes, 1,000 feet north and 1,200 feet east of the junction of Hawk Pride Road and U.S. Highway 72; 4,400 feet north and 1,200 feet east of the southwest corner of sec. 14, T. 4 S., R. 10 W.

Ap—0 to 6 inches; brown (7.5YR 4/4) cherty silt loam; weak medium granular structure; friable; many fine roots; about 15 percent fragments of chert; strongly acid; abrupt smooth boundary.

Bt1—6 to 19 inches; red (2.5YR 4/6) cherty silty clay; moderate medium angular and subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of some peds; about 20 percent chert fragments; very strongly acid; clear smooth boundary.

Bt2—19 to 36 inches; red (2.5YR 4/6) cherty clay;

common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium angular and subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of some peds; about 25 percent chert fragments as much as 2 inches in diameter; very strongly acid; clear smooth boundary.

Bt3—36 to 55 inches; yellowish red (5YR 4/6) cherty clay; common medium distinct strong brown (7.5YR 5/6) and red (2.5YR 4/6) mottles; moderate medium angular and subangular blocky structure; firm; few thin layers of chert; about 35 percent chert fragments; thin continuous clay films on faces of some peds; very strongly acid; clear smooth boundary.

Bt4—55 to 75 inches; yellowish red (5YR 4/6) cherty clay; moderate medium subangular blocky structure; slightly sticky; thin continuous clay films on faces of some peds; about 30 percent chert fragments; very strongly acid.

Thickness of the solum is 72 inches or more. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of chert ranges, by volume, from 15 to 35 percent throughout the profile.

The Ap or A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 6. Some pedons have a thin E horizon. This horizon has colors and textures similar to those of the A horizon.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is cherty silty clay or cherty clay.

Guthrie Series

The Guthrie series consists of very deep, poorly drained, slowly permeable soils that formed in silty deposits. These soils are in upland flats and depressions. Slopes range from 0 to 2 percent. The soils are fine-silty, siliceous, thermic Typic Fragiaquults.

Guthrie soils are associated on the landscape with Bewleyville, Chenneby, Decatur, Dickson, and Emory soils. All of these associated soils are better drained than the Guthrie soils. Chenneby soils are in drainageways. Bewleyville, Decatur, and Emory soils do not have a fragipan. They are in the higher positions on the landscape. Dickson soils are in the slightly higher positions.

Typical pedon of Guthrie silt loam, 0 to 2 percent slopes, frequently flooded, 300 feet east of Alabama Highway 133 and 200 feet southeast of Mount Olive Baptist Church, in Muscle Shoals; 1,300 feet north and 300 feet east of the southwest corner of sec. 19, T. 3 S., R. 10 W.

A—0 to 4 inches; grayish brown (10YR 5/2) silt loam; common medium faint gray (10YR 6/1) and common medium prominent strong brown (7.5YR 5/6) mottles; weak medium granular structure; very friable; common fine roots; very strongly acid; abrupt wavy boundary.

E—4 to 7 inches; light brownish gray (10YR 6/2) silt loam; common medium faint pale brown (10YR 6/3) and common medium prominent brownish yellow (10YR 6/6) mottles; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

Btg1—7 to 13 inches; light brownish gray (10YR 6/2) silt loam; many medium prominent brownish yellow (10YR 6/6) and common medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few fine roots; few fine pores; very strongly acid; clear wavy boundary.

Btg2—13 to 23 inches; gray (10YR 6/1) silt loam; common medium prominent yellowish brown (10YR 5/6) and common medium faint pale brown (10YR 6/3) mottles; weak fine and medium subangular blocky structure; friable; sand grains bridged and coated with clay; few thin discontinuous clay films on faces of peds; few fine roots; few fine pores; few fine fragments of chert; very strongly acid; clear wavy boundary.

Btg3—23 to 30 inches; gray (10YR 6/1) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and few medium faint pale brown (10YR 6/3) mottles; weak fine and medium subangular blocky structure; friable; sand grains bridged and coated with clay; few thin discontinuous clay films on faces of peds; few fine roots; few fine pores; very strongly acid; clear wavy boundary.

Btx1—30 to 49 inches; gray (10YR 6/1) silty clay loam; few medium prominent yellowish brown (10YR 5/6) and few medium distinct pale brown (10YR 6/3) mottles; moderate medium and thick platy structure parting to weak medium subangular blocky; firm, compact, and brittle in more than 60 percent of the mass; few fine roots; few fine and medium pores; sand grains bridged and coated with clay; few thin discontinuous clay films on faces of peds; few thin patches of white (10YR 8/2) silt on faces of some peds; very strongly acid; clear wavy boundary.

Btx2—49 to 66 inches; gray (10YR 6/1) silty clay loam; many medium prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) mottles; strong thick platy structure parting to weak medium subangular blocky; firm, compact, and brittle in more than 70 percent of the mass; few fine pores; sand grains bridged and coated with clay; few thin discontinuous clay films on faces of peds; common pockets and streaks of gray loam; very strongly acid.

Thickness of the solum is 60 inches or more. Depth to the fragipan ranges from 20 to 40 inches. Reaction ranges from extremely acid to strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4.

Most pedons have an E horizon. This horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4.

The Btg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 or 6 and chroma of 2 or less. It has few or common mottles with higher chroma and with hue similar to or redder than that of the matrix. It is silt loam or silty clay loam.

The Btx horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 or 6 and chroma of 2 or less. It has few to many mottles in shades of yellow, red, and brown. In some pedons it has as much as 10 percent fragments of chert and few or common brown or black concretions. It is silt loam or silty clay loam.

Nauvoo Series

The Nauvoo series consists of deep, well drained, moderately permeable soils on uplands. These soils formed in material weathered from sandstone and interbedded sandstone and shale. Slopes range from 6 to 10 percent. The soils are fine-loamy, siliceous, thermic Typic Hapludults.

Nauvoo soils are associated on the landscape with Nectar and Wynnville soils. Nectar soils are more clayey than the Nauvoo soils. Also, they are in similar positions on the landscape. Wynnville soils have a fragipan. They are less well drained than the Nauvoo soils and are in lower positions on the landscape.

Typical pedon of Nauvoo fine sandy loam, in an area of Nectar and Nauvoo fine sandy loams, 6 to 10 percent slopes; 1.5 miles northwest of Colbert Heights, on the northwest roadbank of Milk Springs Road; NE¼SE¼ sec. 20, T. 4 S., R. 11 W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; friable; many fine roots; about 2 percent sandstone channers; strongly acid; clear smooth boundary.

BE—2 to 10 inches; brown (7.5YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; many fine and medium roots; about 2 percent sandstone channers; very strongly acid; abrupt smooth boundary.

Bt1—10 to 24 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; thin discontinuous clay films on faces of most peds; about 2 percent sandstone channers; very strongly acid; gradual smooth boundary.

Bt2—24 to 41 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of peds; about 10 percent sandstone channers; very strongly acid; abrupt smooth boundary.

Cr—41 to 50 inches; soft sandstone bedrock.

Thickness of the solum ranges from 30 to 50 inches. The depth to weathered bedrock ranges from 40 to 60 inches. The content of coarse fragments, mostly sandstone, quartz gravel, or shale, ranges from 0 to 15 percent in the solum. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4.

The BE horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

Some pedons have a BC horizon. This horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It may be mottled in shades of brown or yellow. It is fine sandy loam, loam, or sandy clay loam.

The Cr horizon is level-bedded, weathered sandstone or interbedded sandstone and shale. It ranges from a highly weathered and fractured state to a slightly weathered, massive, and coherent state.

Nectar Series

The Nectar series consists of deep, well drained, moderately slowly permeable soils on uplands. These soils formed in material weathered from shale, sandstone, or interbedded shale and sandstone. Slopes range from 6 to 25 percent. The soils are clayey, kaolinitic, thermic Typic Hapludults.

Nectar soils are associated on the landscape with Chisca, Nauvoo, Nella, Pikeville, Smithdale, and Wynnville soils. Chisca soils are lower on the landscape than the Nectar soils. They are very fine textured. Nauvoo soils are in landscape positions similar to those of the Nectar soils. They are less clayey than the Nectar soils. Nella soils are in the lower landscape positions. They are less clayey throughout than the Nectar soils. Pikeville and Smithdale soils are higher on the landscape than the Nectar soils. Also, they are less clayey. The moderately well drained Wynnville soils are lower on the landscape than the Nectar soils. They have a fragipan.

Typical pedon of Nectar fine sandy loam, in an area of Nectar and Nauvoo fine sandy loams, 6 to 10 percent slopes; along the Old Chickasaw Boundary Line; NE¼SE¼ sec. 12, T. 5 S., R. 13 W.

A1—0 to 4 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; about 5 percent, by volume, sandstone and shale fragments less than 2 inches in size; strongly acid; clear smooth boundary.

A2—4 to 8 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; about 5 percent, by volume, sandstone and shale fragments less than 2 inches in size; strongly acid; clear wavy boundary.

BE—8 to 12 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

Bt1—12 to 20 inches; yellowish red (5YR 5/8) clay; moderate medium subangular blocky structure; firm; thin continuous clay films on faces of peds; about 1 percent, by volume, sandstone fragments less than 1 inch in diameter; strongly acid; clear wavy boundary.

Bt2—20 to 38 inches; yellowish red (5YR 5/8) silty clay; few medium distinct strong brown (7.5YR 5/8) and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; thin continuous clay films on faces of peds; about 2 percent, by volume, sandstone and shale fragments less than 1 inch in size; strongly acid; gradual diffuse boundary.

BC—38 to 46 inches; mottled pale brown (10YR 6/3), yellowish red (5YR 5/8), red (2.5YR 4/6), and strong brown (7.5YR 5/8) clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on vertical faces of peds; 10 percent, by volume, sandstone and shale fragments less than 1 inch in size; strongly acid; gradual diffuse boundary.

C—46 to 50 inches; mottled pale brown (10YR 6/3), yellowish red (5YR 5/8), red (2.5YR 4/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/8) gravelly clay loam; massive; firm; about 25 percent, by volume, shale and sandstone fragments less than 2 inches in size; strongly acid; abrupt wavy boundary.

Cr—50 to 62 inches; mottled red, brown, and gray, soft sandstone bedrock; can be cut with hand tools.

Thickness of the solum and the depth to soft sandstone bedrock or to interbedded sandstone and shale bedrock range from 40 to 60 inches. Reaction is strongly acid or medium acid in the surface layer and ranges from extremely acid to strongly acid in the subsoil, except in areas where the surface layer has been limed. The content of coarse fragments ranges, by volume, from 0 to 15 percent in the A, E, and B horizons and from 10 to 40 percent in the C horizon.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. It is fine sandy loam or loam.

Some pedons have an E horizon. This horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 8. It is fine sandy loam, sandy loam, or loam.

The BE or BA horizon, if it occurs, has hue of 10YR to 5YR, value of 4 to 6, and chroma of 3 to 8. It is loam or silt loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. In some pedons it has hue of 7.5YR in the upper part. It is silty clay loam, clay loam, silty clay, or clay.

The BC or C horizon, if it occurs, has the same hue, value, and chroma as the Bt horizon, or it is mottled in shades of red, brown, and yellow. It is silty clay loam, clay loam, silty clay, or the gravelly or channery analogs of these textures.

The Cr horizon is level-bedded sandstone, shale, or interbedded sandstone and shale in shades of red, yellow, brown, and gray. It ranges from highly weathered and fractured to slightly weathered and massive. It is rippable and can be cut with hand tools.

Nella Series

The Nella series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in loamy alluvium or colluvium or in material weathered from limestone, sandstone, or shale. Slopes range from 10 to 45 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudults.

Nella soils are associated on the landscape with Chisca and Nectar soils and areas of rock outcrop. Chisca and Nectar soils are lower on the landscape than the Nella soils. They are clayey. The areas of rock outcrop are higher or lower on the landscape than the Nella soils.

Typical pedon of Nella cobbly fine sandy loam, in an area of Chisca-Nella-Nectar complex, 10 to 45 percent slopes; about 1 mile south of the junction of Alabama Highway 247 and U.S. Highway 72; 1,000 feet north and 1,900 feet east of the southwest corner of sec. 17, T. 4 S., R. 12 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) cobbly fine sandy loam; weak medium granular structure; friable; many fine and medium roots; about 20 percent, by volume, sandstone cobbles and channers; strongly acid; abrupt smooth boundary.

E—3 to 8 inches; pale brown (10YR 6/3) cobbly fine sandy loam; weak medium granular structure; friable; common fine and medium roots; few wormcasts; about 20 percent, by volume, sandstone cobbles and channers; very strongly acid; clear smooth boundary.

BE—8 to 11 inches; yellowish brown (10YR 5/4) cobbly fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 25 percent, by volume, sandstone cobbles and channers; very strongly acid; clear smooth boundary.

Bt1—11 to 36 inches; yellowish red (5YR 4/6) cobbly sandy clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; about 30 percent, by volume, sandstone cobbles and channers; thin discontinuous clay films on faces of some peds; very strongly acid; gradual smooth boundary.

Bt2—36 to 56 inches; yellowish red (5YR 4/6) cobbly sandy clay loam; few fine faint strong brown mottles; moderate medium subangular blocky structure; friable; few fine roots; about 35 percent, by volume, sandstone cobbles and channers; few thin clay films on faces of peds; few black stains on faces of some peds and cobbles; very strongly acid; gradual wavy boundary.

Bt3—56 to 75 inches; yellowish red (5YR 4/6) cobbly clay loam; many medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; about 35 percent, by volume, sandstone cobbles and channers; few thin discontinuous clay films on faces of peds and on cobbles; very strongly acid.

Thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. The content of coarse fragments, mainly sandstone cobbles, ranges from 15 to 35 percent.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. It is cobbly fine sandy loam or cobbly loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is cobbly fine sandy loam or cobbly loam.

The BE horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is cobbly fine sandy loam or cobbly loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 6 to 8. It is cobbly sandy clay loam or cobbly clay loam.

Nugent Series

The Nugent series consists of very deep, excessively drained, moderately rapidly permeable soils on flood plains. These soils formed in sandy alluvium. Slopes range from 0 to 2 percent. The soils are sandy, siliceous, thermic Typic Udifluvents.

Nugent soils are associated on the landscape with Chenneby, Etowah, Pruitton, and Sullivan soils. All of these associated soils are less sandy than the Nugent soils. Chenneby soils are in the lowest positions on the landscape. Pruitton and Sullivan soils are in intermediate positions between the Chenneby and Nugent soils. Etowah soils are in the higher positions on the landscape.

Typical pedon of Nugent fine sandy loam, 0 to 2 percent slopes, occasionally flooded, 1 mile south of U.S. Highway 72 and 0.5 mile east of the Allsboro Road; 2,400 feet north and 2,300 feet east of the southwest corner of sec. 2, T. 4 S., R. 15 W.

A—0 to 9 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

C1—9 to 19 inches; dark brown (10YR 4/3) fine sandy loam; massive; very friable; common fine roots; very strongly acid; gradual smooth boundary.

C2—19 to 40 inches; dark yellowish brown (10YR 4/4) loamy fine sand; massive; very friable; few fine roots; few black stains; few pockets of pale brown (10YR 6/3) sand; very strongly acid; gradual smooth boundary.

C3—40 to 51 inches; yellowish brown (10YR 5/6) loamy fine sand; massive; very friable; few black stains; common streaks and pockets of pale brown (10YR 6/3) sand; very strongly acid; gradual smooth boundary.

C4—51 to 65 inches; brown (10YR 5/3) sand; massive; very friable; few streaks and pockets of yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) loamy sand; strongly acid.

Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 7, and chroma of 2 or 3. It is fine sandy loam, sandy loam, loamy sand, or sand.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 to 8. It is dominantly loamy fine sand or sand that has thin strata of fine sandy loam, loam, or silt loam. In some pedons it contains as much as 10 percent coarse fragments, by volume.

