SOIL SURVEY OF

Cherokee County, Alabama

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Alabama Agricultural Experiment Station,
Alabama Department of Agriculture and
Industries, and Cherokee County
Commission

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

Major fieldwork for this soil survey was completed in the period 1968–72. Soil names and descriptions were approved in 1973. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1972. This survey was made cooperatively by the Soil Conservation Service, the Alabama Agricultural Experiment Station, the Alabama Department of Agriculture and Industries, and the Cherokee County Commission. It is part of the technical assistance furnished to the Cherokee County Soil and Water Conservation District.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms, ranches, and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Cherokee County, Alabama are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification and woodland suitability group of each. It also shows the page where each soil is described and the capability unit and woodland suitability group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the capability units.

Foresters and others can refer to the section "Use of Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Soil Interpretations for Wildlife Habitat."

Community planners and others can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Cherokee County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the county given at the beginning of the publication and in the section "Environmental Factors Affecting Soil Use."

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SOIL SURVEY OF CHEROKEE COUNTY, ALABAMA

Survey By Charles F. Montgomery, Soil Conservation Service

Soils Surveyed By Charles F. Montgomery, Harold B. Neal, Lewis A. Dungan, And James E. Boman, Soil Conservation Service

United States Department Of Agriculture, Soil Conservation Service, In Cooperation With The Alabama Agricultural Experiment Station, The Alabama Department Of Agriculture And Industries, And The Cherokee County Commission

CHEROKEE COUNTY is in the northeastern part of Alabama (fig. 1). It has a land area of 548 square miles, or 350,800 acres. Most of the county is in the western Appalachian Mountains. The ridges and valleys have a northeast and southwest trend which is closely correlated with the structure of the underlying rocks. These areas are mainly nearly level to gently sloping; however, some ridges are hilly to steep. Lookout Mountain extends along the northwestern side of the county. This mountain has steep side slopes and deeply cut gorges, but the top is a gently sloping to sloping plateau. The Coosa River flows southwest through the central section and forms a rather broad valley of high river terraces and a flat shale area. The river terrace and adjacent flat shale uplands are nearly level to sloping. The elevations of the county range from 537 feet above sea level where the Coosa River leaves the county to 1,967 feet on Indian Mountain.

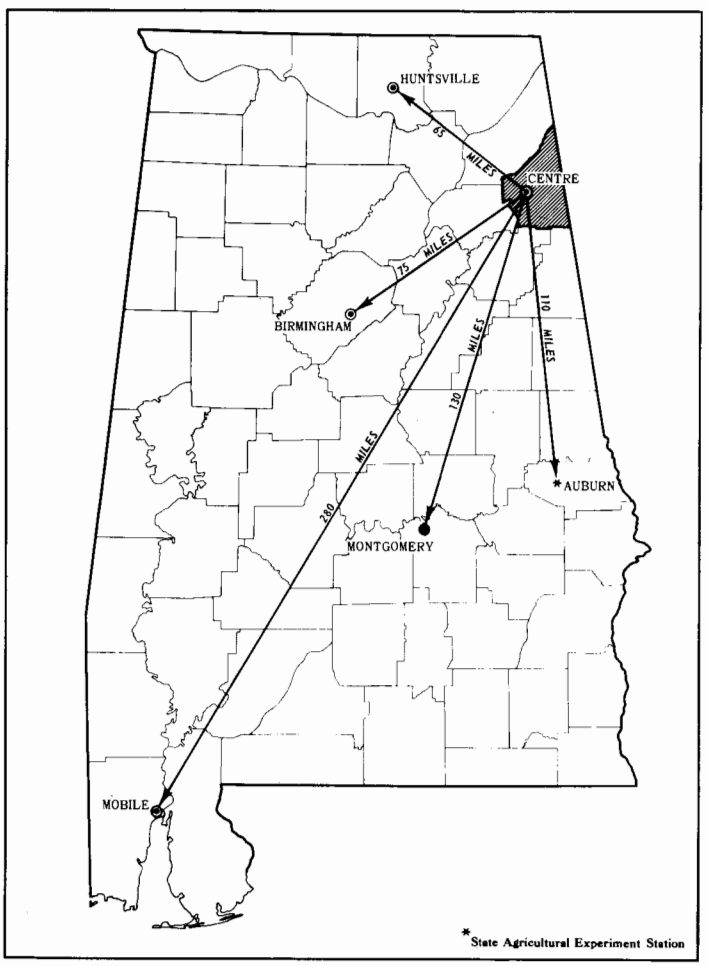

Figure 1.—**Location of Cherokee County in Alabama.**

About 35 percent of the farmland in the county is used for field crops or for pasture. Cotton, corn, and soybeans are the main crops. Poultry is one of the leading farm enterprises. Beef cattle are the main livestock, but hogs and dairy cows are raised on some farms.

The native vegetation of Cherokee County was mainly forest containing some underbrush, small patches of grass, and annual plants. Most areas were mixed hardwoods and pines. Virtually all of the original forest has been harvested and is now in second and third growth.

The climate in the county is temperate and humid. Rainfall is generally well distributed throughout the year. Winters are usually not severe; extended periods of severe cold are rare.

In 1970 the population of the county was 15,606. Centre, the county seat and the largest town, is in the east-central part of the county. Nonagricultural occupations make up about 80 percent of the employment within the county.

Many of the soils in the north-central and southern parts of the county are not suited to row crops and pasture because they are steep and susceptible to erosion. They are well suited to trees. The soils on the plateau of Lookout Mountain are well suited to row crops and pasture. They respond excellently when fertilizer and lime are applied. The soils of the shale uplands are not suited to row crops, but they are well suited to pasture. The soils on the terraces of the Coosa River and the larger streams are well suited to row crops, pasture, and trees.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Cherokee County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes; the size and speed

of streams; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Bomar and Ellisville, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Holston fine sandy loam, 0 to 2 percent slopes, is one of several phases within the Holston series.

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

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent because it is not practical to show on such a map all the small, scattered bits of soil of some kind that have been seen within an area that is dominately of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Three such kinds of mapping units are shown on the soil map of Cherokee County: soil complexes, soil associations, and undifferentiated groups.

A soil complex consists of areas of two or more soils, so intricately mixed or so small that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Ennis-Lobelville complex is an example.

A soil association is made up of adjacent soils in areas large enough to be shown individually on the soil map but shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Firestone-Montevallo association, steep, is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map may be made up of only one of the dominant soils, or of two or more. Chewacla soils is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, so severely eroded, or so variable that it has not been classified by soil series. These places are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Rock outcrop is a land type in Cherokee County.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kind of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kind of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants, and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this to the slow permeability of the soil or to its high water table. They see that streets, road pavements, and foundations for houses are cracked on a particular soil and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Cherokee County, Alabama. A soil association is a landscape that has distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in Cherokee County, who want to compare different parts of Cherokee County, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable

map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in Cherokee County are discussed in the following pages.

The soil associations in this survey have been grouped into four general kinds of landscapes for broad interpretative purposes. Each of the broad groups and its included soil associations are described in the following pages. The terms for texture used in the title for several of the associations apply to the texture of the surface layer. For example, in the title of association 1, the words "shaly and gravelly" refer to the texture of the surface layer.

Areas Dominated by Well Drained, Steep Soils on Uplands

The soils in these areas formed in residuum weathered from shale and sandstone or from a mixture of the two. Some areas have sandstone boulders and rock outcrops. The soils range from shallow to deep. They are mainly shaly and gravelly and, in places, cobbly.

Nearly all the acreage is in woodland. Many types of wildlife abound. The areas are suited to campsites, riding and hiking trails, and hunting preserves.

Soil associations 1, 2, 3, and 4 are in this group and make up about 11 percent of the county.

1. Montevallo-Herndon association

Shallow and deep, shaly and gravelly soils formed in residuum weathered from shale

This association is a plateau that has been dissected by many drainageways and intermittent streams. It is in the southeastern corner of the county. The divides between the drainageways form ridges that have narrow tops. Slopes range from about 20 to 45 percent. There are a few toeslopes and fans that are less dissected. The drainage pattern is branching, and the valleys are narrow and V-shaped. The flood plains are narrow.

This association makes up about 1 percent of the county. It is about 42 percent Montevallo soils and 22 percent Herndon soils. The remaining 36 percent is Chewacla soils, soils similar to Montevallo soils but which have shale at a depth of more than 20 inches, soils similar to Herndon soil but which contain less clay in the subsoil, and a small amount of Rock outcrop.

Montevallo soils are generally steep and are on hillsides and ridgetops. They typically have a surface layer of brown shaly loam. The subsoil is dark yellowish brown shaly silt loam and strong brown shaly silty clay loam.

Herndon soils are generally on the less sloping areas within the association. They typically have a surface layer of dark yellowish brown gravelly loam and a subsoil of yellowish brown clay loam and strong brown to mottled clay.