Pikeville Series

The Pikeville series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in loamy and gravelly marine sediments. Slopes range from 6 to 35 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudults.

Pikeville soils are associated on the landscape with Chenneby, Chisca, Pruitton, Saffell, Savannah, Smithdale, and Sullivan soils. Chenneby, Pruitton, and Sullivan soils are on flood plains and low stream terraces that are subject to flooding. Chisca soils are below the Pikeville soils on the landscape. They are more clayey throughout than the Pikeville soils. Saffell soils are gravelly throughout. Savannah and Smithdale soils are fine-loamy. They are in the lower positions on the landscape. Savannah soils have a fragipan.

Typical pedon of Pikeville loam, in an area of Smithdale-Pikeville complex, 6 to 15 percent slopes; 2 miles west of Natchez Trace on the north roadbank of U.S. Highway 72; SW¼NE¼ sec. 36, T. 4 S., R. 15 W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; common fine and medium roots; common wormcasts; very strongly acid; clear smooth boundary.

E—2 to 6 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; common fine and medium roots; common wormcasts; very strongly acid; clear smooth boundary.

BE—6 to 8 inches; brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common wormcasts; very strongly acid; clear smooth boundary.

Bt1—8 to 23 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; thin continuous clay films on faces of some peds; about 2 percent fine gravel; very strongly acid; clear smooth boundary.

Bt2—23 to 33 inches; yellowish red (5YR 4/6) gravelly clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots; about 20 percent gravel, by volume; thin discontinuous clay films on faces of most peds; very strongly acid; clear smooth boundary.

Bt3—33 to 61 inches; yellowish red (5YR 4/6) very gravelly clay loam; moderate medium subangular blocky structure; firm; few thin discontinuous clay films on faces of some peds; about 40 percent gravel, by volume; very strongly acid; gradual smooth boundary.

Bt4—61 to 80 inches; yellowish red (5YR 4/6) very gravelly clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few thin discontinuous clay films on faces of some peds; about 50 percent gravel, by volume; few thin strata of gray (10YR 6/1) sandy clay loam; very strongly acid.

Thickness of the solum is 72 inches or more. The depth to horizons containing 25 percent gravel or more ranges from 30 to 48 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 4. It is loam or sandy loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is loam or sandy loam.

The BE horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is sandy clay loam, loam, or sandy loam.

The upper part of the Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam, clay loam, or loam. The lower part of the Bt horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 6 to 8. It is gravelly sandy clay loam, gravelly clay loam, gravelly loam, or the very gravelly analogs of these textures. In some pedons thin strata of sandy clay loam, sandy loam, loam, or loamy sand are in the lower part of the Bt horizon.

Pruitton Series

The Pruitton series consists of very deep, well drained, moderately rapidly permeable soils that formed in recent alluvium. These soils are on flood plains and are subject to occasional flooding for brief periods. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Fluventic Dystrochrepts.

Pruitton soils are associated on the landscape with Chenneby, Nugent, Savannah, and Sullivan soils. The somewhat poorly drained Chenneby soils are in lower landscape positions than the Pruitton soils. The excessively drained, sandy Nugent soils are on natural levees on the flood plains. Savannah soils are in higher landscape positions than the Pruitton soils. They have a fragipan. Sullivan soils are in landscape positions similar to those of the Pruitton soils. They are not cherty or very cherty in the lower horizons.

Typical pedon of Pruitton silt loam, in an area of Pruitton and Sullivan silt loams, 0 to 2 percent slopes, occasionally flooded; 2,300 feet south and 400 feet east of the northwest corner of sec. 34, T. 3 S., R. 13 W.

Ap—0 to 7 inches; brown (7.5YR 4/4) silt loam; common medium faint dark brown (7.5YR 3/2) and brown (7.5YR 5/4) mottles; weak fine granular structure; very friable; few fine roots; few fine black concretions; very strongly acid; clear wavy boundary.

Bw1—7 to 13 inches; dark brown (7.5YR 3/4) silt loam; many medium faint brown (7.5YR 4/4) mottles; weak fine and medium subangular blocky structure; very friable; few fine roots; few fine black concretions; strongly acid; clear wavy boundary.

Bw2—13 to 34 inches; dark brown (10YR 4/3) loam; common medium faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine black concretions; strongly acid; clear wavy boundary.

Bw3—34 to 43 inches; dark brown (10YR 3/3) clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; abrupt wavy boundary.

2C—43 to 61 inches; stratified, brown (10YR 4/3) very cherty sandy loam and cherty clay loam; massive; very friable; about 60 percent, by volume, angular chert fragments as much as 2 inches in diameter; very strongly acid.

Thickness of the solum ranges from 35 to 50 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed. The content of chert fragments ranges, by volume, from 0 to 10 percent in the A and B horizons and from 15 to 70 percent in the 2C horizon.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. It has mottles in shades of brown and yellow. It is silt loam, loam, or clay loam.

The 2C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It is cherty or very cherty sandy loam, loam, sandy clay loam, or clay loam.

Saffell Series

The Saffell series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in loamy and gravelly marine and fluvial deposits. Slopes range from 15 to 45 percent. The soils are loamy-skeletal, siliceous, thermic Typic Hapludults.

Saffell soils are associated on the landscape with Chisca, Pikeville, Savannah, and Smithdale soils. Chisca soils are lower on the landscape than the Saffell soils. They have a clayey subsoil. Pikeville, Savannah, and Smithdale soils are higher on the landscape than the Saffell soils. They have less than 35 percent gravel in the upper part of the subsoil.

Typical pedon of Saffell gravelly sandy loam, in an area of Saffell-Pikeville complex, 15 to 45 percent slopes; 1.6 miles north of the railroad at Lime Kiln and 0.15 mile northwest of the intersection of County Road; 1,100 feet west and 2,200 feet north of the southeast corner of sec. 19, T. 3 S., R. 14 W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly sandy loam; weak medium granular structure; very friable; many fine roots; about 30 percent gravel, by volume; strongly acid; clear smooth boundary.

E—3 to 10 inches; brown (10YR 5/3) gravelly sandy loam; weak medium granular structure; very friable; many fine roots; about 30 percent gravel, by volume; strongly acid; clear smooth boundary.

BE—10 to 13 inches; brown (7.5YR 5/4) gravelly sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; about 30 percent gravel, by volume; strongly acid; clear smooth boundary.

Bt1—13 to 30 inches; reddish brown (5YR 5/4) very gravelly loam; moderate medium subangular blocky structure; friable; few fine and medium roots; few thin discontinuous clay films on faces of peds; about 50 percent gravel, by volume; strongly acid; gradual smooth boundary.

Bt2—30 to 52 inches; reddish brown (5YR 4/4) very gravelly loam; moderate medium subangular blocky structure; friable; few fine and medium roots; few thin discontinuous clay films on faces of peds; about 45 percent gravel, by volume; strongly acid; gradual smooth boundary.

C—52 to 65 inches; brown (7.5YR 4/4) extremely gravelly sandy loam; massive; friable; few fine roots; about 75 percent gravel, by volume; strongly acid.

Thickness of the solum ranges from 35 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6. It is gravelly sandy loam, gravelly loam, or gravelly silt loam.

Most pedons have an E horizon. This horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. It is gravelly sandy loam, gravelly loam, or gravelly silt loam.

Most pedons have a BE horizon. This horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6. It is gravelly sandy loam or gravelly loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of

4 to 6, and chroma of 4 to 8. It is very gravelly sandy clay loam, very gravelly loam, or very gravelly clay loam.

The C horizon has the same colors as those of the Bt horizon. It is the extremely gravelly, very gravelly, or gravelly analogs of sandy loam, loamy sand, or sandy clay loam. The content of coarse fragments ranges from 20 to 80 percent, by volume.

Savannah Series

The Savannah series consists of very deep, moderately well drained, moderately slowly permeable soils on uplands and fluvial terraces. These soils formed in loamy marine and fluvial sediments. Slopes range from 1 to 5 percent. The soils are fine-loamy, siliceous, thermic Typic Fragiudults.

Savannah soils are associated on the landscape with Pikeville, Saffell, and Smithdale soils. These associated soils do not have a fragipan. Pikeville soils are gravelly or very gravelly in the lower part of the subsoil. Saffell soils are gravelly or very gravelly throughout the solum. Pikeville soils are in the higher positions on the landscape. Smithdale soils have a decrease in clay content in the lower part of the solum. Saffell and Smithdale soils are in the slightly lower positions on the landscape.

Typical pedon of Savannah loam, 1 to 5 percent slopes, 0.5 mile northwest of Margerum; NE¼NE¼ sec. 27, T. 3 S., R. 15 W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 15 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; common fine roots; few thin discontinuous clay films on faces of some peds; few small soft brown nodules; strongly acid; clear smooth boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/6) loam; few medium faint pale brown (10YR 6/3) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; few thin discontinuous clay films on faces of some peds; few soft brown nodules; strongly acid; clear smooth boundary.

Btx1—22 to 34 inches; mottled yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) loam; weak very coarse prisms parting to moderate medium subangular blocky structure; very firm, compact, and brittle in about 60 percent of the mass; few thin discontinuous clay films on faces of peds; few brown concretions; strongly acid; gradual smooth boundary.

Btx2—34 to 54 inches; mottled yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), and red (2.5YR 4/6) sandy loam; weak very coarse prisms parting to moderate medium subangular blocky structure; firm, compact, and brittle in about 60 percent of the mass; few thin discontinuous clay films; few fine pebbles; few fine brown concretions; strongly acid; gradual smooth boundary.

Btx3—54 to 65 inches; mottled yellowish brown (10YR 5/6), reddish brown (5YR 4/4), and brownish gray (10YR 6/2) sandy loam; weak coarse prisms parting to moderate medium subangular blocky structure; firm, compact, and brittle in 60 percent of the mass; few thin discontinuous clay films; common black concretions; very strongly acid.

Thickness of the solum ranges from 50 to more than 70 inches. Depth to the fragipan ranges from 16 to 28 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 6.

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

The Bt horizon has hue of 7.5YR to 2.5Y, value of 5, and chroma of 4 to 8. It is loam, sandy clay loam, or clay loam.

The Btx horizon is mottled in shades of yellow, brown, red, and gray or has hue of 10YR, value of 5, and chroma of 4 to 8 and has mottles in shades of red and gray. It is sandy loam, loam, sandy clay loam, or clay loam.

Smithdale Series

The Smithdale series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in loamy marine or fluvial sediments. Slopes range from 6 to 15 percent. The soils are fine-loamy, siliceous, thermic Typic Hapludults.

Smithdale soils are associated on the landscape with Chisca, Pikeville, Saffell, and Savannah soils. Chisca soils are clayey and are underlain by alkaline shale bedrock at a depth of 40 to 60 inches. They are on the lower side slopes. Pikeville soils are gravelly or very gravelly in the lower part of the subsoil. Saffell soils are gravelly or very gravelly throughout the solum. Pikeville and Saffell soils are in landscape positions similar to or slightly lower than those of the Smithdale soils. Savannah soils are moderately well drained and are in the lower positions on the landscape. They have a fragipan.

Typical pedon of Smithdale loam, in an area of Smithdale-Pikeville complex, 6 to 15 percent slopes; 4 miles southeast of Maud; 3,400 feet north and 500 feet west of the southeast corner of sec. 24, T. 5 S., R. 15 W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

E—2 to 7 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; many fine and medium roots; few fine pebbles; very strongly acid; clear smooth boundary.

BE—7 to 11 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; common fine roots; few fine pebbles; very strongly acid; clear smooth boundary.

Bt1—11 to 30 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; thin continuous clay films on faces of some peds; very strongly acid; gradual smooth boundary.

Bt2—30 to 41 inches; red (2.5YR 4/6) sandy loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak medium and coarse subangular blocky structure; friable; few fine roots; few pockets of sandy clay loam; thin continuous clay films on horizontal and vertical faces of some peds; very strongly acid; gradual smooth boundary.

Bt3—41 to 50 inches; red (2.5YR 4/6) sandy loam; common medium and coarse distinct strong brown (7.5YR 5/8) mottles; weak coarse subangular blocky structure; friable; thin continuous clay films on vertical faces of some peds; very strongly acid; gradual smooth boundary.

BC—50 to 65 inches; red (2.5YR 5/6) sandy loam; common medium faint yellowish red (5YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure; friable; very strongly acid.

Thickness of the solum ranges from 60 to more than 100 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. It is loam or sandy loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is loam or fine sandy loam.

The BE horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. It is loam or fine sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It is loam, sandy clay loam, or clay loam in the upper part and sandy loam or loam in the lower part. Some pedons have mottles in shades of red and brown in the lower part of the subsoil.

The BC horizon has colors similar to those of the Bt horizon.

Sullivan Series

The Sullivan series consists of very deep, well drained, moderately permeable soils on flood plains. These soils formed in recent alluvium and are subject to occasional flooding for brief periods. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Dystric Fluventic Eutrochrepts.

Sullivan soils are associated on the landscape with Chenneby, Pruitton, and Savannah soils. Chenneby soils are fine-silty. They are somewhat poorly drained and are in the slightly lower positions on the landscape. Pruitton soils are cherty or very cherty in the lower horizons. They are in landscape positions similar to those of the Sullivan soils. Savannah soils are moderately well drained and are in the higher positions on the landscape. They have a fragipan.

Typical pedon of Sullivan silt loam, in an area of Pruitton and Sullivan silt loams, 0 to 2 percent slopes, occasionally flooded; 1,800 feet north and 400 feet east of the southwest corner of sec. 14, T. 4 S., R. 15 W.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak fine granular structure; very friable; few or common fine roots; medium acid; abrupt smooth boundary.

Bw1—6 to 18 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine and medium pores; few fine bits of charcoal; medium acid; clear wavy boundary.

Bw2—18 to 23 inches; dark brown (10YR 4/3) loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; few fine pores; few fine bits of charcoal; medium acid; clear wavy boundary.

Ab—23 to 29 inches; dark brown (10YR 3/3) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; few fine roots; common fine and few coarse pores; few medium bits of charcoal; medium acid; abrupt wavy boundary.

Bwb1—29 to 41 inches; dark brown (10YR 4/3) loam; common medium faint dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; very friable; few fine roots; common fine pores; common medium and coarse bits of charcoal; medium acid; gradual wavy boundary.

Bwb2—41 to 54 inches; dark brown (10YR 4/3) silt loam; common fine and medium faint dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; very friable; common fine pores; common medium and coarse bits of charcoal; medium acid; gradual wavy boundary.

C—54 to 65 inches; dark brown (10YR 4/3) silt loam; few medium distinct pale brown (10YR 6/3) mottles; massive; friable; few fine roots; few fine pores; few small bits of charcoal; medium acid.

Thickness of the solum ranges from 30 to 55 inches. The depth to bedrock is more than 5 feet. Reaction ranges from strongly acid to neutral throughout the profile, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR, value of 4, and chroma of 2 to 4. In some pedons it is thin and has value of 3 and chroma of 2 or 3. It is loam, silt loam, or fine sandy loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It is loam, silt loam, or fine sandy loam.

Most pedons have a buried A horizon below the B horizon. This buried horizon has hue of 10YR or 7.5YR, value of 3, and chroma of 2 or 3. In some pedons it has a few mottles with chroma of 2 or less below a depth of 24 inches. The texture is loam, silt loam, or fine sandy loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In some pedons it has few or common mottles with chroma of 2 or less. It is silt loam, loam, sandy loam, or fine sandy loam.

Tupelo Series

The Tupelo series consists of very deep, somewhat poorly drained, slowly permeable soils on upland flats. These soils formed in clayey alluvium. Slopes range from 0 to 2 percent. The soils are fine, mixed, thermic Aquic Hapludalfs.

Tupelo soils are associated on the landscape with Capshaw, Colbert, Guthrie, Pruitton, and Sullivan soils. Capshaw and Colbert soils are moderately well drained and are in the slightly higher positions on the landscape. Guthrie soils are fine-silty. They are poorly drained and are in depressions. They have a fragipan. Pruitton and Sullivan soils are fine-loamy. They are well drained and are in drainageways.

Typical pedon of Tupelo silt loam, in an area of Tupelo-Colbert complex, 0 to 4 percent slopes; 0.85 mile east of the junction of County Line Road and Cottontown Road; 400 feet southeast of Mt. New Home Church; 400 feet south and 500 feet west of the northeast corner of sec. 31, T. 4 S., R. 9 W.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine black concretions; few thin discontinuous clay films on faces of some peds; strongly acid; clear smooth boundary.

Bt2—14 to 30 inches; yellowish brown (10YR 5/6) silty clay; common medium distinct strong brown (7.5YR 5/6), light brownish gray (10YR 6/2), and light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine and medium black concretions; few thin discontinuous clay films on faces of some peds; strongly acid; clear smooth boundary.

Btg—30 to 46 inches; gray (N 6/0) silty clay; many medium and coarse prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate medium and coarse subangular blocky structure; firm; common fine and medium black concretions; few thin discontinuous clay films on faces of some peds; few fine roots; strongly acid; gradual smooth boundary.

Cg—46 to 60 inches; gray (N 6/0) silty clay; few medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; massive; firm; common fine and medium concretions; slightly acid.

Thickness of the solum ranges from 25 to more than 60 inches. The depth to bedrock ranges from 40 to more than 60 inches. Reaction ranges from very strongly acid to medium acid in the A horizon and from strongly acid to moderately alkaline in the B and C horizons.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is silt loam, silty clay loam, or loam. Some pedons have a thin E horizon. This horizon has colors and textures similar to those of the A horizon.

The Bt horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 3 to 8. It has mottles in shades of gray, yellow, and brown. It is silty clay, silty clay loam, or clay.

The Btg and Cg horizons are dominantly gray and have mottles in shades of yellow, brown, and olive. They are clay, silty clay loam, or clay.

Wynnville Series

The Wynnville series consists of deep or very deep, moderately well drained, slowly permeable soils on plateaus. These soils formed in material weathered from sandstone or interbedded sandstone and shale. Slopes range from 2 to 6 percent. The soils are fine-loamy, siliceous, thermic Glossic Fragiudults.

Wynnville soils are associated on the landscape with Guthrie, Nauvoo, and Nectar soils. Guthrie soils are fine-silty. They are poorly drained and are in the lowest positions on the landscape. Nauvoo and Nectar soils are well drained and are in the higher positions on the landscape. Nauvoo soils are fine-loamy and are underlain by weathered bedrock at a depth of 40 to 60 inches. Nectar soils are clayey and are underlain by soft bedrock at a depth of 40 to 60 inches.

Typical pedon of Wynnville silt loam, 2 to 6 percent slopes, 100 feet west of the entrance to New Bethel Baptist Church; 25 feet south and 300 feet west of the northeast corner of sec. 9, T. 5 S., R. 12 W.

A1—0 to 2 inches; brown (10YR 5/3) silt loam; weak medium granular structure; many fine roots; few sandstone channers and pebbles; few wormcasts; very strongly acid; abrupt smooth boundary.

A2—2 to 7 inches; yellowish brown (10YR 5/4) loam; weak medium granular structure; friable; many fine roots; few sandstone channers and pebbles; few wormcasts; very strongly acid; abrupt smooth boundary.

Bw—7 to 23 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine roots; few sandstone channers; very strongly acid; clear irregular boundary.

Btx/E—23 to 30 inches; yellowish brown (10YR 5/6) loam (Bt); few medium prominent yellowish red (5YR 5/6) mottles; weak thick platy structure parting to moderate medium subangular blocky; firm, compact, and brittle; common fine and medium voids; few thin discontinuous clay films on faces of peds; tongues of light brownish gray (10YR 6/2) loam in about 25 percent of the mass (E); few fragments of sandstone; very strongly acid; gradual irregular boundary.

Btx—30 to 46 inches; mottled strong brown (7.5YR 5/6), red (2.5YR 4/6), and light gray (10YR 6/1) loam; weak thick platy structure parting to moderate medium subangular blocky; firm, compact, and brittle in more than 75 percent of the mass; common fine and medium voids; thin continuous clay films on faces of some peds; few fine fragments of sandstone; very strongly acid; gradual smooth boundary.

Bt—46 to 68 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) and few medium prominent light gray (10YR 6/1) mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of most peds; few fragments of sandstone; very strongly acid.

Thickness of the solum ranges from 40 to 72 inches. Depth to the fragipan ranges from 18 to 36 inches. The depth to bedrock is more than 4 feet. The content of coarse fragments ranges from 0 to 15 percent throughout the profile. Reaction ranges from extremely acid to strongly acid throughout, except in areas where the surface layer has been limed.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. It is silt loam or loam.

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

The Btx horizon and the Btx part of the Btx/E horizon have hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 8 or are mottled in shades of brown, red, and gray. They are loam or sandy clay loam.

The E part of the Btx/E horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 1 to 3. It is loam, sandy loam, or silt loam.

The Bt horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It commonly has mottles in shades of red, brown, and gray. It is loam, sandy clay loam, or clay loam.

Formation of the Soils

In this section, the factors of soil formation are related to the soils in Colbert County and the processes of horizon differentiation are explained.

Factors of Soil Formation

Soil forms through weathering and other processes that act on deposited or accumulated geologic material. The kind of soil that forms depends on the type of parent material; the climate under which soil material has existed since accumulation; the plant and animal life in and on the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material. The relative importance of each of these factors differs from place to place; in some areas one factor is more important, and in other areas another may dominate. A modification or variation in any of the factors results in a different kind of soil.

Climate and living organisms are the active factors of soil formation. They act on parent material and change it to a natural body with definite characteristics. The effects of climate and living organisms are conditioned by relief, which influences surface drainage, the amount of water that percolates through the soil, the rate of erosion, and the kind of vegetation that grows on the soil. The nature of the parent material also affects the kind of soil profile that is formed. Time is needed for the parent material to change into a soil. Normally, a long period of time is required for the development of distinct soil horizons.

Parent Material

The soils of Colbert County formed mainly in four kinds of parent material—marine sediments that have undergone considerable weathering in place; material weathered from cherty limestone, limestone, and alkaline shale; material weathered from sandstone and shale; and water-deposited material on stream terraces and flood plains. Soils that formed in weathered marine sediments include those of the Pikeville, Saffell, Smithdale, and Savannah series. Soils that formed in material weathered from cherty limestone, limestone, and alkaline shale are those of the Bewleyville, Bodine, Decatur, Fullerton, Chisca, Colbert, and Tupelo series. Soils that formed in material weathered from sandstone and shale are those of the Nauvoo, Nectar, and Wynnville series. Soils that formed in water-deposited material on stream terraces and flood plains include those of the Chenneby, Pruitton, and Sullivan series.

Climate

The climate of Colbert County is warm and humid. Summers are long and hot. Winters are short and mild, and the ground rarely freezes to a depth of more than a few inches. The climate is fairly even throughout the county and accounts for few differences among the soils. Rainfall averages 52 inches a year.

A mild, humid climate increases the rate of chemical reaction in the soil. The plentiful rainfall leaches out large amounts of soluble bases and carries the less soluble fine particles downward; consequently, the soils are acid, sandy, and low in natural fertility. The large amount of moisture and the warm temperature favor the growth of bacteria and fungi and speed the decomposition of organic matter. As a result, the soils are low in organic matter content.

Plants and Animals

Living organisms greatly influence the processes of soil formation and the characteristics of the soils. Trees, grasses, earthworms, rodents, fungi, bacteria, and other forms of plant and animal life are affected by the other soil-forming factors. Animal activity is largely confined to the surface layer of the soil. The soil is continually mixed by their activity, which improves water infiltration. Plant roots create channels through which air and water move more rapidly, thereby improving soil structure and increasing the rate of chemical reactions in the soil.

Micro-organisms are important in the decomposition of organic matter, which releases plant nutrients and chemicals into the soil. These nutrients are either used by the plants or are leached from the soil. Human activities have a strong influence on plant and animal populations in the soil and thus affect the future rate of soil formation.

The native vegetation in the uplands of Colbert

County consisted dominantly of coniferous and deciduous trees. The understory species that grow in the shade of the dominant overstory are honeysuckle, persimmon, blackberry, muscadine, sedges, panicum, Virginia creeper, longleaf uniola, and dogwood. These species make up a particular plant community and represent only a very limited number of the species that once grew in the survey area.

The plant communities in the area also are reflected in the species distribution of fauna. Animals in turn have an impact on the soil properties of a particular area. For example, worms, moles, and gophers can improve aeration in a compacted soil. Microbes that thrive in a particular plant community will react to various soil conditions and consequently influence the soil profile by providing decayed organic matter and nitrogen to the soil matrix.

Relief

Relief influences the formation of soils through its effect on drainage, runoff, and erosion. In Colbert County, the topography ranges from nearly level to steeply sloping. The elevation ranges from 397 to 980 feet above sea level. Many large, flat areas and depressions are somewhat poorly drained or poorly drained. The soils in these areas are not as well developed as soils in well drained areas. As the slope increases, the hazard of erosion and the runoff rate increase and the rate of leaching decreases. In places the rate of erosion nearly keeps pace with the rate of soil formation. Thus, the soils in steeply sloping areas are generally not developed to the same degree as the soils in the less sloping areas.

The aspect of the slope affects the microclimate. Soils on south- or southwest-facing slopes warm up somewhat earlier in spring and generally reach a higher temperature each day than soils on north-facing slopes. The warmer soil temperature results in accelerated chemical weathering. The soils on north-facing slopes retain moisture longer because they are in shade for longer periods and the temperature is lower. Differences caused by the direction of slope are only slight in Colbert County and are of minor importance in the formation of the soils.

Time

If all other factors of soil formation are equal, the degree of soil formation is in direct proportion to time. If soil-forming factors have been active for a long time, horizonation is stronger than if the same factors have been active for a relatively short time.

Geologically, most of the soils in Colbert County are relatively young or relatively old. The youngest are the alluvial soils along the streams. These soils receive deposits of sediments and are undergoing a cumulative soil-forming process. In most cases these young soils have very weakly developed horizons, mainly because of the short period of time the soil-forming processes have been active.

The oldest soils in the county are those in the uplands. They formed in marine sediments and material weathered from cherty limestone, limestone, and shale. These materials have undergone considerable weathering.

Processes of Horizon Differentiation

The main processes involved in the formation of soil horizons are accumulation of organic matter, leaching of calcium carbonate and bases, reduction and transfer of iron, and formation and translocation of silicate clay minerals. These processes can occur in combination or individually, depending on the integration of the factors of soil formation.

Most soils have four main horizons. The A horizon is the surface layer. It is the horizon of maximum accumulation of organic matter. The E horizon, usually called the subsurface layer, is the horizon of maximum loss of soluble or suspended material. Smithdale soils have both an A horizon and an E horizon. Other soils, such as Chisca soils, have an A horizon but do not have an E horizon. Organic matter has accumulated in the surface layer of all of the soils in the county to form an A horizon. The content of organic matter varies in different soils because of differences in relief, wetness, and natural fertility.

The B horizon is immediately below the A or E horizon. This horizon is often called the subsoil. It is the horizon of maximum accumulation of dissolved or suspended materials, such as iron or clay. In very young soils, such as Nugent soils, the B horizon has not yet developed.

The C horizon is the substratum. It has been affected very little by the soil-forming processes, but it may be somewhat modified by weathering.

The chemical reduction and transfer of iron, called gleying, is evident in the wet soils in the survey area. Gleying results in gray colors in the subsoil and gray mottles in other horizons. The gray colors indicate the reduction and loss of iron. Some soils have horizons with reddish brown mottles and concretions, which indicate a segregation of iron. Guthrie soils are examples.

Leaching of carbonates and bases has occurred in most of the soils in the county. This process contributes to the development of distinct horizons and to the naturally low fertility and the acid reaction of the soils.

In uniform materials, the difference in natural soil drainage generally is closely associated with slope or relief. Soil drainage in turn generally affects the color of the soil. Soils that formed under good drainage conditions, such as Decatur soils, have a subsoil that is uniformly bright in color. Soils that formed under poor drainage conditions, such as Guthrie soils, have a grayish color. Soils that formed where drainage is intermediate have a subsoil that is mottled with gray and brown. Chenneby and Capshaw soils are examples. The grayish color persists even after artificial drainage is provided by ditches or tile drains.

In steep areas, geological erosion removes the surface soil. In low or depressional areas, soil materials often accumulate and add to the thickness of the surface soil. In some areas, the formation of soil materials and rates of removal are in equilibrium with soil development. The degree of relief also is related to the eluviation of clay from the E horizon to the Bt horizon.

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Glossary

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

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

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

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

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

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

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

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

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

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.

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

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

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

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.

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

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

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

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

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

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

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

Coarse textured soil. Sand or loamy sand.

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

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

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

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

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

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

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

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

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

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

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.

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.

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

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

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

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

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.

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

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

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.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

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.

Infiltration. The downward entry of water into the immediate surface of soil or other material. 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.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

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.

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.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the 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.

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.

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.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Rippable bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). 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.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

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 underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

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.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

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.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

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.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

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 underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

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.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

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."

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

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.

Trace elements. Chemical elements, such as zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced 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 1951-80 at Muscle Shoals, Alabama)

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	49.0	30.6	39.8	72	5	46	5.17	2.87	7.20	8	1.6
February	53.7	33.1	43.4	78	10	61	4.30	2.32	6.04	7	1.0
March	62.0	40.6	51.3	83	20	162	6.22	3.18	8.86	8	.4
April	73.0	50.1	61.6	88	31	353	4.71	2.63	6.54	7	.0
May	80.4	57.7	69.1	93	40	592	4.33	2.18	6.20	7	.0
June	87.7	65.5	76.6	100	50	798	3.52	2.07	4.81	6	.0
July	90.5	69.3	79.9	100	58	927	4.59	2.13	6.70	8	.0
August	89.9	67.9	78.9	100	56	896	3.06	1.20	4.62	5	.0
September	83.9	62.2	73.1	98	44	693	3.82	1.31	5.88	5	.0
October	73.5	48.9	61.2	89	29	355	2.81	1.00	4.34	5	.0
November	61.4	39.4	50.4	81	18	115	3.75	1.96	5.31	7	.0
December	52.9	33.5	43.2	75	12	42	5.30	2.54	7.68	8	.6
Yearly:											
Average	71.5	49.9	60.7	---	---	---	---	---	---	---	---
Extreme	---	---	---	102	4	---	---	---	---	---	---
Total	---	---	---	---	---	5,040	51.58	43.97	58.90	81	3.6

* 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 1951-80 at Muscle Shoals, Alabama)

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--	Mar. 25	Apr. 1	Apr. 10
2 years in 10 later than--	Mar. 15	Mar. 26	Apr. 5
5 years in 10 later than--	Feb. 22	Mar. 16	Mar. 26
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 2	Oct. 24	Oct. 21
2 years in 10 earlier than--	Nov. 9	Oct. 29	Oct. 25
5 years in 10 earlier than--	Nov. 23	Nov. 7	Nov. 2

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-80 at Muscle Shoals, Alabama)

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	234	217	201
8 years in 10	248	223	208
5 years in 10	274	236	220
2 years in 10	300	248	233
1 year in 10	314	255	239

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR MAJOR LAND USES

Map unit	Extent of area	Cultivated crops	Pasture and hayland	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct						
1. Fullerton-Bodine-Decatur	2	Well suited to poorly suited: slope, small stones.	Well suited to poorly suited: small stones.	Well suited	Well suited to poorly suited: slope, shrink-swell.	Moderately suited: slope, small stones.	Well suited.
2. Bewleyville-Decatur-Emory	4	Well suited	Well suited	Well suited	Well suited to poorly suited: shrink-swell, ponding, moderate permeability.	Moderately suited: slope, ponding.	Well suited.
3. Decatur-Fullerton-Emory	20	Well suited	Well suited	Well suited	Well suited to poorly suited: ponding, moderate permeability, shrink-swell.	Moderately suited to well suited: slow permeability, small stones.	Well suited.
4. Chisca-Capshaw-Tupelo	11	Well suited to poorly suited: slope, wetness.	Well suited	Well suited	Poorly suited: slope, wetness, very slow permeability.	Moderately suited to poorly suited: very slow permeability.	Moderately suited: wetness, too clayey.
5. Wynnville-Nectar-Nauvoo	6	Well suited to moderately suited: slope.	Well suited	Well suited	Moderately suited to poorly suited: slow permeability, depth to rock.	Moderately suited: slow permeability.	Well suited.
6. Chisca-Nella-Nectar	28	Poorly suited: slope, cobbles.	Poorly suited: slope, cobbles.	Well suited	Very poorly suited: slope, slow permeability, shrink-swell, cobbles.	Poorly suited: slope, cobbles, percs slowly.	Poorly suited: slope, too clayey, cobbles.
7. Saffell-Pikeville-Chisca	19	Poorly suited: slope, small stones.	Poorly suited: slope, small stones.	Well suited	Moderately suited to poorly suited: slope, slow permeability, shrink-swell.	Moderately suited to poorly suited: slope, small stones, slow permeability.	Moderately suited: slope, small stones, too clayey.