About 95 percent of this association is wooded. Very little acreage has been cleared for cultivation. Most of this association is better suited to trees than to cultivated crops because of slope and soil characteristics.

Most areas of this association can be developed for campsites, riding and hiking trails, and hunting areas. Slopes present moderate to severe limitations for many urban uses.

2. Firestone-Montevallo association

Moderately deep and shallow, gravelly and shaly soils formed in residuum weathered from shale

This association is typically dominated by steep slopes and dissected by many drainageways and intermittent streams. It is mainly in the south-central part of the county. The divides between the drainageways form ridges that have short, steep slopes and narrow tops. Slopes range from about 20 to 45 percent. The drainage pattern is branching, and the valleys are narrow and V-shaped. The flood plains are narrow.

This association makes up about 3 percent of the county. It is about 37 percent Firestone soils, 33 percent Montevallo soils, and 30 percent Chewacla, Conasauga, and Gaylesville soils.

Firestone soils are generally on ridgetops and toeslopes but are also on steep side slopes. They typically have a surface layer of brown gravelly loam and a subsoil of strong brown silty clay loam and yellowish red clay and silty clay.

Montevallo soils are on ridges and side slopes. They typically have a surface layer of brown shaly loam and a subsoil of yellowish brown shaly silt loam and shaly silty clay loam. Shale content is more than 35 percent, by volume, throughout.

About 95 percent of this association is wooded. A very small acreage has been cleared for cultivation. Most of this association is better suited to trees than to cultivated crops because of slope and soil characteristics.

Most areas of this association can be developed for campsites, riding and hiking trails, and hunting areas. Slopes present moderate to severe limitations for many urban uses.

3. Firestone-Montevallo-Leesburg association

Deep to shallow, shaly and cobbly soils formed in residuum weathered from shale and sandstone

This association is a series of steep and broken, knoblike mountains connected by saddles (fig. 2). It is in the Dirt Cellar Mountain Range in the northeastern part of the county. These mountains have steep side slopes and fairly rounded tops. Slopes range from about 20 to 45 percent. The drainage pattern is irregular. The flood plains are very narrow.

This association makes up about 3 percent of the county. It is 29 percent Firestone soils, 24 percent Montevallo soils, 20 percent Leesburg soils, and 27 percent mostly Allen, Chewacla, and Nella soils.

Firestone and Montevallo soils are generally on toe slopes and lower side slopes but are also on the upper side slopes and tops of ridges. Firestone soils typically have a surface layer of brown loam and a subsoil of strong brown silty clay loam and yellowish red silty clay and clay. Montevallo soils typically have a surface layer of brown shaly loam and a subsoil of yellowish brown shaly silt loam and shaly silty clay loam.

Leesburg soils are throughout the association but are commonly at the highest elevations. They typically have a surface layer of brown cobbly loam. The subsoil is brownish yellow cobbly loam and yellowish brown cobbly clay loam. The amount of cobbles in the subsoil generally increases with depth.

About 95 percent of this association is wooded. A very small acreage has been cleared for cultivation. This asso-

Figure 2.—**The Firestone-Montevallo-Leesburg association is a series of knoblike mountains connected by saddles.**

ciation is better suited to trees than to cultivated crops because of slope and soil characteristics.

Most areas of this association can be developed for campsites, riding and hiking trails, and hunting areas. Slopes present moderate to severe limitations for most urban uses.

4. Hartsells-Rock outcrop association

Moderately deep, loamy soils formed in residuum weathered from sandstone, common sandstone boulders, and rock outcrop

This association is typically dominated by steep slopes and rock bluffs. It is along the northwestern border of the county. There are many straight, narrow drainageways running from top to bottom on the bluffs. Slopes range from about 15 to 50 percent. A few sandstone bluffs run the length of the association.

This association makes up about 4 percent of the county. It is about 30 percent Hartsells soils, 30 percent Rock outcrop, and 40 percent Allen, Hector, Linker, and Townley soils.

Hartsells soils are in most of the area between the sandstone rocks. They typically have a surface layer of yellowish brown fine sandy loam and a subsoil of yellowish brown loam. Depth to bedrock is 20 to 40 inches.

The Rock outcrop part of the association consists of pieces of broken, angular, and weathered sandstone rock that average about 3 feet in diameter. The heaviest concentrations are immediately below the sandstone bluffs.

This association is in woodland. Very little acreage has been cleared for cultivation. This association has severe limitations for most uses.

Areas Dominated by Well Drained to Excessively Drained, Steep Soils on Uplands

The soils in these areas formed in residuum weathered from cherty limestone and from sandstone. The soils are deep and are cherty, cobbly, and loamy.

Nearly all the acreage is in woodland. There is a wide variety of wildlife. The areas are also suited to campsites, hunting, and hiking and scenic trails.

Soil associations 5 and 6 are in this group and make up about 22 percent of the county.

5. Minvale-Bodine association

Deep, cherty soils formed in residuum weathered from cherty limestone

This association has steep slopes that have been dissected by many drainageways and intermittent streams. The divides between the drainageways form ridges that have narrow tops. Slopes range from about 20 to 45 percent. The drainage pat-

tern is branching, the valleys are narrow and V-shaped, and the flood plains are narrow.

This association makes up about 14 percent of the county. It is about 55 percent Minvale soils, 26 percent Bodine soils, and 19 percent mostly Chewacla, Dewey, Ennis, and Lobelville soils.

Minvale soils are on ridges but are not in any regular pattern. They typically have a surface layer of brown cherty loam. The subsoil is yellowish brown cherty loam, strong brown cherty silt loam, and yellowish red cherty silty clay loam. The amount of chert fragments, the clay content, and the redness generally increase with depth. Bedrock is at a depth of more than 6 feet.

Bodine soils also are not in any regular pattern within the association. They typically have a surface layer of brown cherty loam. The subsoil is yellowish brown cherty silt loam and brown or mottled cherty silty clay loam. The chert content is more than 35 percent, by volume, throughout, and it generally increases with depth.

About 95 percent of this association is wooded. A very small acreage has been cleared for cultivation. Most of this association is better suited to trees than to cultivated crops because of slope and soil characteristics.

6. *Leesburg-Allen association*

Deep, cobbly and loamy soils formed in residuum weathered from sandstone

This association typically has steep slopes that have been highly dissected by many drainageways and intermittent streams. It is mainly in the southern and east-central parts of the county. The divides between the drainageways form ridges that have narrow tops. Slopes range from about 20 to 45 percent. The drainage pattern is branching, and the valleys are narrow and V-shaped. The flood plains are narrow.

This association makes up about 8 percent of the county. It is 43 percent Leesburg soils, 34 percent Allen soils, and 23 percent Firestone, Herndon, and Montevallo soils and Rock outcrop.

Leesburg soils are throughout the association but are commonly at the highest elevations. They typically have a surface layer of brown cobbly loam that contains from 15 to about 35 percent cobbles. The subsoil is brownish yellow gravelly loam and yellowish brown gravelly clay loam.

Allen soils are also throughout the association but are commonly at the lower elevations. They typically have a surface layer of brown fine sandy loam. The subsoil is yellowish red loam and red and reddish brown clay loam.

Rock outcrop in this association consists of pieces of broken, angular and weathered sandstone rock that average about 2 to 3 feet in diameter. The heaviest concentration is at the higher elevations.

This association is in woodland. Very little acreage has been cleared for cultivation. This association is better suited to trees than to cultivated crops because of slope. Slopes present severe limitations for most urban uses.

Areas Dominated by Well Drained to Poorly Drained, Level to Gently Sloping Soils on First Bottoms and Low Stream Terraces

The soils in these areas formed in alluvial material. They are deep and loamy. Some of the soils have a fragipan.

Nearly all the acreage of the better drained soils is cultivated or in pasture. The poorly drained parts are mainly wooded. The well drained soils are among the most productive in the county. Cotton, corn, and soybeans are the main crops.

Soil associations 7 and 8 are in this group and make up about 13 percent of the county.

7. *McQueen-Chewacla-Wickham association*

Deep, loamy soils formed in alluvial material

This association is a level to gently sloping, broad flood plain. It is mainly southwest of Centre along the old Coosa River Channel and along Terrapin Creek. The flood plain is generally one-quarter mile to about 1 mile in width. Slopes range from 0 to 6 percent. The drainage pattern is central.

This association makes up about 4 percent of the county. It is about 34 percent McQueen soils, 30 percent Chewacla soils, 13 percent Wickham soils, and 23 percent Bomar and Toccoa soils.

McQueen soils are commonly in an intermediate position between Wickham and Chewacla soils. McQueen soils typically have a surface layer of brown loam and a subsoil of yellowish red, red, and strong brown clay, silty clay, or silty clay loam.