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR MAJOR LAND USES--Continued

Map unit	Extent of area	Cultivated crops	Pasture and hayland	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct						
8. Chenneby-Pruitton-Sullivan	6	Well suited	Well suited	Well suited	Poorly suited: wetness, flooding.	Moderately suited: wetness, flooding.	Moderately suited: wetness, flooding.
9. Decatur-Urban land*	4	Well suited	Well suited	Well suited	Moderately suited: shrink-swell, moderate permeability.	Moderately suited: slope.	Well suited.

* Ratings for this unit do not include the areas of Urban land.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
BaE	Barfield-Rock outcrop complex, 2 to 35 percent slopes	1,621	0.4
BeB	Bewleyville silt loam, 2 to 6 percent slopes	6,716	1.7
BeC	Bewleyville silt loam, 6 to 10 percent slopes	2,548	0.6
CaB	Capshaw silt loam, 2 to 6 percent slopes	12,149	3.0
CbA	Chenneby silt loam, 0 to 2 percent slopes, occasionally flooded	19,417	4.9
CeA	Chenneby silt loam, 0 to 2 percent slopes, ponded	1,247	0.3
ChD	Chisca loam, 6 to 15 percent slopes	22,983	5.8
CnF	Chisca-Nella-Nectar complex, 10 to 45 percent slopes	79,930	20.0
DaB	Decatur silt loam, 2 to 6 percent slopes	45,546	11.4
DaC2	Decatur silty clay loam, 6 to 10 percent slopes, eroded	5,192	1.3
DeB	Decatur-Urban land complex, 2 to 8 percent slopes	7,537	1.9
DeD	Decatur-Urban land complex, 8 to 15 percent slopes	805	0.2
DkA	Dickson silt loam, 0 to 3 percent slopes	1,715	0.4
Dp	Dumps	75	*
EmA	Emory silt loam, 0 to 2 percent slopes, ponded	13,596	3.4
EnA	Emory-Urban land complex, 0 to 1 percent slopes	896	0.2
EtB	Etowah silt loam, 2 to 6 percent slopes	3,694	0.9
FaB	Fullerton cherty silt loam, 2 to 6 percent slopes	2,641	0.7
FaD	Fullerton cherty silt loam, 6 to 15 percent slopes	7,789	2.0
FbF	Fullerton-Bodine complex, 15 to 45 percent slopes	8,031	2.0
GuA	Guthrie silt loam, 0 to 2 percent slopes, frequently flooded	3,070	0.8
NNC	Nectar and Nauvoo fine sandy loams, 6 to 10 percent slopes	24,429	6.1
NuA	Nugent fine sandy loam, 0 to 2 percent slopes, occasionally flooded	400	0.1
Pt	Pits, nearly level	763	0.2
PUA	Pruitton and Sullivan silt loams, 0 to 2 percent slopes, occasionally flooded	7,587	1.9
SaF	Saffell-Pikeville complex, 15 to 45 percent slopes	59,605	14.9
ShB	Savannah loam, 1 to 5 percent slopes	2,357	0.6
SpD	Smithdale-Pikeville complex, 6 to 15 percent slopes	14,763	3.7
TnD	Typic Udorthents-Nectar complex, 6 to 15 percent slopes	459	0.1
TuB	Tupelo-Colbert complex, 0 to 4 percent slopes	7,669	1.9
Ub	Urban land, 0 to 5 percent slopes	2,340	0.6
WnB	Wynnville silt loam, 2 to 6 percent slopes	9,460	2.4
	Water	22,140	5.6
	Total	399,170	100.0

* Less than 0.1 percent.

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	Cotton lint	Grain sorghum	Soybeans	Wheat	Tall fescue	Improved bermuda-grass
		Bu	Lbs	Bu	Bu	Bu	AUM*	Tons
BaE		---	---	---	---	---	---	---
Barfield	VIIs							
Rock outcrop	VIIIs							
BeB: Bewleyville	IIe	100	800	105	35	50	10	7
BeC: Bewleyville	IIIe	90	700	95	30	45	9	6
CaB: Capshaw	IIe	75	650	80	30	35	9	---
CbA: Chenneby	IIw	100	800	100	40	---	8	---
CeA: Chenneby	IVw	---	---	85	30	---	---	---
ChD: Chisca	VIe	---	---	---	---	---	6.0	---
CnF: Chisca-Nella-Nectar	VIIe	---	---	---	---	---	---	---
DaB: Decatur	IIe	90	900	105	30	50	10	7
DaC2: Decatur	IVe	50	700	90	25	40	9	6
DeB, DeD. Decatur-Urban land								
DkA: Dickson	IIw	90	650	95	35	35	8	5
Dp: Dumps	VIIIs	---	---	---	---	---	---	---
EmA: Emory	IIw	110	1,000	110	45	60	10	7
EnA. Emory-Urban land								
EtB: Etowah	IIe	95	800	105	35	50	10	7

See footnote 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	Cotton lint	Grain sorghum	Soybeans	Wheat	Tall fescue	Improved bermuda-grass
		Bu	Lbs	Bu	Bu	Bu	AUM*	Tons
FaB------------- Fullerton	IIe	80	700	105	30	50	10	7
FaD------------- Fullerton	IVe	50	450	65	25	40	9	6
FbF-------------		---	---	---	---	---	---	---
Fullerton------	VIIe							
Bodine---------	VIIs							
GuA------------- Guthrie	Vw	---	---	---	---	---	---	---
NNC------------- Nectar and Nauvoo	IIIe	65	650	85	25	40	6	4.5
NuA------------- Nugent	IIIs	40	---	60	---	35	3.5	6
Pt-------------- Pits	VIIIs	---	---	---	---	---	---	---
PUA------------- Pruitton and Sullivan	IIw	110	900	110	40	60	10	7
SaF------------- Saffell-Pikeville	VIIe	---	---	---	---	---	---	---
ShB------------- Savannah	IIe	75	650	85	30	35	8.0	5
SpD------------- Smithdale-Pikeville	IVe	50	---	65	20	40	6	4
TnD-------------		---	---	---	---	---	---	---
Typic Udorthents----	VIIs							
Nectar---------	IVe							
TuB-------------		---	---	80	30	---	8	---
Tupelo---------	IIIw							
Colbert--------	IIIe							
Ub-------------- Urban land	VIIIs	---	---	---	---	---	---	---
WnB------------- Wynnville	IIe	75	750	90	35	35	8	5

* 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.

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	Ordination 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*	Trees to plant
BaE:										
Barfield	4D	Moderate	Severe	Severe	Severe	Slight	Eastern redcedar	40	43	Eastern redcedar.
Rock outcrop.										
BeB Bewleyville	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, yellow-poplar.
							Yellow-poplar	90	---	
							White oak	75	---	
BeC Bewleyville	8A	Moderate	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, yellow-poplar.
							Yellow-poplar	90	---	
							White oak	75	---	
CaB Capshaw	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Shortleaf pine	70	---	
CbA Chenneby	11W	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine	100	154	Loblolly pine, sweetgum, water oak.
							Sweetgum	100	---	
							Water oak	100	---	
CeA Chenneby	11W	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine	100	154	Loblolly pine, sweetgum, water oak.
							Sweetgum	100	---	
							Water oak	100	---	
ChD Chisca	8C	Slight	Moderate	Slight	Moderate	Moderate	Loblolly pine	85	120	Loblolly pine.
							Virginia pine	75	---	
							Shortleaf pine	75	---	
CnF:										
Chisca	8C	Moderate	Severe	Slight	Moderate	Moderate	Loblolly pine	85	120	Loblolly pine.
							Virginia pine	75	---	
							Shortleaf pine	75	---	
Nella	8R	Moderate	Moderate	Slight	Slight	Moderate	Yellow-poplar	96	110	Loblolly pine.
							Shortleaf pine	70	---	
							Virginia pine	70	---	
							Southern red oak	70	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination 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*	Trees to plant
CnF:										
Nectar	9R	Moderate	Moderate	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, yellow-poplar, sweetgum.
							Shortleaf pine	80	---	
							Virginia pine	80	---	
							Yellow-poplar	100	---	
							Sweetgum	90	---	
DaB	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
Decatur							Shortleaf pine	70	---	
							Virginia pine	70	---	
DaC2	7C	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine	75	101	Loblolly pine.
Decatur							Virginia pine	65	---	
							Shortleaf pine	65	---	
DkA	8A	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine	80	110	Loblolly pine, yellow-poplar, water oak.
Dickson							Yellow-poplar	90	---	
							Shortleaf pine	70	---	
							Water oak	80	---	
EmA	9A	Slight	Moderate	Slight	Slight	Severe	Loblolly pine	90	131	Yellow-poplar, loblolly pine, black walnut, American sycamore.
Emory							Yellow-poplar	104	---	
							Black walnut	70	---	
							American sycamore	100	---	
EtB	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, yellow-poplar, black walnut, American sycamore.
Etowah							Yellow-poplar	100	---	
							Shortleaf pine	80	---	
							Black walnut	70	---	
							American sycamore	100	---	
FaB, FaD	7A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	75	101	Loblolly pine.
Fullerton							Southern red oak	65	---	
							Shortleaf pine	65	---	
FbF:										
Fullerton	7R	Severe	Severe	Moderate	Slight	Moderate	Loblolly pine	75	101	Loblolly pine.
							Southern red oak	65	---	
							Shortleaf pine	65	---	
Bodine	8R	Severe	Severe	Moderate	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Southern red oak	70	---	
							Yellow-poplar	90	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
GuA---------------- Guthrie	8W	Slight	Severe	Severe	Moderate	Severe	Loblolly pine------- Water oak----------- Sweetgum------------	80 80 80	110 --- ---	Loblolly pine, sweetgum, water oak.
NNC: Nectar------------	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Virginia pine------- Yellow-poplar------- Sweetgum------------	90 80 80 100 90	131 --- --- --- ---	Loblolly pine, yellow-poplar, sweetgum.
Nauvoo------------	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Virginia pine------- Yellow-poplar------- Sweetgum------------	90 80 80 100 90	131 --- --- --- ---	Loblolly pine, yellow-poplar, sweetgum.
NuA---------------- Nugent	9S	Slight	Moderate	Moderate	Slight	Slight	Loblolly pine------- Sweetgum------------ Water oak-----------	90 90 85	131 --- ---	Loblolly pine, sweetgum, water oak.
PUA: Pruitton----------	9A	Slight	Slight	Slight	Slight	Severe	Loblolly pine------- Yellow-poplar------- White oak----------- Shortleaf pine------	90 100 80 80	131 --- --- ---	Yellow-poplar, black walnut, loblolly pine.
Sullivan----------	9A	Slight	Slight	Moderate	Slight	Severe	Loblolly pine------- Yellow-poplar------- Shortleaf pine------ White oak-----------	90 100 70 80	131 --- --- ---	Yellow-poplar, black walnut, loblolly pine.
SaF: Saffell-----------	6F	Severe	Severe	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Chestnut oak--------	70 60 60	93 --- ---	Loblolly pine.
Pikeville---------	8R	Severe	Severe	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Virginia pine-------	80 70 70	110 --- ---	Loblolly pine.
ShB---------------- Savannah	8W	Slight	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Water oak----------- Sweetgum------------	80 70 70 80	110 --- --- ---	Loblolly pine, water oak, sweetgum.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns: Erosion hazard	Management concerns: Equip- ment limita- tion	Management concerns: Seedling mortal- ity	Management concerns: Wind- throw hazard	Management concerns: Plant competi- tion	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume*	Trees to plant
SpD:										
Smithdale	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Shortleaf pine	70	---	
Pikeville	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Shortleaf pine	70	---	
							Virginia pine	70	---	
TnD:										
Typic Udorthents.										
Nectar	9A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, yellow-poplar, sweetgum.
							Shortleaf pine	80	---	
							Virginia pine	80	---	
							Yellow-poplar	100	---	
							Sweetgum	90	---	
TuB:										
Tupelo	6W	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine	90	131	Loblolly pine, sweetgum, water oak.
							Sweetgum	90	---	
							Water oak	90	---	
Colbert	8C	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Shortleaf pine	70	---	
							Virginia pine	70	---	
WnB: Wynnville	8A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine.
							Shortleaf pine	70	---	
							Yellow-poplar	90	---	
							Southern red oak	70	---	
							Sweetgum	80	---	

* 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.

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
BaE:					
Barfield	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, depth to rock.
Rock outcrop.					
BeB Bewleyville	Slight	Slight	Moderate: slope.	Slight	Slight.
BeC Bewleyville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
CaB Capshaw	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
CbA Chenneby	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
CeA Chenneby	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
ChD Chisca	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight	Moderate: slope.
CnF:					
Chisca	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.
Nella	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Moderate: slope.	Severe: slope.
Nectar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
DaB Decatur	Slight	Slight	Moderate: slope.	Slight	Slight.
DaC2 Decatur	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey.	Moderate: slope, too clayey.
DeB:					
Decatur	Slight	Slight	Moderate: slope.	Slight	Slight.
Urban land.					
DeD:					
Decatur	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DeD:					
Urban land.					
DkA: Dickson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Slight.
Dp. Dumps					
EmA: Emory	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Moderate: ponding.
EnA:					
Emory	Slight	Slight	Slight	Slight	Slight.
Urban land.					
EtB: Etowah	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
FaB: Fullerton	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight	Severe: small stones.
FaD: Fullerton	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight	Severe: small stones.
FbF:					
Fullerton	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
Bodine	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope.
GuA: Guthrie	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
NNC:					
Nectar	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
Nauvoo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
NuA: Nugent	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty, flooding.
Pt. Pits					
PUA:					
Pruitton	Severe: flooding.	Slight	Moderate: small stones, flooding.	Severe: erodes easily.	Moderate: flooding.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PUA:					
Sullivan	Severe: flooding.	Slight	Moderate: small stones, flooding.	Slight	Moderate: flooding.
SaF:					
Saffell	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Pikeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ShB: Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
SpD:					
Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Pikeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
TnD:					
Typic Udorthents.					
Nectar	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
TuB:					
Tupelo	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Colbert	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
Ub. Urban land					
WnB: Wynnville	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, percs slowly.	Moderate: wetness.	Moderate: wetness.

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: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BaE:										
Barfield	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
BeB Bewleyville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BeC Bewleyville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CaB Capshaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CbA Chenneby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CeA Chenneby	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
ChD Chisca	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CnF:										
Chisca	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Nella	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Nectar	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DaB Decatur	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DaC2 Decatur	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DeB, DeD:										
Decatur	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
DkA Dickson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Dp. Dumps										
EmA Emory	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
EnA:										
Emory	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
EtB Etowah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaB Fullerton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaD Fullerton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FbF:										
Fullerton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Bodine	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
GuA Guthrie	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
NNC:										
Nectar	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Nauvoo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
NuA Nugent	Fair	Poor	Fair	Fair	Poor	Very poor.	Very poor.	Fair	Fair	Very poor.
Pt. Pits										
PUA:										
Pruitton	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sullivan	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SaF:										
Saffell	Very poor.	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Pikeville	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
ShB Savannah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SpD:										
Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

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 herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SpD: Pikeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TnD: Typic Udorthents.										
Nectar	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TuB: Tupelo	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Colbert	Good	Good	Fair	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ub. Urban land										
WnB Wynnville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

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
BaE:						
Barfield	Severe: depth to rock, slope.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, shrink-swell, low strength.	Severe: slope, depth to rock.
Rock outcrop.						
BeB: Bewleyville	Moderate: too clayey.	Slight	Moderate: shrink-swell.	Moderate: slope.	Severe: low strength.	Slight.
BeC: Bewleyville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
CaB: Capshaw	Moderate: depth to rock, too clayey, wetness.	Moderate: shrink-swell.	Moderate: wetness, depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
CbA: Chenneby	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Moderate: wetness, flooding.
CeA: Chenneby	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding.	Severe: ponding.
ChD: Chisca	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
CnF:						
Chisca	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Severe: slope.
Nella	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nectar	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DaB: Decatur	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength.	Slight.
DaC2: Decatur	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope, too clayey.

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
DeB:						
Decatur	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: low strength.	Slight.
Urban land.						
DeD:						
Decatur	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Urban land.						
DkA: Dickson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
Dp. Dumps						
EmA: Emory	Severe: ponding.	Moderate: ponding.	Severe: ponding.	Moderate: ponding.	Severe: low strength, ponding.	Moderate: ponding.
EnA:						
Emory	Slight	Slight	Moderate: wetness.	Slight	Severe: low strength.	Slight.
Urban land.						
EtB: Etowah	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
FaB: Fullerton	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Severe: small stones.
FaD: Fullerton	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Severe: small stones.
FbF:						
Fullerton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Bodine	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
GuA: Guthrie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
NNC:						
Nectar	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope, shrink-swell.	Moderate: slope.

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
NNC:						
Nauvoo	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
NuA Nugent	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
Pt. Pits						
PUA:						
Pruitton	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Sullivan	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
SaF:						
Saffell	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pikeville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ShB Savannah	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
SpD:						
Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Pikeville	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
TnD:						
Typic Udorthents.						
Nectar	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: low strength, slope, shrink-swell.	Moderate: slope.
TuB:						
Tupelo	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Colbert	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
Ub. Urban land						
WnB Wynnville	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Moderate: wetness.

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
BaE:					
Barfield	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.
Rock outcrop.					
BeB Bewleyville	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
BeC Bewleyville	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
CaB Capshaw	Severe: wetness, percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock, wetness, too clayey.	Moderate: depth to rock, wetness.	Poor: too clayey, hard to pack.
CbA Chenneby	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
CeA Chenneby	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: ponding.	Poor: hard to pack, ponding.
ChD Chisca	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
CnF:					
Chisca	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Nella	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Nectar	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
DaB Decatur	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.

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
DaC2: Decatur	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
DeB:					
Decatur	Slight	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
Urban land.					
DeD:					
Decatur	Moderate: slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
Urban land.					
DkA: Dickson	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Dp. Dumps					
EmA: Emory	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
EnA:					
Emory	Moderate: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Slight	Fair: too clayey.
Urban land.					
EtB: Etowah	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
FaB: Fullerton	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Poor: small stones.
FaD: Fullerton	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: small stones.
FbF:					
Fullerton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Bodine	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.

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
GuA: Guthrie	Severe: flooding, wetness, percs slowly.	Slight	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
NNC:					
Nectar	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Fair: depth to rock, too clayey, slope.
Nauvoo	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: slope, depth to rock.	Fair: depth to rock, slope.
NuA: Nugent	Severe: flooding, wetness.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage.
Pt. Pits					
PUA:					
Pruitton	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Good.
Sullivan	Severe: flooding.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Good.
SaF:					
Saffell	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: small stones, slope.
Pikeville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
ShB: Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
SpD:					
Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Pikeville	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: small stones.
TnD: Typic Udorthents.					

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
TnD:					
Nectar	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Fair: depth to rock, too clayey, slope.
TuB:					
Tupelo	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Colbert	Severe: wetness, percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
Ub. Urban land					
WnB Wynnville	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Fair: area reclaim, wetness.

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
BaE:				
Barfield	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, small stones.
Rock outcrop.				
BeB Bewleyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
BeC Bewleyville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.
CaB Capshaw	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CbA Chenneby	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
CeA Chenneby	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
ChD Chisca	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
CnF:				
Chisca	Poor: low strength, slope, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Nella	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Nectar	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
DaB, DaC2 Decatur	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
DeB, DeD:				
Decatur	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
DkA: Dickson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
Dp. Dumps				
EmA: Emory	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
EnA:				
Emory	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Urban land.				
EtB: Etowah	Fair: low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey.
FaB, FaD: Fullerton	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
FbF:				
Fullerton	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Bodine	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
GuA: Guthrie	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
NNC:				
Nectar	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Nauvoo	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey, slope.
NuA: Nugent	Good	Probable	Improbable: too sandy.	Fair: too sandy, small stones.
Pt. Pits				

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PUA:				
Pruitton	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Sullivan	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
SaF:				
Saffell	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Pikeville	Poor: slope.	Improbable: excess fines.	Probable	Poor: small stones, area reclaim, slope.
ShB Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SpD:				
Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Pikeville	Good	Improbable: excess fines.	Probable	Poor: small stones, area reclaim.
TnD: Typic Udorthents.				
Nectar	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
TuB:				
Tupelo	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Colbert	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ub. Urban land				
WnB Wynnville	Fair: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

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	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
BaE:						
Barfield	Severe: depth to rock.	Severe: thin layer, hard to pack.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop.						
BeB Bewleyville	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
BeC Bewleyville	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
CaB Capshaw	Moderate: depth to rock, slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
CbA Chenneby	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
CeA Chenneby	Moderate: seepage.	Severe: piping, hard to pack, ponding.	Ponding	Ponding, erodes easily.	Erodes easily, ponding.	Erodes easily, wetness.
ChD Chisca	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
CnF:						
Chisca	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
Nella	Moderate: seepage.	Severe: piping.	Deep to water	Large stones, droughty, slope.	Slope, large stones.	Large stones, slope, droughty.
Nectar	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope	Slope	Slope.
DaB Decatur	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope	Favorable	Favorable.
DaC2 Decatur	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slow intake, slope.	Slope	Slope.
DeB:						
Decatur	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope	Favorable	Favorable.
Urban land.						

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
DeD:						
Decatur	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope	Slope	Slope.
Urban land.						
DkA: Dickson	Moderate: seepage.	Severe: piping.	Percs slowly	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
Dp. Dumps						
EmA: Emory	Moderate: seepage.	Severe: piping, ponding.	Ponding	Ponding	Erodes easily, ponding.	Erodes easily.
EnA:						
Emory	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Urban land.						
EtB: Etowah	Moderate: seepage, slope.	Moderate: thin layer, piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
FaB: Fullerton	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope	Large stones	Large stones.
FaD: Fullerton	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope, large stones.	Large stones, slope.
FbF:						
Fullerton	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope, large stones.	Large stones, slope.
Bodine	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
GuA: Guthrie	Slight	Severe: piping, wetness.	Percs slowly, flooding.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
NNC:						
Nectar	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope	Slope	Slope.
Nauvoo	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
NuA: Nugent	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, flooding.	Too sandy	Droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Pt. Pits						
PUA:						
Pruitton	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Sullivan	Moderate: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
SaF:						
Saffell	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Slope, droughty, soil blowing.	Slope, soil blowing.	Slope, droughty.
Pikeville	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
ShB: Savannah	Moderate: seepage, slope.	Severe: piping.	Slope	Slope, wetness.	Erodes easily, wetness.	Erodes easily, rooting depth.
SpD:						
Smithdale	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
Pikeville	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
TnD:						
Typic Udorthents.						
Nectar	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope	Slope	Slope.
TuB:						
Tupelo	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Colbert	Moderate: depth to rock.	Severe: hard to pack.	Deep to water	Percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
Ub. Urban land						
WnB: Wynnville	Moderate: seepage, depth to rock, slope.	Severe: piping.	Percs slowly, slope.	Percs slowly, rooting depth, slope.	Rooting depth, percs slowly.	Rooting depth, percs slowly.

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	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
BaE:											
Barfield--------	0-5	Silty clay loam	CL, CH, MH	A-6, A-7	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	5-17	Silty clay, clay, silty clay loam.	CH, MH, CL	A-7, A-6	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
BeB, BeC--------- Bewleyville	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	95-100	95-100	85-100	20-30	2-7
	6-22	Silty clay loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	90-100	85-100	30-45	11-22
	22-72	Clay, clay loam, silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-5	75-100	75-100	70-95	60-95	35-65	12-32
CaB-------------- Capshaw	0-8	Silt loam--------	ML, CL, CL-ML	A-4	0	90-100	85-100	80-95	75-85	18-30	3-10
	8-20	Silty clay loam, silty clay, silt loam.	ML, CL	A-6, A-7	0	90-100	85-100	80-95	75-85	30-45	11-20
	20-51	Clay, silty clay, silty clay loam.	CL, CH, MH	A-7	0	90-100	85-100	80-95	75-90	41-68	18-36
	51-65	Clay, silty clay loam, clay loam.	MH, CH, CL	A-7	0-3	85-100	80-100	75-95	70-90	41-68	18-36
CbA-------------- Chenneby	0-8	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0	100	95-100	90-100	60-90	20-35	3-15
	8-65	Loam, silt loam, silty clay loam.	CL, ML, MH, CH	A-4, A-6, A-7	0	100	95-100	90-100	75-95	30-55	8-20
CeA-------------- Chenneby	0-8	Silt loam--------	CL, ML	A-4, A-6	0	100	95-100	90-100	60-90	20-35	3-15
	8-65	Loam, silt loam, silty clay loam.	CL, ML, MH, CH	A-4, A-6, A-7	0	100	95-100	90-100	75-95	30-55	8-20
ChD-------------- Chisca	0-5	Loam-------------	ML, SM, CL-ML, SC-SM	A-4	0-5	95-100	90-100	70-95	40-70	<20	NP-7
	5-13	Silty clay, clay	CL, CH, MH	A-7	0	95-100	90-100	80-100	70-100	40-70	20-40
	13-32	Clay-------------	CH, MH	A-7	0	95-100	90-100	85-100	80-100	60-90	30-60
	32-55	Clay, silty clay	CL, CH, MH	A-7	0-10	80-100	75-95	65-95	60-95	40-70	20-40
	55-65	Weathered bedrock	---	---	---	---	---	---	---	---	---
CnF:											
Chisca----------	0-5	Loam-------------	ML, SM, CL-ML, SC-SM	A-4	0-5	95-100	90-100	70-95	40-70	<20	NP-7
	5-13	Silty clay, clay	CL, CH, MH	A-7	0	95-100	90-100	80-100	70-100	40-70	20-40
	13-32	Clay-------------	CH, MH	A-7	0	95-100	90-100	85-100	80-100	60-90	30-60
	32-55	Clay, silty clay	CL, CH, MH	A-7	0-10	80-100	75-95	65-95	60-95	40-70	20-40
	55-65	Weathered bedrock	---	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CnF:											
Nella-----------	0-8	Cobbly fine sandy loam.	ML, CL, SM, SC	A-4	10-25	90-100	85-90	65-75	36-55	<30	NP-8
	8-36	Cobbly clay loam, gravelly clay loam, cobbly sandy clay loam.	CL, SC, CL-ML, SC-SM	A-4, A-6, A-2	0-25	75-95	60-90	45-70	30-60	25-40	6-20
	36-75	Cobbly clay loam, gravelly sandy clay loam, cobbly clay.	SC, SM, CL, ML	A-4, A-6, A-7	0-25	85-95	75-90	65-80	40-65	30-55	8-27
Nectar----------	0-12	Fine sandy loam	SM, ML	A-4	0	95-100	85-100	70-90	40-70	<20	NP-4
	12-38	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	90-100	85-100	75-99	70-95	35-70	14-40
	38-46	Silty clay loam, silty clay, clay loam.	CL, CH	A-7	0	90-100	85-100	75-99	70-95	40-60	15-30
	46-50	Silty clay loam, gravelly silty clay loam, channery clay loam.	ML	A-4, A-6, A-7	0-5	60-90	55-90	50-90	50-85	35-46	8-17
	50-62	Weathered bedrock	---	---	---	---	---	---	---	---	---
DaB-------------- Decatur	0-6	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0-3	90-100	90-98	85-98	65-80	<32	NP-12
	6-18	Silty clay loam, silty clay, clay.	ML, CL	A-7, A-4, A-6, A-5	0-3	90-100	90-100	88-99	78-92	30-49	8-22
	18-80	Clay-------------	CL, ML, MH, CH	A-7, A-6	0-3	90-100	90-100	88-98	75-90	37-60	11-28
DaC2------------- Decatur	0-4	Silty clay-------	ML, CL	A-4, A-6, A-7	0-3	90-100	90-100	88-99	78-92	30-49	8-22
	4-80	Silty clay loam, silty clay, clay.	ML, CL	A-7, A-4, A-6, A-5	0-3	90-100	90-100	88-99	78-92	30-49	8-22
DeB:											
Decatur---------	0-6	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0-3	90-100	90-98	85-98	65-80	<32	NP-12
	6-18	Silty clay loam, silty clay, clay.	ML, CL	A-7, A-4, A-6, A-5	0-3	90-100	90-100	88-99	78-92	30-49	8-22
	18-80	Clay-------------	CL, ML, MH, CH	A-7, A-6	0-3	90-100	90-100	88-98	75-90	37-60	11-28
Urban land.											
DeD:											
Decatur---------	0-6	Silty clay loam	CL, ML	A-4, A-5, A-6	0-3	90-100	90-100	85-100	75-95	28-43	7-18
	6-18	Silty clay loam, silty clay, clay.	ML, CL	A-7, A-4, A-6, A-5	0-3	90-100	90-100	88-99	78-92	30-49	8-22
	18-80	Clay-------------	CL, ML, MH, CH	A-7, A-6	0-3	90-100	90-100	88-98	75-90	37-60	11-28
Urban land.											