Chewacla soils are generally farthest from the main stream and are along the smaller side drainageways and depressions. They typically have a surface layer of brown silty clay loam. The subsoil is brown and grayish brown silt loam. Chewacla soils have grayish mottles within 20 inches of the surface.

Wickham soils are generally near the main streams. They typically have a surface layer of brown fine sandy loam and a subsoil of yellowish red sandy clay loam.

Most of this association is cultivated. The main crops are cotton, corn, and soybeans. The association is well suited to these crops because of the level topography and productive soils.

Flooding presents moderate to severe limitations for most urban uses.

8. *Gaylesville-Chewacla-Bomar association*

Deep, loamy soils formed in alluvial material; some have a fragipan

This association is a level to nearly level, broad flood plain about one-eighth to three-fourths mile in width. It is mainly along the lower ranges of Terrapin Creek and in Ballplay Swamp in the southeastern part of the county. Slopes range from 0 to 2 percent. The drainage pattern is central.

This association makes up about 9 percent of the county. It is about 34 percent Gaylesville soils, 13 percent Chewacla soils, 11 percent Bomar soils, and 42 percent Cedarbluff, Cloudland, and Ellisville soils.

Gaylesville soils typically have a surface layer of light olive brown silty clay loam and a subsoil of mottled gray, yellow, and brown silty clay loam and silty clay.

Chewacla soils are generally along the smaller side drainageways and depressions. They typically have a surface layer of brown silty clay loam. The subsoil is brown and grayish brown silt loam. Chewacla soils have grayish mottles within 20 inches of the surface.

Bomar soils are generally on wide, flat, low terraces. They typically have a surface layer of brown silt loam and a subsoil of yellowish brown silty clay loam and silty clay mottled

with shades of gray in the upper part. The lower part of the subsoil is generally mottled and contains a fragipan.

About half of this association is cleared and used for cultivated crops and pasture. The main crops are corn, soybeans, and fescue. The most poorly drained soils in this association are better suited to trees than to cultivated crops. Oak, sweetgum, and poplar are the dominant species.

Poor drainage and flooding present moderate to severe limitations for most urban uses.

Areas Dominated by Excessively Drained to Moderately Well Drained, Gently Sloping to Strongly Sloping Soils on Uplands and Stream Terraces

The soils in these areas formed in alluvial material and also in residuum weathered from sandstone, shale, and cherty limestone. The soils range from shallow to deep. They are mainly loamy, but some are cherty and gravelly.

Soils in these areas provide most of the cultivated upland acreage. Approximately one-half of the acreage is cultivated, and the rest is about equally divided between pasture and woodland.

Soil associations 9, 10, 11, 12, 13, and 14 are in this group and make up about 54 percent of the county.

9. Holston-Leesburg-Cloudland association

Deep, well drained and moderately well drained, gravelly and loamy soils formed in alluvial material; some have a fragipan

This association is flat to rolling and dissected by many drainageways and intermittent streams. It is mainly in the central and eastern parts of the county, south of the Coosa River. Slopes range from 0 to 6 percent. The drainage pattern is branching and has wide, flat lateral drainageways and depressions.

This association makes up about 13 percent of the county. It is about 49 percent Holston soils, 27 percent Leesburg soils, 18 percent Cloudland soils, and 6 percent Cedarbluff soils.

Holston soils are throughout the association but are commonly at the highest elevations. They typically have a surface layer of yellowish brown loam that contains from 0 to 20 percent gravel. The subsoil is yellowish brown and mottled loam and clay loam.

Leesburg soils are generally on breaks between the Holston and Cloudland soils. Leesburg soils typically have a surface layer of brown gravelly fine sandy loam and a subsoil of yellowish brown and brownish yellow gravelly clay loam and loam. The gravel content is about 15 to 30 percent throughout.

Cloudland soils are also throughout the association but are commonly in the low, flat areas. They typically have a surface layer of dark grayish brown loam. The subsoil is light yellowish brown and mottled loam and silt loam. It contains a fragipan.

About 90 percent of this association is cultivated (fig. 3) or in pasture. Most farms are medium to large and are operated full time by the owners. Cotton, corn, and soybeans are the main crops.

The soils in this association can be developed for several types of farming operations if such operations are suited to the location. Well drained Holston and Leesburg soils have slight to moderate limitations for most urban uses. The Cloudland soils have moderate to severe limitations because of wetness.

Figure 3.—Cultivated field on Holston fine sandy loam, 0 to 2 percent slopes, in the Holston-Leesburg-Cloudland association.

10. Allen-Dewey association

Deep, well drained, loamy soils formed in residuum weathered from sandstone and cherty limestone

This association is a series of rolling toe slopes and foothills dissected by many drainageways. It is mainly within the Leesburg community and in the valley between Lookout Mountain and the chert and shale ridge that runs parallel to it. Another large area lies around the base of Indian Mountain in the southeastern part of the county. The divides between the drainageways form small rolling ridges that have rounded tops. Slopes of these ridges range from about 2 to 15 percent. There are a few smoother fans within the association. The drainage pattern is very irregular, and the valleys are bowl-shaped and not sharply defined.

This association makes up about 5 percent of the county. It is 68 percent Allen soils, 10 percent Dewey soils, and about 22 percent Holston, Leesburg, and Minvale soils.

Allen soils typically have a surface layer of brown gravelly fine sandy loam and a subsoil of red, reddish brown, and yellowish red loam and clay loam.

Dewey soils typically have a surface layer of reddish brown loam and a subsoil of red clay.

About 75 percent of this association is now in pine trees, but most of it was cleared at one time. The cultivated part is used for pasture, corn, and soybeans.

The soils in this association are generally well suited to most urban uses. Steep slopes are the main limitation for most urban uses.

11. Dewey-Decatur-Fullerton association

Deep, well drained, loamy and cherty soils formed in residuum weathered from cherty limestone

This association is an area of rolling ridges and valleys. It is mainly just north of Gaylesville, northeast of Jamestown, and in the Goshen Valley community. The valleys are bowl-shaped and not sharply defined. The divides between the drainageways form rolling ridges that have rounded tops and complex slopes. These areas are generally highly eroded.

Slopes range from 2 to 15 percent. Large fields that have a uniform slope are not common. The drainage pattern is irregular. Some of the drainageways have no outlet and end in a depression.

This association makes up about 3 percent of the county. It is about 52 percent Dewey soils, 20 percent Decatur soils, 13 percent Fullerton soils, and 15 percent Emory and Lobelville soils.

Dewey soils typically have a surface layer of reddish brown loam and a subsoil of red clay. As much as 15 percent chert fragments may be present in places.

Decatur soils typically have a surface layer of dark reddish brown loam and a subsoil of dark red silty clay loam to clay.

Fullerton soils typically have a surface layer of brown cherty silt loam and a subsoil of yellowish red cherty silty clay loam and silty clay. Chert content ranges from 15 to 35 percent throughout.

Most of this association was once cleared and cultivated. Pasture grasses (fig. 4), cotton, corn, and soybeans are the main crops grown in the areas still in cultivation. The wooded areas contain mixed pine and hardwood.

Most areas of this association have slight to moderate limitations for most urban uses.

12. Minvale-Bodine-Dewey association

Deep, well drained to excessively drained, cherty and loamy soils formed in residuum weathered from cherty limestone

This association is a series of rolling ridges and complex slopes dissected by many drainageways. It is mainly in the northeastern part of the county. The divides between the drainageways form sloping ridges that have rolling tops. Slopes range from 2 to 15 percent. The drainage pattern is very irregular, and the valleys are bowl-shaped and not sharply defined. The flood plains are narrow.

This association makes up about 6 percent of the county. It is about 58 percent Minvale soils, 18 percent Bodine soils, 9 percent Dewey soils, and 15 percent Decatur, Emory, and Lobelville soils.

Minvale soils are not in any regular pattern. They typically have a surface layer of dark yellowish brown cherty loam. The subsoil is yellowish brown, yellowish red, and strong brown cherty loam to cherty silty clay loam. The amount of chert fragments, the clay content, and the redness generally increase with depth. Bedrock is at a depth of more than 6 feet.

Bodine soils also are not in any regular pattern within this association. They typically have a surface layer of brown cherty loam. The subsoil is yellowish brown cherty silt loam and brown and mottled cherty silty clay loam.

Dewey soils typically have a surface layer of reddish brown loam and a subsoil of red clay.

About 70 percent of this association was once cleared and cultivated. Now about 70 percent is wooded. The trees are mainly second growth pines and hardwood. The other 30 percent of the association is in pasture or cultivated crops.

Most areas of this association have slight to moderate limitations for most urban uses.

Figure 4.—**Pasture of fescue on a Decatur loam in the Dewey-Decatur-Fullerton association.**

13. Conasauga-Firestone association

Moderately deep, moderately well drained and well drained, gravelly and loamy soils formed in residuum weathered from shale

This association is made up of relatively flat areas of very low ridges. It is mainly south of Centre in the south-central part of the county, on the north side of and adjacent to the Coosa River, and around and east of Cedar Bluff. Large flat areas that have an elevation difference of only a few inches are common. The ridges are generally very wide and broad and have short side slopes. Slopes range from 1 to 15 percent. The drainage pattern is irregular, and the drainageways are bowl-shaped and not sharply defined.

This association makes up about 19 percent of the county. It is about 61 percent Conasauga soils, 36 percent Firestone soils, and 3 percent Bomar and Gaylesville soils.

Conasauga soils are generally at the lowest elevations. They typically have a surface layer of brown silt loam and a subsoil of brownish yellow and yellowish brown silty clay loam and silty clay that is generally mottled with shades of gray.

Firestone soils are generally at the higher elevations. They typically have a surface layer of brown gravelly silt loam and a subsoil of strong brown silty clay loam and yellowish red clay and silty clay.

About 75 percent of this association is in mixed hardwoods and pines. Some acreage is cleared and used for pasture and row crops. Small grain, corn, and soybeans are the main crops.

Many of the fields once cultivated within this association have now been planted to pines (fig. 5).

The soils in this association can be developed for campsites, riding and hiking trails, and hunting areas. Slow permeability and a moderate to high shrink-swell potential present moderate to severe limitations for most urban uses.

14. Hartsells-Linker-Hector association

Moderately deep and shallow, well drained loamy soils formed in residuum weathered from sandstone

This association is a sloping landscape dissected by many drainageways and intermittent streams. It is along the northwestern border of the county. Slopes range from 2 to 10 percent. The drainage pattern is irregular, and the valleys are bowl-shaped and not sharply defined.

This association makes up about 8 percent of the county. It is about 75 percent Hartsells soils, 13 percent Linker soils, 7 percent Hector soils, and 5 percent mostly Townley soils.

Hartsells soils are not in any regular pattern. They typically have a surface layer of yellowish brown fine sandy loam. The subsoil is yellowish brown loam.

Linker soils also are throughout the association but are commonly on high knobs. They typically have a surface layer of dark yellowish brown fine sandy loam. The subsoil is yellowish red loam.

Hector soils are throughout the association but are commonly near drainageways where the sandstone bedrock is near the surface. They typically have a surface layer of very dark grayish brown fine sandy loam. The subsoil is dark yellowish brown fine sandy loam. In places there are few to many sandstone fragments throughout.

About 90 percent of the area of this association that is south of Little River is cultivated or in pasture. North of Little River, about 50 percent had been cleared and cultivated in the past, but now about 85 percent is wooded. The trees are mainly second or third growth pines and hardwoods. Many areas have been chopped and reseeded to pines (fig. 6).

Figure 5.—**Plantation pines on a Conasauga silt loam in the Conasauga-Firestone association.**

Most areas of this association have limitations for most urban uses because of depth to rock. They are suitable for recreation and woodland.

Descriptions of the Soils

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

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. Color terms are for moist soil unless otherwise stated. The profile described in the series is representative for mapping units in that series. If the profile of a given mapping unit is different from the one described for the series, these differences are stated in de-

Figure 6.—**Chopped area which has been reseeded to pines on a Linker fine sandy loam in the Hartsells-Linker-Hector association.**

scribing the mapping unit, or they are differences that are apparent in the name of the mapping unit.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Udorthents (made land), for example, do not belong to a soil series; nevertheless, they are listed in alphabetical order along with the soil series.

Preceding the name of each mapping unit is the symbol that identifies the mapping unit on the detailed soil map. Listed at the end of the description of each mapping unit are the capability unit and woodland suitability group in which the mapping unit has been placed. The page for the description of each capability unit can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*9*).[1]

Allen Series

The Allen series consists of deep, well drained soils on uplands and stream terraces. These soils formed in thick beds of alluvial and colluvial material washed or rolled from sandstone and shale uplands. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is brown gravelly fine sandy loam about 4 inches thick. The upper 6 inches of the subsoil is reddish brown clay loam. The next layers are yellowish red loam to a depth of 20 inches and red clay loam to a depth of 32 inches. Below this, to a depth of 72 inches or more, the subsoil is yellowish red loam that has red and reddish yellow mottles.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage where slopes are 15 percent or less was once cleared but is now idle or has been planted to pine trees.

Representative profile of Allen gravelly fine sandy loam, 6 to 10 percent slopes, in an idle field, about one mile northwest of Leesburg in the NW¼SE¼ sec. 3, T. 10 S., R. 8 E.:

Ap—0 to 4 inches; brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; many fine roots; 15 percent small pebbles; medium acid; clear smooth boundary.

B1—4 to 10 inches; reddish brown (5YR 4/4) clay loam that has few dark reddish brown stains; weak medium subangular blocky structure; friable; few fine roots; 5 percent small pebbles; strongly acid; gradual wavy boundary.

B21t—10 to 20 inches; yellowish red (5YR 4/6) loam; moderate medium subangular blocky structure; friable; few fine roots; clay bridges on sand grains; very strongly acid; gradual wavy boundary.

B22t—20 to 32 inches; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; friable; few medium

[1] Italic numbers in parentheses refer to Literature Cited, p. 76.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent	Soil	Acres	Percent
Allen fine sandy loam, 2 to 6 percent slopes	5,867	1.7	Hartsells fine sandy loam, 2 to 6 percent slopes	7,108	2.0
Allen gravelly fine sandy loam, 6 to 10 percent slopes	6,611	1.9	Hartsells fine sandy loam, 6 to 10 percent slopes	11,005	3.2
Allen sandy clay loam, 2 to 10 percent slopes, eroded	376	.1	Hartsells-Rock outcrop association, steep	16,489	4.7
Bodine cherty loam, 5 to 15 percent slopes	3,766	1.2	Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes	4,560	1.3
Bomar silt loam	3,444	1.0	Herndon gravelly loam, 2 to 10 percent slopes	1,317	.4
Cedarbluff fine sandy loam	5,048	1.4	Holston fine sandy loam, 0 to 2 percent slopes	5,755	1.6
Chewacla soils	8,430	2.4	Holston loam, 2 to 6 percent slopes	16,817	4.8
Cloudland loam	8,387	2.4	Leesburg gravelly fine sandy loam, 2 to 6 percent slopes	9,247	2.6
Conasauga silt loam, 1 to 5 percent slopes	33,560	9.6	Leesburg gravelly fine sandy loam, 6 to 15 percent slopes	3,364	1.0
Conasauga silt loam, 5 to 15 percent slopes	4,972	1.4	Leesburg-Allen association, steep	26,226	7.5
Conasauga-Firestone-Rock outcrop complex, 2 to 6 percent slopes	4,805	1.4	Linker fine sandy loam, 2 to 6 percent slopes	1,371	.4
Conasauga-Leesburg complex, 15 to 45 percent slopes	1,721	.5	Linker fine sandy loam, 6 to 10 percent slopes	1,954	.6
Decatur loam, 2 to 6 percent slopes	992	.3	McQueen loam, 0 to 2 percent slopes	2,419	.7
Decatur loam, 6 to 10 percent slopes	520	.2	McQueen loam, 2 to 6 percent slopes	2,821	.8
Decatur silty clay loam, 6 to 15 percent slopes	740	.2	Minvale cherty loam, 2 to 6 percent slopes	4,766	1.3
Dewey loam, 2 to 6 percent slopes	4,813	1.4	Minvale cherty loam, 6 to 10 percent slopes	8,131	2.3
Dewey loam, 6 to 10 percent slopes	2,144	.6	Minvale-Bodine association, steep	50,191	14.3
Dewey silty clay loam, 6 to 15 percent slopes	2,863	.8	Montevallo-Herndon association, steep	3,538	1.0
Ellisville silty clay loam	2,029	.6	Nella cobbly fine sandy loam, 2 to 10 percent slopes	655	.2
Emory loam	671	.2	Nella gravelly fine sandy loam, 10 to 25 percent slopes	724	.2
Ennis-Lobelville complex	2,129	.6	Stemley cherty loam, 0 to 3 percent slopes	3,153	.9
Firestone gravelly silt loam, 2 to 6 percent slopes	6,555	1.8	Toccoa soils	1,706	.5
Firestone gravelly silt loam, 6 to 15 percent slopes	14,861	4.2	Townley sandy loam, 2 to 10 percent slopes	959	.3
Firestone-Conasauga-Rock outcrop complex, 6 to 25 percent slopes	2,670	.7	Udorthents, 0 to 40 percent slopes (mines, dumps, made land)	437	.1
Firestone-Montevallo association, steep	12,946	3.7	Wickham fine sandy loam, 0 to 2 percent slopes	832	.2
Firestone-Montevallo-Leesburg association, steep	10,384	2.9	Wickham fine sandy loam, 2 to 6 percent slopes	1,191	.3
Fullerton cherty silt loam, 6 to 15 percent slopes	1,508	.4			
Gaylesville silty clay loam	10,663	3.0	Total	350,800	100.0
Guthrie silt loam	589	.2			

roots; clay bridges on sand grains; very strongly acid; gradual wavy boundary.