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
DkA-------------- Dickson	0-7	Silt loam--------	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	20-28	2-7
	7-24	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	25-38	5-17
	24-44	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	25-42	7-20
	44-60	Clay, cherty silty clay loam, cherty clay.	MH, ML, GC, CL	A-6, A-7	0-20	70-100	60-100	55-100	45-95	35-65	12-30
Dp. Dumps											
EmA-------------- Emory	0-8	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0-2	95-100	90-100	85-100	80-95	25-40	4-15
	8-52	Silt loam, silty clay loam.	CL, ML, CL-ML	A-4, A-6	0-2	95-100	90-100	85-100	80-95	25-40	4-15
	52-78	Silty clay loam, silty clay.	CL	A-4, A-6, A-7	0-2	90-100	75-100	70-100	65-95	25-45	9-20
EnA:											
Emory-----------	0-7	Silt loam--------	CL, ML, CL-ML	A-4, A-6	0-2	95-100	90-100	85-100	80-95	25-40	4-15
	7-50	Silt loam, silty clay loam.	CL, ML, CL-ML	A-4, A-6	0-2	95-100	90-100	85-100	80-95	25-40	4-15
	50-72	Silty clay loam, silt loam, silty clay.	CL	A-4, A-6, A-7	0-2	90-100	75-100	70-100	65-95	25-45	9-20
Urban land.											
EtB-------------- Etowah	0-8	Silt loam--------	ML, CL, SC-SM, CL-ML	A-4	0	80-100	75-100	70-95	45-70	20-30	3-10
	8-32	Silty clay loam, clay loam, silt loam.	CL	A-6	0	80-100	75-100	70-95	65-85	25-35	10-15
	32-70	Silty clay loam, clay loam, clay.	CL, ML, MH	A-6, A-7	0	80-100	75-100	70-95	65-85	39-60	15-25
FaB, FaD--------- Fullerton	0-6	Cherty silt loam	GM-GC, CL-ML, CL, GC	A-2, A-4	2-15	60-94	45-80	40-75	30-70	18-30	3-10
	6-75	Cherty clay, cherty silty clay.	MH, ML, GM, SM	A-2, A-7	2-18	60-90	45-80	40-75	30-75	48-78	20-42
FbF:											
Fullerton-------	0-6	Cherty silt loam	GM-GC, CL-ML, CL, GC	A-2, A-4	2-15	60-94	45-80	40-75	30-70	18-30	3-10
	6-75	Cherty clay, cherty silty clay.	MH, ML, GM, SM	A-2, A-7	2-18	60-90	45-80	40-75	30-75	48-78	20-42

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
FbF:											
Bodine----------	0-12	Cherty silt loam	ML, CL-ML, GM, SM	A-4, A-2, A-1-b	5-25	30-90	20-75	20-67	20-62	<30	NP-7
	12-52	Cherty silt loam, cherty silty clay loam, stony silt loam.	GM-GC, GC, SC, SC-SM	A-1, A-2, A-4, A-6	10-35	30-70	20-65	20-55	15-45	20-38	3-15
	52-75	Cherty silty clay loam, cherty clay loam, very cherty silt loam.	GC, GM, SC, SM	A-2	10-35	20-70	15-65	15-45	12-35	26-42	8-16
GuA-------------- Guthrie	0-7	Silt loam--------	ML, CL-ML	A-4	0	100	100	90-100	85-95	18-28	2-7
	7-23	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	85-95	23-39	5-15
	23-30	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	90-100	85-100	80-100	70-95	20-42	5-20
	30-66	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-7, A-4	0-5	85-100	80-100	75-100	66-95	20-50	4-25
NNC:											
Nectar----------	0-12	Fine sandy loam	SM, ML	A-4	0	95-100	85-100	70-90	40-70	<20	NP-4
	12-38	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	90-100	85-100	75-99	70-95	35-70	14-40
	38-46	Silty clay loam, silty clay, clay loam.	CL, CH	A-7	0	90-100	85-100	75-99	70-95	40-60	15-30
	46-50	Silty clay loam, gravelly silty clay loam, channery clay loam.	ML	A-4, A-6, A-7	0-5	60-90	55-90	50-90	50-85	35-46	8-17
	50-62	Weathered bedrock	---	---	---	---	---	---	---	---	---
Nauvoo----------	0-10	Fine sandy loam	SC-SM, CL-ML, SC, CL	A-4, A-2	0-3	90-100	85-100	55-93	30-60	<30	NP-8
	10-41	Loam, sandy clay loam, clay loam.	SC, CL, ML	A-4, A-6, A-7	0-3	95-100	90-100	60-95	40-80	30-50	8-24
	41-50	Weathered bedrock	---	---	---	---	---	---	---	---	---
NuA-------------- Nugent	0-19	Fine sandy loam	SM, ML	A-4	0	85-100	75-100	70-100	40-60	<25	NP-3
	19-65	Stratified loamy sand to fine sandy loam.	SM, SP-SM	A-2	0	85-100	75-100	60-100	10-30	<25	NP-3
Pt. Pits											
PUA:											
Pruitton--------	0-7	Silt loam--------	ML, CL, CL-ML	A-4	0	80-100	75-98	65-95	65-90	20-30	3-10
	7-43	Silt loam, loam	ML, CL, CL-ML	A-4, A-6	0	80-100	75-100	65-97	60-90	20-38	3-15
	43-61	Cherty sandy loam, cherty loam, cherty silt loam.	ML, CL, SM, SC	A-1, A-2, A-4, A-6	0-8	40-90	20-75	20-75	15-70	<30	NP-11

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
PUA:											
Sullivan	0-41	Silt loam	ML, CL, CL-ML, SM	A-4	0	80-100	75-100	60-100	36-90	20-31	3-10
	41-65	Gravelly fine sandy loam, gravelly loam, silt loam.	SM, SC-SM, SC, GM	A-4, A-2	0-5	65-100	55-100	45-85	25-55	20-30	3-10
SaF:											
Saffell	0-13	Gravelly sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2, A-4	0-5	50-80	50-75	40-70	20-50	<25	NP-5
	13-52	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, GP-GC, GM-GC	A-2, A-1, A-4, A-6	0-10	25-55	25-50	20-50	12-40	20-40	4-15
	52-65	Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand.	GM, GC, SM, SC	A-1, A-2, A-3	0-15	15-80	10-75	10-65	5-35	<35	NP-15
Pikeville	0-8	Sandy loam	SM, ML	A-4	0	90-100	90-100	50-85	36-60	<30	NP-4
	8-23	Sandy clay loam, loam, gravelly loam.	SC, CL, SC-SM, CL-ML	A-4, A-6	0	80-100	65-100	60-90	36-60	20-40	4-17
	23-33	Gravelly sandy loam, gravelly loam, gravelly sandy clay loam.	SC, SM, GM	A-1-b, A-2, A-4, A-6	0	60-90	50-85	45-75	20-45	25-48	2-18
	33-80	Very gravelly sandy loam, very gravelly loam, very gravelly sandy clay loam.	GW-GM, GM, SW-SM, SM	A-1, A-2	0-5	35-75	20-65	15-55	9-30	20-45	2-16
ShB Savannah	0-6	Loam	ML, CL-ML	A-4	0	100	90-100	80-100	60-90	<25	NP-7
	6-22	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	98-100	90-100	80-100	40-80	23-40	7-19
	22-65	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	94-100	90-100	60-100	30-80	23-43	7-19
SpD:											
Smithdale	0-11	Loam	SM, SC-SM	A-4, A-2	0	100	85-100	60-95	28-49	<20	NP-5
	11-30	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-96	45-75	23-38	7-16
	30-65	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-95	36-70	<30	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SpD:											
Pikeville-------	0-8	Sandy loam-------	SM, ML	A-4	0	90-100	90-100	50-85	36-60	<30	NP-4
	8-23	Sandy clay loam, loam, gravelly loam.	SC, CL, SC-SM, CL-ML	A-4, A-6	0	80-100	65-100	60-90	36-60	20-40	4-17
	23-33	Gravelly sandy loam, gravelly loam, gravelly sandy clay loam.	SC, SM, GM	A-1-b, A-2, A-4, A-6	0	60-90	50-85	45-75	20-45	25-48	2-18
	33-80	Very gravelly sandy loam, very gravelly loam, very gravelly sandy clay loam.	GW-GM, GM, SW-SM, SM	A-1, A-2	0-5	35-75	20-65	15-55	9-30	20-45	2-16
TnD:											
Typic Udorthents.											
Nectar----------	0-12	Fine sandy loam	SM, ML	A-4	0	95-100	85-100	70-90	40-70	<20	NP-4
	12-38	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	90-100	85-100	75-99	70-95	35-70	14-40
	38-46	Silty clay loam, silty clay, clay loam.	CL, CH	A-7	0	90-100	85-100	75-99	70-95	40-60	15-30
	46-50	Silty clay loam, gravelly silty clay loam, channery clay loam.	ML	A-4, A-6, A-7	0-5	60-90	55-90	50-90	50-85	35-46	8-17
	50-62	Weathered bedrock	---	---	---	---	---	---	---	---	---
TuB:											
Tupelo----------	0-7	Silt loam--------	CL-ML, CL, ML	A-4	0	95-100	90-100	80-100	70-90	20-35	3-10
	7-14	Silty clay loam, silty clay.	CL, CH	A-6, A-7	0	95-100	95-100	90-100	85-95	30-55	11-29
	14-60	Clay, silty clay	CH, CL	A-7	0	95-100	95-100	90-100	85-100	41-70	20-42
Colbert---------	0-8	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	60-90	<20	NP-15
	8-26	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	95-100	95-100	85-100	80-100	35-68	15-35
	26-44	Silty clay, clay	MH, CH	A-7	0	95-100	90-100	90-100	80-100	50-85	25-50
	44-55	Silty clay loam, silty clay, clay.	CL, CH	A-7	0-3	90-100	85-100	75-95	60-90	40-70	25-50
	55-59	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ub.											
Urban land											

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WnB-------------- Wynnville	0-7	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0-5	85-100	85-100	80-100	60-90	10-25	2-14
	7-23	Loam, sandy clay loam, silt loam.	SC-SM, SC, CL-ML, CL	A-4	0-5	85-100	85-100	70-100	36-90	15-30	3-10
	23-46	Loam, sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0-5	85-100	85-100	80-100	36-95	20-35	3-13
	46-68	Loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0-5	85-100	85-100	80-100	36-95	20-35	3-13

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
BaE:										
Barfield	0-5	35-55	1.50-1.62	0.2-0.6	0.10-0.15	6.1-7.8	Moderate	0.24	1	2-4
	5-17	35-55	1.55-1.65	0.2-0.6	0.09-0.14	6.1-7.8	High	0.17		
	17-21	---	---	---	---	---	---	---		
Rock outcrop.										
BeB, BeC Bewleyville	0-6	15-27	1.30-1.50	0.6-2.0	0.20-0.22	4.5-6.5	Low	0.43	5	1-3
	6-22	22-35	1.35-1.55	0.6-2.0	0.18-0.20	4.5-6.0	Low	0.37		
	22-72	35-50	1.30-1.50	0.6-2.0	0.12-0.17	4.5-5.5	Moderate	0.37		
CaB Capshaw	0-8	15-27	1.35-1.50	0.6-2.0	0.18-0.22	5.1-6.0	Low	0.37	4	1-3
	8-20	25-45	1.35-1.55	0.6-2.0	0.16-0.20	5.1-6.0	Low	0.37		
	20-51	35-55	1.40-1.55	0.06-0.2	0.12-0.18	5.1-6.0	Moderate	0.24		
	51-65	35-50	1.40-1.60	0.06-0.2	0.12-0.16	5.6-7.8	Moderate	0.24		
CbA Chenneby	0-8	12-27	1.30-1.60	0.6-2.0	0.14-0.20	4.5-6.0	Low	0.37	5	.5-3
	8-65	12-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.32		
CeA Chenneby	0-8	12-27	1.30-1.60	0.6-2.0	0.14-0.20	4.5-6.0	Low	0.37	5	.5-2
	8-65	12-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.32		
ChD Chisca	0-5	8-20	1.30-1.55	0.6-2.0	0.10-0.15	3.6-5.5	Low	0.28	3	1-3
	5-13	50-70	1.10-1.35	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	13-32	60-75	1.00-1.40	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	32-55	40-70	1.00-1.40	<0.06	0.10-0.15	4.5-8.4	High	0.32		
	55-65	---	---	<0.06	---	---	---	---		
CnF:										
Chisca	0-5	8-20	1.30-1.55	0.6-2.0	0.10-0.15	3.6-5.5	Low	0.28	3	1-3
	5-13	50-70	1.10-1.35	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	13-32	60-75	1.00-1.40	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	32-55	40-70	1.00-1.40	<0.06	0.10-0.15	4.5-8.4	High	0.32		
	55-65	---	---	<0.06	---	---	---	---		
Nella	0-8	12-25	1.30-1.45	2.0-6.0	0.08-0.15	4.5-5.5	Low	0.15	5	.5-3
	8-36	22-35	1.35-1.55	0.6-2.0	0.08-0.15	4.5-5.5	Low	0.15		
	36-75	27-45	1.30-1.45	0.6-2.0	0.07-0.14	4.5-5.5	Low	0.15		
Nectar	0-12	4-20	1.30-1.60	0.6-2.0	0.12-0.16	5.1-6.0	Low	0.28	3	.5-2
	12-38	35-55	1.20-1.50	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.32		
	38-46	28-45	1.30-1.60	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.32		
	46-50	20-40	1.20-1.50	0.2-2.0	0.06-0.12	3.6-5.5	Low	0.28		
	50-62	---	---	0.00-0.2	---	---	---	---		
DaB Decatur	0-6	15-27	1.25-1.55	0.6-2.0	0.18-0.20	4.5-6.0	Low	0.32	5	.5-2
	6-18	35-60	1.20-1.55	0.6-2.0	0.14-0.17	4.5-6.0	Moderate	0.28		
	18-80	35-60	1.20-1.50	0.6-2.0	0.12-0.16	4.5-6.0	Moderate	0.24		
DaC2 Decatur	0-4	40-50	1.20-1.50	0.6-2.0	0.15-0.18	4.5-6.0	Moderate	0.28	5	.5-1
	4-80	35-60	1.20-1.55	0.6-2.0	0.14-0.17	4.5-6.0	Moderate	0.28		
DeB:										
Decatur	0-6	15-27	1.25-1.55	0.6-2.0	0.18-0.20	4.5-6.0	Low	0.32	5	.5-2
	6-18	35-60	1.20-1.55	0.6-2.0	0.14-0.17	4.5-6.0	Moderate	0.28		
	18-80	35-60	1.20-1.50	0.6-2.0	0.12-0.16	4.5-6.0	Moderate	0.24		

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
DeB:										
Urban land.										
DeD:										
Decatur	0-6	27-40	1.25-1.55	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.32	5	.5-2
	6-18	35-60	1.20-1.55	0.6-2.0	0.14-0.17	4.5-6.0	Moderate	0.28		
	18-80	35-60	1.20-1.50	0.6-2.0	0.12-0.16	4.5-6.0	Moderate	0.24		
Urban land.										
DkA	0-7	15-26	1.30-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	3	.5-2
Dickson	7-24	18-30	1.35-1.55	0.6-2.0	0.18-0.20	4.5-5.5	Low	0.43		
	24-44	20-32	1.55-1.75	0.06-0.6	0.05-0.11	4.5-5.5	Low	0.43		
	44-60	35-50	1.35-1.55	0.2-0.6	0.02-0.04	4.5-5.5	Moderate	0.28		
Dp.										
Dumps										
EmA	0-8	19-35	1.30-1.55	0.6-2.0	0.17-0.21	5.1-6.0	Low	0.37	5	1-4
Emory	8-52	20-35	1.25-1.50	0.6-2.0	0.17-0.21	5.1-6.0	Low	0.37		
	52-78	27-45	1.20-1.55	0.6-2.0	0.16-0.20	5.1-6.0	Low	0.37		
EnA:										
Emory	0-7	20-35	1.20-1.40	0.6-2.0	0.17-0.21	5.1-6.0	Low	0.37	5	1-4
	7-50	20-35	1.25-1.45	0.6-2.0	0.17-0.21	5.1-6.0	Low	0.37		
	50-72	32-45	1.35-1.55	0.6-2.0	0.16-0.20	5.1-6.0	Low	0.37		
Urban land.										
EtB	0-8	15-27	1.30-1.45	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.37	5	1-3
Etowah	8-32	23-35	1.35-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.32		
	32-70	32-45	1.40-1.55	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.32		
FaB, FaD	0-6	15-27	1.45-1.55	0.6-2.0	0.10-0.16	4.5-5.5	Low	0.28	5	.5-2
Fullerton	6-75	40-70	1.45-1.55	0.6-2.0	0.10-0.14	4.5-5.5	Moderate	0.20		
FbF:										
Fullerton	0-6	15-27	1.45-1.55	0.6-2.0	0.10-0.16	4.5-5.5	Low	0.28	5	.5-2
	6-75	40-70	1.45-1.55	0.6-2.0	0.10-0.14	4.5-5.5	Moderate	0.20		
Bodine	0-12	8-20	1.35-1.55	2.0-6.0	0.07-0.12	3.6-5.5	Low	0.28	5	---
	12-52	20-35	1.40-1.60	2.0-6.0	0.05-0.10	3.6-5.5	Low	0.24		
	52-75	23-38	1.40-1.60	2.0-6.0	0.05-0.10	3.6-5.5	Low	0.24		
GuA	0-7	10-25	1.35-1.55	0.6-2.0	0.20-0.22	3.6-5.5	Low	0.43	3	1-2
Guthrie	7-23	18-30	1.40-1.60	0.6-2.0	0.18-0.20	3.6-5.5	Low	0.43		
	23-30	18-32	1.60-1.75	0.06-0.2	0.03-0.05	3.6-5.5	Low	0.43		
	30-66	18-35	1.60-1.75	0.06-0.2	0.03-0.05	3.6-5.5	Low	0.43		
NNC:										
Nectar	0-12	4-20	1.30-1.60	0.6-2.0	0.12-0.16	5.1-6.0	Low	0.28	3	.5-2
	12-38	35-55	1.20-1.50	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.32		
	38-46	28-45	1.30-1.60	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.32		
	46-50	20-40	1.20-1.50	0.2-2.0	0.06-0.12	3.6-5.5	Low	0.28		
	50-62	---	---	0.00-0.2	---	---	-------------	----		
Nauvoo	0-10	10-25	1.30-1.60	2.0-6.0	0.13-0.17	4.5-6.0	Low	0.28	3	.5-2
	10-41	18-35	1.30-1.60	0.6-2.0	0.14-0.20	4.5-6.0	Low	0.32		
	41-50	---	---	0.00-0.2	---	---	-------------	----		
NuA	0-19	3-10	1.20-1.40	2.0-6.0	0.12-0.14	4.5-6.5	Low	0.24	5	.5-2
Nugent	19-65	2-10	1.20-1.40	2.0-6.0	0.07-0.13	4.5-6.5	Low	0.17		