B23t—32 to 72 inches; yellowish red (5YR 5/6) loam that has common medium distinct red and reddish yellow mottles; moderate medium subangular blocky structure; friable; clay bridges on sand grains; very strongly acid.

Reaction is strongly acid to very strongly acid throughout the profile, but it ranges to slightly acid in the Ap horizon where the soil has been limed.

The Ap horizon is brown, dark yellowish brown, yellowish brown, strong brown, reddish brown, or yellowish red. The A1 horizon, where present, is very dark grayish brown gravelly fine sandy loam, and, in eroded areas, sandy clay loam.

The B1 horizon is strong brown, brown, reddish brown, or yellowish red clay loam or loam. The B2t horizon is yellowish red, red, or dark red sandy clay loam, loam, or clay loam. It is generally mottled in the lower part with shades of red, yellow, and brown. Some pedons contain a B3 horizon which is sandy clay loam, clay loam, or silty clay loam. It is generally mottled with shades of red, yellow, and brown, or it has a yellowish red or red matrix in places.

Allen soils are geographically associated with Chewacla, Cloudland, Dewey, Holston, Leesburg, and Nella soils. They are better drained than Chewacla soils and do not have the fragipan characteristic of Cloudland soils. They have a less clayey B horizon than Dewey soils and a redder B horizon than Holston soils. They contain fewer pebbles than Leesburg and Nella soils.

AaB—Allen fine sandy loam, 2 to 6 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is fine sandy loam.

Included with this soil in mapping are small areas of Chewacla, Cloudland, Dewey, Holston, Leesburg, and Nella soils. Also included are small areas of soils in which pebbles make up more than 15 percent of the surface layer, some areas of soils in which pebbles make up 15 to 20 percent of the subsoil, and some areas of soils that have a loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. When this soil is tilled, the hazard of erosion is slight to moderate. Capability unit IIe–2; woodland suitability group 3o7.

AbC—Allen gravelly fine sandy loam, 6 to 10 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Chewacla, Cloudland, Dewey, Holston, Leesburg, and Nella soils. Also included are areas of soils in which pebbles make up less than 15 percent of the surface layer or soils that have a loam surface layer.

This soil is suited to pasture and woodland. It is only moderately well suited to row crops because of slopes and pebbles in the surface layer. Except in areas where the percentage of pebbles is extremely high, the soil is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. Capability unit IIIe–2; woodland suitability group 3o7.

AcC2—Allen sandy clay loam, 2 to 10 percent slopes, eroded. This soil has a profile similar to the one described as representative of the series, but the surface layer is sandy clay loam.

Included with this soil in mapping are small areas of Chewacla, Cloudland, Dewey, Holston, Leesburg, and Nella soils. Also included are areas of soils in which pebbles make up more than 15 percent of the surface layer or soils that have a silty clay loam or loam surface layer.

This soil is suited to cultivated crops, but the moisture range within which it can be tilled is narrow. The soil clods and crusts if tilled when too wet. Capability unit IIIe–2; woodland suitability group 3o7.

Bodine Series

The Bodine series consists of deep, well drained to excessively drained soils on uplands. These soils formed in thick beds of residuum weathered from cherty limestone. They contain many angular chert fragments (fig. 7). Slopes range from 5 to 45 percent.

In a representative profile the surface layer is brown cherty loam 7 inches thick. The upper 7 inches of the subsoil is yellowish brown cherty silt loam. Next, it is mottled yellowish brown, yellowish red, and reddish brown cherty silty clay loam to a depth of 36 inches. Below this, to a depth of 70 inches or more, the subsoil is brown cherty silty clay loam.

Permeability is moderately rapid. The organic-matter content and natural fertility are low. The available water capacity is low to moderate. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage is now in second and third growth timber.

Representative profile of Bodine cherty loam, 5 to 15 percent slopes, about 4 miles north of Gaylesville in the SW¼SW¼ sec. 21, T. 8 S., R. 10 E.:

Ap—0 to 7 inches; brown (10YR 4/3) cherty loam; weak fine granular structure; very friable; many fine roots; 35 percent angular chert fragments; very strongly acid; clear smooth boundary.

B1—7 to 14 inches; yellowish brown (10YR 5/6) cherty silt loam; weak fine angular structure; very friable; few fine roots; 40 percent angular chert fragments; strongly acid; gradual wavy boundary.

B21t—14 to 36 inches; mottled yellowish brown (10YR 5/4), yellowish red (5YR 4/6), and reddish brown (5YR 4/4) cherty silty clay loam; weak medium subangular blocky structure; friable; few medium roots; very thin patchy clay films; 50 percent angular chert fragments; very strongly acid; gradual wavy boundary.

B22t—36 to 70 inches; brown (7.5YR 4/4) cherty silty clay loam; weak medium subangular blocky structure; friable; very thin patchy clay films; 85 percent angular chert fragments; very strongly acid.

The solum is 5 to more than 20 feet thick. Reaction ranges from medium acid to very strongly acid in the A horizon and from strongly acid to very strongly acid in the Bt horizon. Chert content ranges from 35 to 90 percent throughout.

In most uncultivated areas, the A1 horizon is very dark grayish brown, dark grayish brown, or yellowish brown. The Ap and A2 horizons are dark grayish brown, light yellowish brown, brown, yellowish brown, brownish yellow, pale brown, or dark yellowish brown. The thickness of the A horizon is 5 to 15 inches.

The B1 horizon is brown, yellowish brown, strong brown, yellow, or light olive brown cherty loam or cherty silt loam. The Bt horizon is brownish yellow, light yellowish brown, reddish brown, yellowish brown, strong brown, or light olive brown cherty loam or cherty silty clay loam. In places it has distinct to prominent mottles in shades of red, yellow, and brown, or it is mottled in these shades without a dominant color.

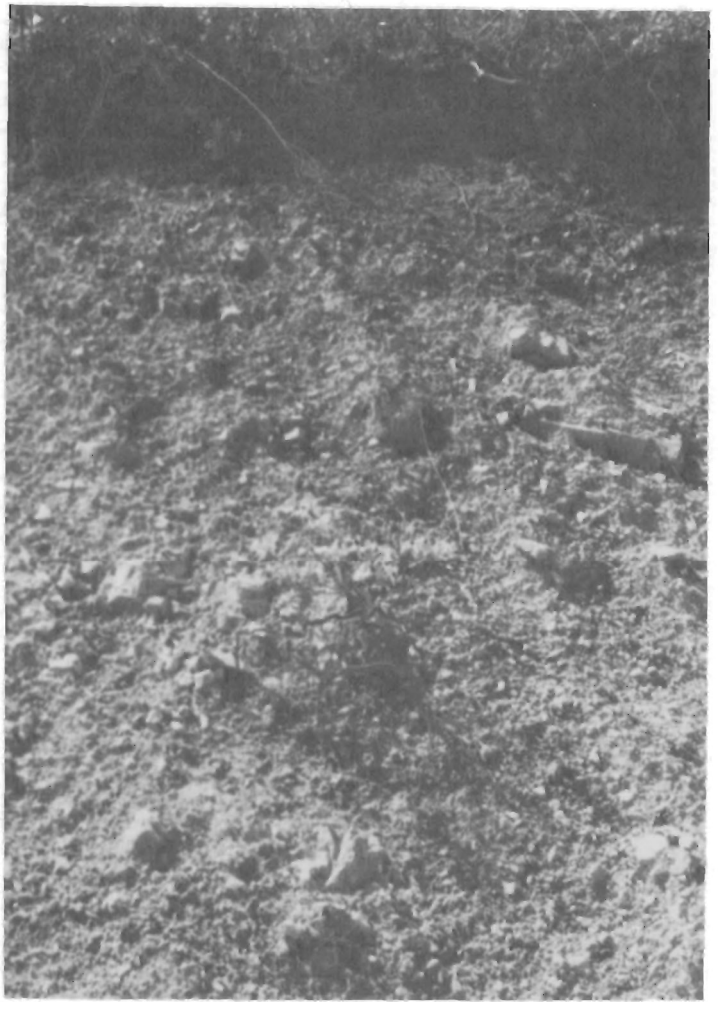

Figure 7.—**Angular cherty fragments in soil profile of Bodine cherty loam, 5 to 15 percent slopes.**

Bodine soils are geographically associated with Ennis, Fullerton, Lobelville, Minvale, and Stemley soils. They contain an appreciably higher content of chert fragments in the solum than Ennis and Minvale soils. They are less clayey in the lower part of the Bt horizon than Fullerton soils, and they are better drained than Lobelville soils. They do not have the fragipan characteristic of Stemley soils.

BaC—Bodine cherty loam, 5 to 15 percent slopes. This is the only Bodine soil mapped in the county.

Included with this soil in mapping are small areas of Ennis, Fullerton, Lobelville, Minvale, and Stemley soils. Also included are small areas of soils that have a fragipan in the subsoil, a cherty silt loam surface layer, or a clay loam or silt loam subsoil.

This soil is poorly suited to row crops because of the content of chert fragments and the slopes. It is suited to pasture and woodland, but the content of chert fragments tends to make it droughty. Capability unit IVs–2; woodland suitability group 3f8.

Bomar Series

The Bomar series consists of deep, moderately well drained soils on stream terraces. These soils formed in thick beds of

alluvium washed mainly from sandstone and shale uplands. They have a fragipan in the lower part of the subsoil. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The upper 11 inches of the subsoil is yellowish brown silty clay loam. Below this, to a depth of 33 inches, it is yellowish brown silty clay that has light yellowish brown and yellowish red mottles. The fragipan extends to a depth of 73 inches. It is mottled strong brown, yellowish brown, pale brown, and light gray silty clay. The subsoil below the fragipan is mottled brownish yellow, red, and light gray clay loam to a depth of 100 inches or more.

Permeability is moderately slow in the upper part of the profile and slow in the fragipan. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines, but most of the acreage has been cleared and is used for row crops. Soybeans and corn are the main crops.

Representative profile of Bomar silt loam, in a cotton-field about 2 miles south of Centre in the NW¼NW¼ sec. 3, T. 11 S., R. 9 E.:

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

B21t—7 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; very thin patchy clay films; very strongly acid; clear wavy boundary.

B22t—18 to 33 inches; yellowish brown (10YR 5/6) silty clay that has common medium distinct light yellowish brown and yellowish red mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; very thin patchy clay films; very strongly acid; clear wavy boundary.

Bx—33 to 73 inches; mottled strong brown (7.5 YR 5/6), yellowish brown (10YR 5/6), and pale brown (10YR 6/3) silty clay; common nearly vertical streaks or crevices of light gray (10YR 7/2) as much as 1 inch wide; weak coarse blocky structure parting to moderate medium platy; firm and brittle in about 80 percent of the horizonal cross section; friable in the light gray areas and in some pale brown areas; few fine roots in the light gray streaks; common fine voids lined with clay; nearly continuous thin clay films on faces of peds; common black concretions and ped coatings; very strongly acid; clear irregular boundary.

B3—73 to 100 inches; mottled brownish yellow (10YR 6/6), red (2.5YR 4/6), and light gray (10YR 7/1, 7/2) clay loam; weak medium subangular blocky structure; friable; very strongly acid.

The solum is 60 to more than 100 inches thick. Reaction is strongly acid or very strongly acid in the A and B2t horizons except where the soil has been limed. It is very strongly acid or extremely acid in the Bx and B3 horizons.

The A horizon is brown, dark grayish brown, strong brown, or light olive brown.

The B2t horizon is brownish yellow, yellowish brown, light yellowish brown, light olive brown, strong brown, yellow, or yellowish red silty clay loam or silty clay. It is generally mottled in the lower part with shades of yellow, brown, gray, and red. Depth to the fragipan ranges from 19 to 40 inches. The Bx and B3 horizons are yellowish brown or strong brown silty clay loam, clay loam, or silty clay. They are distinctly mottled in shades of yellow, brown, red, or gray, or they are variegated in these shades and have no clear matrix color.

Bomar soils are geographically associated with Chewacla, Firestone, Gaylesville, and McQueen soils. They have a fragipan, and none of the associated soils does.

Bb—Bomar silt loam. This is the only Bomar soil mapped in the county. This soil is subject to infrequent flooding for brief periods. Slopes range from 0 to 3 percent.

Included with this soil in mapping are small areas of Chewacla, Firestone, Gaylesville, and McQueen soils. Also included are areas of soils that do not have a fragipan in the subsoil and that have a loam or silty clay loam surface layer.

This soil is suited to most row crops grown in the county. It is fairly easy to work, but the moisture range within which it can be tilled is narrow. Capability unit IIw–9; woodland suitability group 3o7.

Cedarbluff Series

The Cedarbluff series consists of deep, somewhat poorly drained soils on low stream terraces. These soils formed in thick beds of alluvium washed mainly from sandstone and shale uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown fine sandy loam that has strong brown mottles and is about 5 inches thick. The upper 4 inches of the subsoil is yellowish brown silt loam that has strong brown mottles. The next layer, to a depth of 18 inches, is light yellowish brown loam that has yellowish brown, strong brown, and light brownish gray mottles. Below this, to a depth of 65 inches or more, the subsoil is mottled light gray, yellowish brown, brownish yellow, and olive yellow clay loam.

Permeability is moderate in the upper part of the profile and slow in the lower part. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods. Most of the acreage is still wooded but some of it has been cleared and is used for adapted crops and pasture grasses.

Representative profile of Cedarbluff fine sandy loam, about 1 mile north of Alexis Baptist Church in the NE¼SE¼ sec. 1, T. 10 S., E. 10 E.:

Ap—0 to 5 inches; brown (10YR 5/3) fine sandy loam that has few fine faint strong brown mottles; weak fine granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

B1—5 to 9 inches; yellowish brown (10YR 5/4) silt loam that has few fine faint strong brown mottles; weak fine subangular blocky structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

B21t—9 to 18 inches; light yellowish brown (10YR 6/4) loam that has common medium distinct yellowish brown, strong brown, and light brownish gray mottles; weak medium subangular blocky structure; friable; strongly acid; clear irregular boundary.

B22t—18 to 33 inches; mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), and brownish yellow (10YR 6/6) clay loam; the brown, firm and compact areas have weak coarse blocky structure; they are moderately brittle, 1 to 4 inches wide, and make up about 30 percent of the horizonal cross section; friable gray seams are common in a reticulate pattern; few manganese concretions; 3 to 4 percent red plinthite nodules; strongly acid; gradual wavy boundary.

B23t—33 to 65 inches; mottled light gray (10YR 6/1), yellowish brown (10YR 5/6), and olive yellow (2.5Y 6/6) clay loam; the brown and yellow parts have moderate blocky structure 1 to 4 inches wide; they are brittle and firm and make up about 60 percent of the horizonal cross section; friable gray seams are common in a reticulate pattern; few manganese concretions; 7 to 8 percent red plinthite nodules; strongly acid.

The solum is 60 to more than 100 inches thick. Reaction is medium acid or strongly acid in the A horizon and strongly acid in the B horizon.

The A horizon is brown, dark grayish brown, dark yellowish brown, yellowish brown, or grayish brown.

The B1 horizon is brown, yellowish brown, pale brown, or light yellowish brown silt loam or fine sandy loam. It is generally mottled in shades of gray, yellow, or brown. The B21t horizon is light yellowish brown, strong brown, light olive brown, or yellow loam or clay loam mottled with shades of yellow, brown, and

gray. The B22t and B23t horizons are clay loam or loam mottled with shades of gray, yellow, and brown.

Cedarbluff soils are geographically associated with Cloudland, Gaylesville, Guthrie, Holston, and Leesburg soils. They do not have the fragipan characteristic of Cloudland and Guthrie soils. They are better drained than Gaylesville soils. They are less well drained than Holston and Leesburg soils.

Ca—Cedarbluff fine sandy loam. This is the only Cedarbluff soil mapped in the county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Cloudland, Gaylesville, Guthrie, Holston, and Leesburg soils. Also included are areas of soils that are more poorly drained and that contain a fragipan in the subsoil and areas of soils that have a loam or silt loam surface layer.

This soil is suited to some cultivated crops. Drainage outlets are seldom available, however, and water tends to pond on the surface. The soil is late to warm up in the spring, and many crops will drown. It is suited to adapted pasture grasses and woodland. Capability unit IIIw–9; woodland suitability group 2w8.

Chewacla Series

The Chewacla series consists of deep, somewhat poorly drained soils on first bottoms and at the heads of and along small drainageways. These soils formed in mixed alluvium washed from sandstone, cherty limestone, and shale uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown silty clay loam 5 inches thick. The upper 24 inches of the subsoil is brown silt loam that has dark brown, yellowish brown, and grayish brown mottles. Below this, to a depth of 35 inches, the subsoil is grayish brown silt loam that has yellowish brown and light yellowish brown mottles. The underlying material is mottled grayish brown and yellowish brown stratified loam and silty clay loam to a depth of 62 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are medium. The available water capacity is high. The native vegetation was dominantly mixed hardwoods and pines, but some of the acreage has been cleared and is used for adapted pasture, hay, and row crops.