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Pt. Pits										
PUA:										
Pruitton--------	0-7	10-28	---	2.0-6.0	0.18-0.22	4.5-6.0	Low----------	0.37	5	2-4
	7-43	18-32	---	2.0-6.0	0.16-0.20	4.5-6.0	Low----------	0.32		
	43-61	7-25	---	2.0-6.0	0.05-0.12	4.5-6.0	Low----------	0.24		
Sullivan--------	0-41	18-25	1.30-1.45	0.6-2.0	0.12-0.20	5.1-7.3	Low----------	0.32	5	1-3
	41-65	15-25	1.30-1.45	0.6-2.0	0.09-0.14	5.1-7.3	Low----------	0.32		
SaF:										
Saffell---------	0-13	5-20	1.35-1.60	2.0-6.0	0.07-0.17	4.5-5.5	Low----------	0.20	4	1-2
	13-52	12-35	1.35-1.60	0.6-2.0	0.06-0.12	4.5-5.5	Low----------	0.28		
	52-65	10-25	1.40-1.65	0.6-6.0	0.04-0.11	4.5-5.5	Low----------	0.17		
Pikeville-------	0-8	6-15	---	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24	4	.5-2
	8-23	18-35	---	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.37		
	23-33	18-35	---	2.0-6.0	0.05-0.10	4.5-5.5	Low----------	0.10		
	33-80	16-32	---	2.0-6.0	0.04-0.08	4.5-5.5	Low----------	0.10		
ShB-------------- Savannah	0-6	3-16	1.40-1.60	0.6-2.0	0.15-0.24	3.6-5.5	Low----------	0.37	3	.5-3
	6-22	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low----------	0.28		
	22-65	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.24		
SpD:										
Smithdale-------	0-11	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	11-30	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	30-65	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Pikeville-------	0-8	6-15	---	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.24	4	.5-2
	8-23	18-35	---	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.37		
	23-33	18-35	---	2.0-6.0	0.05-0.10	4.5-5.5	Low----------	0.10		
	33-80	16-32	---	2.0-6.0	0.04-0.08	4.5-5.5	Low----------	0.10		
TnD: Typic Udorthents.										
Nectar----------	0-12	4-20	1.30-1.60	0.6-2.0	0.12-0.16	5.1-6.0	Low----------	0.28	3	.5-2
	12-38	35-55	1.20-1.50	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.32		
	38-46	28-45	1.30-1.60	0.2-0.6	0.12-0.18	3.6-5.5	Moderate-----	0.32		
	46-50	20-40	1.20-1.50	0.2-2.0	0.06-0.12	3.6-5.5	Low----------	0.28		
	50-62	---	---	0.00-0.2	---	---	-------------	----		
TuB:										
Tupelo----------	0-7	18-27	1.35-1.50	0.6-2.0	0.18-0.22	5.1-6.5	Low----------	0.37	4	1-3
	7-14	30-45	1.40-1.55	0.6-2.0	0.15-0.20	5.1-6.5	Moderate-----	0.32		
	14-60	40-65	1.40-1.55	0.06-0.2	0.12-0.16	5.1-6.5	High---------	0.28		
Colbert---------	0-8	5-27	1.30-1.55	0.6-2.0	0.15-0.22	4.5-6.5	Low----------	0.37	3	.5-2
	8-26	35-50	1.20-1.60	0.06-0.2	0.14-0.20	4.5-6.5	High---------	0.32		
	26-44	50-70	1.00-1.30	<0.06	0.12-0.16	4.5-6.5	High---------	0.32		
	44-55	40-65	1.10-1.45	<0.06	0.10-0.15	6.1-7.8	High---------	0.32		
	55-59	---	---	0.00-0.06	---	---	-------------	----		
Ub. Urban land										
WnB-------------- Wynnville	0-7	7-20	1.40-1.60	0.6-2.0	0.16-0.22	3.6-5.5	Low----------	0.28	3	<1
	7-23	18-30	1.40-1.60	0.6-2.0	0.15-0.20	3.6-5.5	Low----------	0.24		
	23-46	10-25	1.60-1.75	0.06-0.2	0.08-0.12	3.6-5.5	Low----------	0.20		
	46-68	14-35	1.40-1.60	0.2-0.6	0.12-0.17	3.6-5.5	Low----------	0.20		

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: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
BaE:											
Barfield	D	None	---	---	>6.0	---	---	8-20	Hard	High	Low.
Rock outcrop.											
BeB, BeC Bewleyville	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
CaB Capshaw	C	None	---	---	3.5-5.0	Apparent	Dec-Mar	48-60	Hard	High	Moderate.
CbA Chenneby	C	Occasional	Very brief to long.	Dec-Apr	1.0-2.5	Apparent	Jan-Mar	>60	---	High	Moderate.
CeA Chenneby	C	None	---	---	+1-1.5	Apparent	Dec-Jun	>60	---	High	Moderate.
ChD Chisca	D	None	---	---	>6.0	---	---	40-60	Soft	High	Moderate.
CnF:											
Chisca	D	None	---	---	>6.0	---	---	40-60	Soft	High	Moderate.
Nella	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Nectar	C	None	---	---	>6.0	---	---	40-60	Soft	Moderate	High.
DaB, DaC2 Decatur	B	None	---	---	>6.0	---	---	>60	---	High	Moderate.
DeB, DeD:											
Decatur	B	None	---	---	>6.0	---	---	>60	---	High	Moderate.
Urban land.											
DkA Dickson	C	None	---	---	2.0-3.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
Dp. Dumps											
EmA Emory	B	None	---	---	+1-0	Perched	Dec-Apr	>60	---	Moderate	Moderate.
EnA:											
Emory	B	None	---	---	5.0-6.0	Apparent	Dec-Mar	>60	---	Moderate	Moderate.
Urban land.											
EtB Etowah	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
FaB, FaD Fullerton	B	None	---	---	>6.0	---	---	>60	---	High	Moderate.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
FbF:											
Fullerton	B	None	---	---	>6.0	---	---	>60	---	High	Moderate.
Bodine	B	None	---	---	>6.0	---	---	>60	---	Low	High.
GuA: Guthrie	D	Frequent	Brief	Jan-Apr	0.5-1.0	Perched	Jan-Apr	>60	---	High	High.
NNC:											
Nectar	C	None	---	---	>6.0	---	---	40-60	Soft	Moderate	High.
Nauvoo	B	None	---	---	>6.0	---	---	40-60	Soft	Low	High.
NuA: Nugent	A	Occasional	Brief	Dec-Apr	3.5-6.0	Apparent	Jan-Apr	>60	---	Low	Moderate.
Pt. Pits											
PUA:											
Pruitton	B	Occasional	Brief	Nov-Mar	>6.0	---	---	>60	---	Low	Moderate.
Sullivan	B	Occasional	Very brief or brief.	Dec-Mar	4.0-6.0	Apparent	Dec-Mar	>60	---	Low	Low.
SaF:											
Saffell	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Pikeville	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
ShB: Savannah	C	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SpD:											
Smithdale	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Pikeville	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
TnD:											
Typic Udorthents.											
Nectar	C	None	---	---	>6.0	---	---	40-60	Soft	Moderate	High.
TuB:											
Tupelo	D	None	---	---	1.0-2.0	Apparent	Nov-Mar	>60	---	High	Moderate.
Colbert	D	None	---	---	3.5-5.0	Perched	Dec-Mar	40-72	Hard	High	Moderate.
Ub. Urban land											
WnB: Wynnville	C	None	---	---	1.5-2.5	Perched	Dec-Feb	48-60	Hard	Moderate	High.

TABLE 17.--PHYSICAL ANALYSIS OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Barfield[1]					
S83AL-033-2	0-5	A	10.0	40.6	49.4
	5-10	Bw	9.2	38.0	52.8
	10-12	C	7.2	31.4	61.4
Bewleyville[2]					
S76AL-033-1	0-1	A1	28.7	61.2	10.1
	1-6	A2	26.5	58.9	14.6
	6-11	Bt1	22.0	58.2	19.8
	11-22	Bt2	19.4	53.9	26.7
	22-32	Bt3	25.9	45.0	29.1
	32-44	Bt4	26.1	42.1	31.8
	44-72	Bt5	27.5	34.7	37.8
Capshaw[3]					
S76AL-033-6	0-2	A1	14.2	67.8	18.0
	2-7	A2	14.1	66.7	19.2
	7-11	Bt1	5.2	60.5	34.3
	11-21	Bt2	4.2	59.0	36.8
	21-27	Bt3	4.5	57.9	37.6
	27-37	Bt4	3.9	46.0	50.1
	37-61	BC	5.6	53.0	41.4
Chisca[4]					
S76AL-033-3	0-3	A	28.2	41.5	30.2
	3-10	Bt1	3.6	24.7	71.7
	10-19	Bt2	3.1	25.5	71.4
	19-26	Bt3	3.4	26.6	70.0
	26-37	Bt4	3.5	32.7	63.8
	37-43	BC	3.6	42.2	54.2
	43-48	C	12.7	44.2	43.1
	48-66	Cr	3.2	46.8	50.0
Chisca[5]					
S76AL-033-7	0-4	Ap	18.1	60.2	21.7
	4-10	Bt1	9.6	53.6	36.8
	10-28	Bt2	1.9	28.0	70.1
	28-34	Bt/C1	0.4	40.5	59.1
	34-44	Bt/C2	0.9	37.0	62.1
	44-58	C	0.3	49.3	50.4
	58-68	Cr	0.8	48.0	51.2
Chisca[6]					
S79AL-033-3	0-2	A	31.0	43.2	25.8
	2-9	Bt1	3.6	30.9	65.5
	9-20	Bt2	3.0	33.5	63.5
	20-34	Bt3	4.9	33.9	61.2
	34-44	C/Bt	7.6	42.2	50.2
	44-58	Cr	19.9	42.7	37.4
Colbert[2]					
S81AL-033-1	0-3	A1	38.0	53.5	8.5
	3-8	A2	35.2	55.8	9.0
	8-15	Bt1	10.9	51.8	37.3
	15-26	Bt2	12.6	45.5	41.9
	26-36	Bt3	9.8	35.2	55.0
	36-44	Bt4	5.7	31.6	62.7
	44-55	C	3.9	38.2	57.9

See footnotes at end of table.

TABLE 17.--PHYSICAL ANALYSIS OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Colbert[7]					
S76AL-033-9	0-5	Ap	11.2	59.8	29.0
	5-9	Bt1	7.0	52.1	40.9
	9-19	Bt2	5.3	41.6	53.1
	19-29	Bt3	5.8	42.2	52.0
	29-52	Bt4	4.1	40.9	55.0
	52-65	BC	10.1	48.1	41.8
	65-85	Cr	5.1	64.2	30.7
Decatur[8]					
S70AL-033-3	6-23	Bt1	16.8	47.3	35.9
	23-45	Bt2	17.7	42.5	39.8
Decatur[9]					
S70AL-033-4	0-5	Ap	19.4	49.1	31.5
	5-23	Bt1	14.9	49.4	35.7
	23-51	Bt2	20.9	41.4	37.7
	51-75	Bt3	20.5	20.7	58.8
Decatur[10]					
S77AL-033-2	0-4	Ap	12.0	60.0	28.0
	4-13	Bt1	8.3	50.0	41.7
	13-45	Bt2	10.0	42.6	47.4
	45-72	Bt3	10.3	45.5	44.2
Decatur[11]					
S77AL-033-3	0-3	Ap	26.8	49.5	23.7
	3-7	Bt1	17.1	48.8	34.1
	7-16	Bt2	18.3	43.5	38.2
	16-72	Bt3	21.0	37.3	41.7
Decatur[12]					
S77AL-033-4	0-6	Ap	24.9	49.1	26.0
	6-16	Bt1	23.5	41.7	34.8
	16-80	Bt2	31.3	32.2	36.5
Decatur[2]					
S77AL-033-6	0-6	Ap	6.8	65.6	27.6
	6-18	Bt1	6.2	60.0	33.8
	18-29	Bt2	6.2	52.0	41.8
	29-53	Bt3	6.8	49.3	43.9
	53-64	Bt4	8.3	45.0	46.7
	64-80	Bt5	9.2	44.2	46.6
Emory[13]					
S70AL-033-1	0-9	Ap	1.6	79.0	19.4
	9-26	Bw	0.4	77.9	21.7
	26-33	Ab	3.9	69.0	27.1
	33-47	Btb1	4.4	66.2	29.4
	47-77	Btb2	10.3	73.1	16.6
Guthrie[2]					
S76AL-033-5	0-4	A	13.1	63.6	23.3
	4-7	E	13.4	67.8	18.8
	7-13	Btg1	13.4	63.2	23.4
	13-23	Btg2	12.0	60.3	27.7
	23-30	Btg3	11.1	57.6	31.3
	30-49	Btx1	17.1	50.7	32.2
	49-66	Btx2	21.9	39.5	38.6

See footnotes at end of table.