Representative profile of Chewacla silty clay loam, in an area of Chewacla soils, about 1.5 miles southwest of Watson Chapel Church in the SW¼NW¼ sec. 34, T. 8 S., R. 10 E.:

A—0 to 5 inches; brown (10YR 4/3) silty clay loam; weak fine granular and weak medium subangular blocky structure; friable; many fine and medium roots; strongly acid; gradual wavy boundary.

B1—5 to 18 inches; brown (10YR 4/3) silt loam that has few fine faint dark brown mottles; weak medium subangular blocky structure; friable; few fine and medium roots; medium acid; gradual wavy boundary.

B2—18 to 29 inches; brown (10YR 4/3) silt loam that has few medium faint yellowish brown and grayish brown mottles; weak medium subangular blocky structure; very friable; few fine roots; few small black concretions and stains; medium acid; gradual wavy boundary.

B3g—29 to 35 inches; grayish brown (10YR 5/2) silt loam that has common medium distinct yellowish brown and light yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; common small black concretions and stains; medium acid; gradual wavy boundary.

C—35 to 62 inches; mottled grayish brown (10YR 5/2) and yellowish brown (10YR 5/4, 5/6) stratified loam and silty clay loam material; massive; very friable; few fine roots; common small black concretions and stains; medium acid.

Reaction ranges from strongly acid to medium acid throughout the profile. Mica flakes, manganese concretions, and small chert fragments are not in the profile in some places but range to common in other places.

The A horizon is brown, yellowish brown, dark yellowish brown, or dark brown loam, silt loam, or silty clay loam.

The B1 and B2 horizons are brown, yellowish brown, or dark yellowish brown loam or silt loam. They are mottled with shades of brown and gray. The B3g horizon is grayish brown or gray loam, silt loam, or silty clay loam and is mottled with shades of yellow and brown.

The C horizon is extremely variable in texture. It is commonly stratified sandy and loamy material.

Chewacla soils are geographically associated with Allen, Bomar, Cloudland, Dewey, Ellisville, Holston, Minvale, Toccoa, and Wickham soils. They are more poorly drained than all of the associated soils. They do not have the fragipan characteristic of Bomar and Cloudland soils.

Cb—Chewacla soils. This is the only unit of Chewacla soils mapped in the county. These soils have a surface layer of loam, silt loam, or silty clay loam. The pattern and extent of Chewacla soils are not uniform. Some areas are mostly Chewacla soils, and some areas contain other soils. About 66 percent of this mapping unit is either Chewacla soils or soils that are very similar. The soils that are similar to Chewacla soils have more clay in the subsoil or have an older, heavier-textured, buried soil at a depth of about 20 inches. Slopes range from 0 to 2 percent.

Included with these soils in mapping are small areas of Allen, Bomar, Cloudland, Dewey, Ellisville, Holston, Minvale, Toccoa, and Wickham soils. Also included are areas of soils which are flooded on an average of less than once each year.

These soils are suited to some row crops. Flooding generally occurs during winter, but crops are occasionally damaged. The soils are suited to adapted pasture grasses, hardwoods, and pines. Capability unit IIIw–2; woodland suitability group 1w8.

Cloudland Series

The Cloudland series consists of deep, moderately well drained soils on stream terraces. These soils formed in thick beds of alluvium washed mainly from sandstone and shale uplands. They have a fragipan in the lower part of the subsoil. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is dark grayish brown loam about 10 inches thick. The upper 12 inches of the subsoil is light yellowish brown silt loam. The fragipan is 14 inches thick. The upper 6 inches is light yellowish brown loam mottled with light gray and yellowish brown. The lower 8 inches is mottled light yellowish brown, yellowish brown, light gray, and reddish yellow loam. The subsoil below the fragipan is mottled strong brown, yellowish brown, pale brown, and light brownish gray loam to a depth of 62 inches or more.

Permeability is moderate in the upper part of the profile and slow in the fragipan. The organic-matter content and natural fertility are low. The available water capacity is moderate. The native vegetation was dominantly mixed hardwoods and pines, but most of the acreage has been cleared and is used for row crops. Some of it is now idle.

Representative profile of Cloudland loam, in a soybean field about 2½ miles north of Bomar in the SW¼SE¼ sec. 23, T. 10 S., R. 10 E.:

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

B2—10 to 22 inches; light yellowish brown (2.5Y 6/4) silt loam;

weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

Bx1&A2—22 to 28 inches; light yellowish brown (2.5Y 6/4) loam that has common medium distinct yellowish brown and light gray mottles; weak coarse prisms parting to weak medium platy and moderate medium subangular blocky structure; prisms are firm and brittle and make up about 60 percent of horizonal cross section; few small pores; few fine roots in light gray polygonal veins surrounding prisms filled with sandy loam; very strongly acid; clear wavy boundary.

Bx2—28 to 36 inches; mottled light yellowish brown (2.5Y 6/4), yellowish brown (10YR 5/6), and reddish yellow (7.5YR 7/6) loam, weak coarse prisms parting to weak thick platy and weak medium subangular blocky structure; prisms are firm and brittle and make up about 75 percent of the horizonal cross section; few small pores within prisms; few fine roots in light gray polygonal veins surrounding prisms; 5 percent small chert fragments; very strongly acid; gradual wavy boundary.

B3—36 to 62 inches; mottled strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) loam; massive, firm, 5 percent small chert fragments; very strongly acid.

The solum is 60 to more than 100 inches thick. Reaction ranges from medium acid to strongly acid in the A horizon and from strongly acid to very strongly acid in the B horizon. Content of coarse fragments in the upper part of the solum is about 8 percent, but it ranges in places to as much as 25 percent below the fragipan.

The A horizon is dark grayish brown, grayish brown, brown, pale brown, or dark yellowish brown.

The B2 horizon is light yellowish brown, light olive brown, olive yellow, brownish yellow, or yellowish brown loam, fine sandy loam, or silt loam. Depth to the fragipan ranges from 18 to 28 inches. The Bx horizon is loam, clay loam, or silty clay loam. It is distinctly mottled with shades of yellow, brown, and gray, or it has a light yellowish brown or olive yellow matrix mottled with shades of yellow, brown, and gray. The B3 horizon has colors and texture similar to the Bx horizon.

Cloudland soils are geographically associated with Allen, Cedarbluff, Chewacla, Gaylesville, Guthrie, Holston, Leesburg, McQueen, and Nella soils. They are more poorly drained than Allen, Holston, Leesburg, McQueen, and Nella soils. They are less clayey in the upper part of the B horizon than Gaylesville soils. They are better drained than Guthrie soils and have a fragipan, which the Cedarbluff and Chewacla soils do not have.

Cc—Cloudland loam. This is the only Cloudland soil mapped in the county. Slopes range from 0 to 3 percent.

Included with this soil in mapping are small areas of Allen, Cedarbluff, Chewacla, Gaylesville, Guthrie, Holston, Leesburg, McQueen, and Nella soils. Also included are areas of soils that have a fine sandy loam or silt loam surface layer.

Although this soil is slow to warm up in the spring, it is suited to most crops grown in the county. It is easy to work and can be tilled within a fairly wide range of moisture content, but the fragipan restricts the growth of roots and the movement of water. During wet seasons the subsoil is waterlogged for short periods. Capability unit IIw–9; woodland suitability group 3o7.

Conasauga Series

The Conasauga series consists of moderately deep, moderately well drained soils on uplands. These soils formed in materials weathered from shale. Slopes range from 1 to 45 percent.

In a representative profile the surface layer is brown silt loam 4 inches thick. The upper 6 inches of the subsoil is brownish yellow silty clay loam. Next, to a depth of 19 inches, the subsoil is yellowish brown silty clay loam that has strong brown and very pale brown mottles. Below this, to a depth of 30 inches, it is yellowish brown silty clay that has strong brown and light gray mottles. The underlying material is horizontal beds of partly weathered, fractured shale.

Permeability is slow. The organic-matter content and natural fertility are low. The available water capacity is low to moderate. The native vegetation was dominantly mixed hardwoods and pines, but about one-third of the acreage, on slopes of less than 15 percent, has been cleared and is used mainly for pasture and small grain. A very small part of the acreage is used for row crops.

Representative profile of Conasauga silt loam, 1 to 5 percent slopes, about 2 miles east of Cedarbluff in the SW¼NW¼ sec. 25, T. 9 S., R. 12 E.:

A1—0 to 1 inch; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; extremely acid; clear wavy boundary.

A2—1 to 4 inches; brown (10YR 5/3) silt loam; weak fine granular structure; very friable; few medium roots; extremely acid; clear wavy boundary.

B1—4 to 10 inches; brownish yellow (10YR 6/6) silty clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; very thin patchy clay films; very strongly acid; gradual wavy boundary.

B21t—10 to 19 inches; yellowish brown (10YR 5/6) silty clay loam that has common medium distinct strong brown and very pale brown mottles; strong medium angular blocky structure; very thin patchy clay films; firm; few medium roots; very strongly acid; gradual wavy boundary.