TABLE 17.--PHYSICAL ANALYSIS OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Particle-size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Savannah[14]					
S78AL-033-4	0-6	Ap	46.5	43.0	10.5
	6-13	Bt1	25.7	53.6	20.7
	13-22	Bt2	36.4	45.8	17.8
	22-34	Bx1	51.5	34.3	14.2
	34-40	Bx2	56.3	25.6	18.1
	40-54	Bx3	57.9	23.1	19.0
	54-65	C	68.7	13.7	17.6
Sullivan[2]					
S78AL-033-1	0-6	Ap	14.6	65.5	19.9
	6-18	Bw1	24.0	52.0	24.0
	18-23	Bw2	49.1	34.5	16.4
	23-29	Ab	62.5	25.4	12.1
	29-41	Bwb1	38.9	42.9	18.2
	41-54	Bwb2	23.4	55.3	21.3
	54-65	C	14.5	61.6	23.9
Sullivan[15]					
S78AL-033-2	0-12	Ap	5.5	75.3	19.2
	12-16	Bw1	2.2	70.0	27.8
	16-36	Bw2	4.0	69.2	26.8
	36-59	Bw3	15.9	59.1	25.0
	59-70	C	59.9	26.3	13.8
Wynnville[16]					
S77AL-033-1	0-7	Ap	39.7	51.7	8.6
	7-20	Bw	31.2	49.5	19.3
	20-47	Btx/E	42.4	41.0	16.6
	47-70	Bt	48.6	34.1	17.3

[1] 1,320 feet west and 100 feet north of the southeast corner of sec. 17, T. 4 S., R. 11 W.
[2] See the section "Soil Series and Their Morphology" for pedon location.
[3] On County Line Road, 2 miles south of the intersection with State Highway 157; sec. 18, T. 5 S., R. 9 W.
[4] NE1/4NE1/4 sec. 21, T. 3 S., R. 14 W.
[5] NW1/4NE1/4 sec. 13, T. 5 S., R. 9 W.
[6] SW1/4NE1/4 sec. 5, T. 4 S., R. 14 W.
[7] NW1/4NE1/4 sec. 17, T. 4 S., R. 12 W.
[8] 1,900 feet south and 1,195 feet west of the northeast corner of sec. 34, T. 3 S., R. 13 W.
[9] 1,280 feet north and 2,390 feet east of the southwest corner of sec. 34, T. 3 S., R. 13 W.
[10] 2,400 feet south and 500 feet west of the northeast corner of sec. 10, T. 4 S., R. 11 W.
[11] 300 feet south and 1,100 feet west of the northeast corner of sec. 6, T. 4 S., R. 10 W.
[12] 1,500 feet south and 1,900 feet west of the northeast corner of sec. 25, T. 4 S., R. 11 W.
[13] 2,020 feet south and 470 feet west of the northeast corner of sec. 34, T. 3 S., R. 13 W.
[14] About one-half mile northwest of Margerum; NE1/4NE1/4 sec. 27, T. 3 S., R. 15 W.
[15] 2,300 feet north and 520 feet east of the southwest corner of sec. 14, T. 4 S., R. 15 W.
[16] About 1.5 miles southeast of Littleville; SE1/4NE1/4 sec. 36, T. 5 S., R. 11 W.

TABLE 18.--CHEMICAL ANALYSIS OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable acidity	Cation-exchange capacity	Base saturation	pH
	In		-----Milliequivalents per 100 grams of soil-----					Pct	
Bewleyville[1] S76AL-033-1	0-1	A1	1.15	0.41	0.23	6.00	7.80	23.2	4.9
	1-6	A2	0.93	0.41	0.12	4.16	5.63	26.2	5.2
	6-11	Bt1	1.37	0.79	0.12	4.00	6.29	36.4	5.3
	11-22	Bt2	1.70	1.20	0.13	4.64	7.68	39.6	5.3
	22-32	Bt3	1.60	1.08	0.09	4.48	7.27	38.4	5.4
	32-44	Bt4	1.44	1.35	0.11	3.92	6.83	42.7	5.4
	44-72	Bt5	0.23	0.68	0.16	5.76	6.85	15.9	5.1
Chisca[2] S76AL-033-3	0-3	A	5.64	1.26	0.26	6.16	13.33	53.8	5.0
	3-10	Bt1	8.96	2.21	0.37	25.28	36.83	31.4	4.9
	10-19	Bt2	8.59	2.27	0.37	26.80	38.04	29.6	4.7
	19-26	Bt3	12.07	3.01	0.31	9.36	24.76	62.2	5.1
	26-37	Bt4	17.57	3.55	0.18	3.12	24.43	87.2	7.2
	37-43	BC	25.00	0.03	0.13	2.16	27.33	92.1	7.8
	43-48	C	27.57	3.10	0.14	1.52	32.35	95.3	7.8
	48-66	Cr	27.00	3.10	0.12	2.08	32.32	93.6	8.3
Chisca[3] S76AL-033-7	0-4	Ap	---	---	---	---	---	---	---
	4-10	Bt1	2.03	1.69	0.22	12.41	16.35	24.2	4.7
	10-28	Bt2	3.20	3.77	0.43	28.96	36.36	20.4	4.4
	28-34	Bt/C1	3.97	4.32	0.38	18.72	27.40	31.7	4.2
	34-44	Bt/C2	4.23	4.11	0.37	15.60	24.32	35.9	4.4
	44-58	C	5.13	4.90	0.34	7.52	17.90	58.0	4.6
	58-68	Cr	4.02	6.39	0.26	2.48	13.17	81.1	7.1
Chisca[4] S79AL-033-3	0-2	A	7.70	1.80	0.29	2.64	12.43	78.8	5.3
	2-9	Bt1	10.82	3.00	0.25	5.36	19.43	72.4	5.0
	9-20	Bt2	14.32	3.69	0.18	2.96	21.15	86.0	6.0
	20-34	Bt3	26.02	3.38	0.06	1.52	30.99	95.1	8.1
	34-44	C/Bt	22.26	2.93	0.07	1.28	26.54	95.2	8.4
	44-58	Cr	25.68	2.75	0.07	0.72	29.22	97.5	8.4
Colbert[5] S76AL-033-9	0-5	Ap	29.67	1.54	0.16	4.80	36.19	86.7	5.3
	5-9	Bt1	2.24	1.51	0.17	8.72	12.65	31.1	4.8
	9-19	Bt2	7.31	2.83	0.24	9.84	20.23	51.4	5.0
	19-29	Bt3	6.49	2.41	0.22	13.76	22.89	39.9	4.9
	29-52	Bt4	9.69	3.64	0.22	7.04	20.60	65.8	5.3
	52-65	BC	27.29	4.23	0.06	1.76	33.36	94.7	8.3
	65-85	Cr	29.19	4.02	0.11	1.36	34.70	96.1	8.1
Colbert[1] S81AL-033-1	0-3	A1	1.60	0.26	0.09	4.00	5.94	32.7	5.0
	3-8	A2	1.78	0.26	0.08	4.08	6.19	34.1	5.0
	8-15	Bt1	5.51	0.44	0.08	7.76	13.79	43.7	5.1
	15-26	Bt2	5.72	0.41	0.10	10.40	16.63	37.5	5.1
	26-36	Bt3	6.30	0.34	0.17	18.64	25.45	26.7	5.0
	36-44	Bt4	11.80	0.47	0.20	12.88	25.35	49.2	5.1
	44-55	C	32.95	0.56	0.04	4.80	38.35	87.5	7.1
Decatur[6] S70AL-033-3	6-23	Bt1	3.74	2.46	0.10	5.44	11.74	53.6	5.2
	23-45	Bt2	1.36	1.06	0.12	8.48	11.02	23.0	5.1
Decatur[7] S70AL-033-4	0-5	Ap	6.30	1.31	0.34	3.34	11.31	70.3	6.3
	5-23	Bt1	1.40	1.02	0.14	7.52	10.08	25.4	4.3
	23-51	Bt2	0.30	0.33	0.11	8.08	8.82	8.4	4.4
	51-75	Bt3	2.12	2.89	0.10	12.96	18.07	28.3	4.5
Decatur[8] S77AL-033-4	0-6	Ap	4.62	0.55	0.25	3.84	9.28	58.6	5.5
	6-16	Bt1	1.80	1.03	0.08	5.60	8.52	34.3	5.0
	16-80	Bt2	0.84	0.95	0.07	6.16	8.03	23.3	4.9

See footnotes at end of table.

TABLE 18.--CHEMICAL ANALYSIS OF SELECTED SOILS--Continued

Soil name and sample number	Depth	Horizon	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable acidity	Cation-exchange capacity	Base saturation	pH
	In		-----Milliequivalents per 100 grams of soil-----					Pct	
Decatur[1]	0-6	Ap	5.45	0.85	0.14	2.88	9.33	69.1	6.3
S77AL-033-6	6-18	Bt1	2.97	1.87	0.21	3.68	8.75	58.0	5.8
	18-29	Bt2	0.60	0.83	0.27	5.60	7.31	23.5	5.5
	29-53	Bt3	0.29	0.81	0.20	6.40	7.70	17.0	5.3
	53-64	Bt4	0.31	1.00	0.14	6.16	7.62	19.2	5.3
	64-80	Bt5	0.47	1.22	0.12	6.24	8.06	22.7	5.4
Emory[9]	0-9	Ap	5.90	0.69	0.27	4.24	11.10	61.8	5.7
S70AL-033-1	9-26	Bw	4.60	0.87	0.17	4.88	10.52	53.6	5.8
	26-33	Ab	7.34	0.93	0.12	6.32	14.71	57.0	5.8
	33-47	Btb1	4.50	0.57	0.21	4.72	10.00	52.8	5.9
Guthrie[1]	0-4	A	3.76	0.47	0.09	2.64	6.97	62.1	4.8
S76AL-033-5	4-7	E	0.80	0.18	0.05	2.08	3.11	33.2	4.7
	7-13	Btg1	0.64	0.21	0.04	2.40	3.30	27.3	4.5
	13-23	Btg2	0.60	0.38	0.04	2.32	3.34	30.7	4.5
	23-30	Btg3	0.54	0.57	0.05	3.04	4.20	27.7	4.6
	30-49	Btx1	0.12	0.41	0.03	2.48	3.05	18.8	4.8
	49-66	Btx2	0.06	0.34	0.03	2.56	2.99	14.6	4.6
Savannah[10]	0-6	Ap	1.22	0.26	0.09	2.48	4.06	38.9	5.2
S78AL-033-4	6-13	Bt1	2.30	0.65	0.03	2.32	5.31	56.3	5.5
	13-22	Bt2	0.86	0.79	0.04	3.04	4.73	35.8	5.2
	22-34	Bx1	0.36	0.66	0.04	2.16	3.22	33.1	5.2
	34-40	Bx2	0.22	0.76	0.04	2.96	3.98	25.7	5.2
	40-54	Bx3	0.22	0.65	0.04	3.12	4.04	22.8	5.2
	54-65	C	0.14	0.46	0.04	2.96	3.61	18.0	5.2
Sullivan[1]	0-6	Ap	7.42	0.52	0.10	1.44	9.48	84.8	5.7
S78AL-033-1	6-18	Bw1	8.52	0.27	0.06	2.32	11.17	79.2	5.7
	18-23	Bw2	5.62	0.12	0.04	1.28	7.06	81.9	5.6
	23-29	Ab	4.34	0.09	0.04	0.88	5.35	83.6	5.8
	29-41	Bwb1	6.38	0.10	0.05	1.68	8.21	79.5	5.7
	41-54	Bwb2	7.02	0.09	0.05	2.24	9.41	76.2	5.7
	54-65	C	7.42	0.08	0.06	2.96	10.52	71.9	5.7
Sullivan[11]	0-12	Ap	6.64	0.61	0.13	1.92	9.31	79.4	5.8
S78AL-033-2	12-16	Bw1	9.88	0.64	0.07	2.24	12.84	82.6	6.0
	16-36	Bw2	9.98	0.40	0.06	2.24	12.69	82.4	6.0
	36-59	Bw3	7.04	0.13	0.06	2.40	9.64	75.1	5.7
	59-70	C	3.94	0.08	0.05	2.08	6.15	66.2	5.8
Wynnville[12]	0-7	Ap	3.22	0.16	0.10	1.84	5.32	65.5	6.3
S77AL-033-1	7-20	Bw	3.18	0.18	0.08	4.00	7.45	46.3	5.7
	20-47	Btx/E	0.36	0.26	0.05	5.20	5.87	11.5	5.1
	47-70	Bt	0.12	0.23	0.03	6.08	6.46	6.0	4.8

1 See the section "Soil Series and Their Morphology" for pedon location.
2 NE1/4NE1/4 sec. 21, T. 3 S., R. 14 W.
3 NW1/4NE1/4 sec. 13, T. 5 S., R. 9 W.
4 SW1/4NE1/4 sec. 5, T. 4 S., R. 14 W.
5 0.6 mile south of the junction of State Highway 247 and U.S. Highway 72; NW1/4NE1/4 sec. 17, T. 4 S., R. 12 W.
6 1,900 feet south and 1,195 feet west of the northeast corner of sec. 34, T. 3 S., R. 13 W.
7 1,280 feet north and 2,390 feet east of the southwest corner of sec. 34, T. 3 S., R. 13 W.
8 1 mile south of the intersection of State Highway 157 and Three Mile Land; 1,500 feet south and 1,900 feet west of the northeast corner of sec. 25, T. 4 S., R. 11 W.
9 2,020 feet south and 470 feet west of the northeast corner of sec. 34, T. 3 S., R. 13 W.
10 About one-half mile northwest of Margerum; NE1/4NE1/4 sec. 27, T. 3 S., R. 15 W.
11 290 feet east of Bear Creek; 2,300 feet north and 520 feet east of the southwest corner of sec. 14, T. 4 S., R. 15 W.
12 About 1.5 miles southeast of Littleville; SE1/4NE1/4 sec. 36, T. 5 S., R. 11 W.

TABLE 19.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. NP means nonplastic. See the section "Soil Series and Their Morphology" for pedon locations)

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution									Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve--						Percentage smaller than--					Maximum dry density	Optimum moisture
	AASHTO	Unified	2 in.	1 in.	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm				
												Pct		Lb/cu ft	Pct
Chisca															
S81AL-033-3															
Bt1--- 5 to 13	A-7-6	CL	100	100	94	90	99	79	---	63	---	46	19	104	19
Bt2--- 13 to 23	A-7-5(34)	MH	100	99	97	96	99	87	---	77	---	68	35	94	25
C1---- 32 to 44	A-7-5(52)	CH	100	100	100	100	99	91	---	84	---	80	48	---	---
Colbert															
S81AL-033-1															
E----- 3 to 8	A-4(0)	ML	100	100	100	100	98	83	---	29	---	---	NP	110	12
Bt1--- 8 to 15	A-7-6(20)	CL	100	100	100	100	99	93	---	62	---	44	19	104	18
Bt3--- 26 to 36	A-7-6(32)	CH	100	100	100	100	99	94	---	72	---	58	29	93	25

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Barfield	Clayey, mixed, thermic Lithic Hapludolls
Bewleyville	Fine-silty, siliceous, thermic Typic Paleudults
Bodine	Loamy-skeletal, siliceous, thermic Typic Paleudults
Capshaw	Fine, mixed, thermic Ultic Hapludalfs
Chenneby	Fine-silty, mixed, thermic Fluvaquentic Dystrochrepts
Chisca	Very fine, montmorillonitic, thermic Vertic Hapludalfs
Colbert	Fine, montmorillonitic, thermic Vertic Hapludalfs
Decatur	Clayey, kaolinitic, thermic Rhodic Paleudults
Dickson	Fine-silty, siliceous, thermic Glossic Fragiudults
Emory	Fine-silty, siliceous, thermic Fluventic Umbric Dystrochrepts
Etowah	Fine-loamy, siliceous, thermic Typic Paleudults
Fullerton	Clayey, kaolinitic, thermic Typic Paleudults
Guthrie	Fine-silty, siliceous, thermic Typic Fragiaquults
Nauvoo	Fine-loamy, siliceous, thermic Typic Hapludults
Nectar	Clayey, kaolinitic, thermic Typic Hapludults
Nella	Fine-loamy, siliceous, thermic Typic Paleudults
Nugent	Sandy, siliceous, thermic Typic Udifluvents
Pikeville	Fine-loamy, siliceous, thermic Typic Paleudults
Pruitton	Fine-loamy, siliceous, thermic Fluventic Dystrochrepts
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Sullivan	Fine-loamy, siliceous, thermic Dystric Fluventic Eutrochrepts
Tupelo	Fine, mixed, thermic Aquic Hapludalfs
Typic Udorthents	Clayey, thermic Typic Udorthents
Wynnville	Fine-loamy, siliceous, thermic Glossic Fragiudults

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