B22t—19 to 30 inches; yellowish brown (10YR 5/6) silty clay that has common medium distinct strong brown and light gray mottles; strong medium angular blocky structure; firm; 20 percent small shale fragments; very thin patchy clay films; very strongly acid; clear irregular boundary.

C—30 to 45 inches, partly weathered fractured shale in horizontal beds; rock-controlled structure; few fine roots in partings between shale fragments at intervals.

Reaction is extremely acid to strongly acid throughout the solum except where the soil has been limed, but it is commonly medium acid or slightly acid just above the weathered shale. Soft shale fragments make up as much as about 10 percent of the profile, and they make up as much as 20 percent in places just above the weathered shale. Depth to weathered shale ranges from 20 to 40 inches.

The Ap and A2 horizons are brown, dark brown, yellowish brown, dark yellowish brown, light yellowish brown, or light olive brown. Where the soil has not been tilled, the A1 horizon is brown, dark grayish brown, very dark grayish brown, dark yellowish brown, or olive brown silt loam or gravelly loam.

The B1 horizon is brownish yellow, dark yellowish brown, yellowish brown, yellow, olive yellow, or light olive brown silty clay loam, clay loam, or silt loam. The Bt horizon is yellowish brown, brownish yellow, olive yellow, strong brown, or reddish brown clay, silty clay, silty clay loam, or clay loam. It is generally mottled in the lower part with shades of brown, yellow, red, and gray.

Conasauga soils are geographically associated with Firestone, Gaylesville, Holston, Leesburg, and Montevallo soils. They have a yellower B horizon than Firestone soils, and they are better drained than Gaylesville soils. They are more clayey in the upper part of the B horizon than Holston soils. They contain fewer shale fragments and pebbles than Leesburg and Montevallo soils.

CdB—Conasauga silt loam, 1 to 5 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Firestone, Gaylesville, Holston, Leesburg, and Montevallo soils. Also included are areas of soils in which pebbles make up more than 15 percent of the surface layer, areas of soils that have a loam or silty clay loam surface layer, and areas of soils that have gray mottles in the upper part of the subsoil.

This soil is suited to most crops grown in the county. It is fairly easy to work, but the moisture range within which

it can be tilled is narrow. Capability unit IIIe–5; woodland suitability group 3c2.

CdC—Conasauga silt loam, 5 to 15 percent slopes. This soil has a profile similar to the one described as representative of the series, but it is 10 inches deeper to weathered shale.

Included with this soil in mapping are small areas of Firestone, Gaylesville, Holston, Leesburg, and Montevallo soils. Also included are areas of soils in which pebbles make up more than 15 percent of the surface layer, areas of soils that have a loam surface layer, and areas of soils in which depth to weathered shale is more than 40 inches.

This soil is suited to pasture or woodland. It has a narrow moisture range within which it can be tilled. It clods and crusts easily if tilled when too wet. Capability unit VIe–5; woodland suitability group 3c2.

CfB—Conasauga-Firestone-Rock outcrop complex, 2 to 6 percent slopes. This complex is about 45 percent Conasauga soils, about 31 percent Firestone soils, and about 11 percent Rock outcrop. The remaining 13 percent is Gaylesville and Montevallo soils.

The Conasauga and Firestone soils have profiles similar to the ones described as representative of the Conasauga and Firestone series, respectively, but this Conasauga soil is 7 inches deeper to weathered shale, and this Firestone soil is 3 inches shallower and has a surface layer of silt loam.

Rock outcrop is limestone bedrock exposed at the surface. Outcrops range from about 1 foot to about 15 feet across. In some places they are level with the surface; in others they extend as much as 5 feet above the surface.

Included with this complex in mapping are small areas of Bomar, Holston, and Leesburg soils. Also included are areas of soils deeper than 40 inches to weathered shale.

This complex is suited to pasture and woodland. Seedbed preparation and pasture maintenance operations are difficult because of the outcrops of rock. Capability unit VIe–5; woodland suitability group 5x3.

CgE—Conasauga-Leesburg complex, 15 to 45 percent slopes. This complex consists of soils formed in alluvial and colluvial material on high river terraces intermingled with soils formed in materials weathered from shale at lower elevations.

This mapping unit is about 67 percent Conasauga soils and about 31 percent Leesburg soils. The remaining 2 percent is Firestone and Holston soils.

The Conasauga and Leesburg soils have profiles similar to the ones described as representative of the Conasauga and Leesburg series, respectively, but this Conasauga soil has a surface layer of gravelly loam, and this Leesburg soil has a surface layer of gravelly silt loam.

Included with this complex in mapping are small areas of Allen, Cedarbluff, Cloudland, Gaylesville, Montevallo, and Nella soils. Also included are small areas of soils that have about 10 to 20 inches of loamy soil material over about 10 to 20 inches of clayey soil material underlain by shale. Also included are small areas of soils deeper than 40 inches to weathered shale.

This complex is suited to woodland. Capability unit VIIe–5; woodland suitability group 3r8.

Decatur Series

The Decatur series consists of deep, well drained soils on uplands. These soils formed in thick beds of residuum weathered from cherty limestone. Slopes range from 2 to 15 percent.

In a representative profile the surface layer is dark reddish brown loam about 5 inches thick. The upper 4 inches of the subsoil is dark red silty clay loam. Below this, the subsoil is dark red clay to a depth of 65 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Nearly all of the acreage was once cleared and cultivated, but much of it is now idle.

Representative profile of Decatur loam, 2 to 6 percent slopes, in a pasture about 5 miles southeast of Ellisville in the NW¼NE¼ sec. 10, T. 12 S., R. 10 E.:

Ap—0 to 5 inches; dark reddish brown (5YR 3/4) loam; weak fine granular and weak medium angular blocky structure; friable; many fine roots; medium acid; gradual wavy boundary.

B1—5 to 9 inches; dark red (2.5YR 3/6 dry) silty clay loam; moderate medium angular blocky structure; friable; very thin patchy clay films; few fine and medium roots; medium acid; gradual wavy boundary.

B21t—9 to 17 inches; dark red (2.5YR 3/6 dry) clay; strong medium angular blocky structure; firm; very thin patchy clay films; few medium roots; strongly acid; gradual wavy boundary.

B22t—17 to 65 inches; dark red (10YR 3/6 dry) clay; strong medium angular blocky structure; firm; very thin patchy clay films; few medium roots; strongly acid.

Reaction is strongly acid to very strongly acid throughout the profile, but it ranges to medium acid in the surface layer.

The A horizon is dark reddish brown or dusky red loam or silty clay loam.

The B horizon is dark red clay, silty clay, or silty clay loam. Manganese concretions are not present in the Bt horizon in some profiles but range to common in places.

Decatur soils are geographically associated with Dewey, Emory, Fullerton, Minvale, and Nella soils. They have a darker red B horizon than Dewey soils, and they have a more clayey B horizon than Minvale soils. They do not have so many coarse fragments as Fullerton and Nella soils. They do not have the buried B horizon characteristic of Emory soils.

DcB—Decatur loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Dewey, Emory, Fullerton, Minvale, and Nella soils. Also included are areas of soils that have a gravelly loam surface layer.

This soil is suited to all crops grown in the county. It warms up early in the spring and is easy to work. It can be tilled within a wide range of moisture content without clodding or crusting. Capability unit IIe–1; woodland suitability group 3o7.

DcC—Decatur loam, 6 to 10 percent slopes. This soil has a profile similar to the one described as representative of the series.

Included with this soil in mapping are small areas of Dewey, Emory, Fullerton, Minvale, and Nella soils. Also included are areas of soils that have a gravelly loam, silt loam, or silty clay loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content. If this soil is tilled, the hazard of erosion is moderately high. Capability unit IIIe–1; woodland suitability group 3o7.

DdC—Decatur silty clay loam, 6 to 15 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is silty clay loam.

Included with this soil in mapping are small areas of

Dewey, Emory, Fullerton, Minvale, and Nella soils. Also included are areas of soils that have a gravelly loam or loam surface layer.

This soil is not suited to cultivated crops because it is eroded. Many areas have shallow gullies and rills. Seedbed preparation and maintenance are difficult. The moisture range within which the soil can be tilled is narrow. The soil clods and crusts if tilled when too wet. It is suited to pasture and woodland. Capability unit VIe–1; woodland suitability group 4c3.

Dewey Series

The Dewey series consists of deep, well drained soils on uplands. These soils formed in thick beds of residuum weathered from cherty limestone. Slopes range from 2 to 15 percent.

In a representative profile the surface layer is reddish brown loam about 8 inches thick. The upper 18 inches of the subsoil is red clay. Below this, to a depth of 60 inches or more, the subsoil is red clay that has distinct brownish yellow mottles.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage was once cleared and used for row crops, but much of it is now used for pasture or has been planted to pine trees.

Representative profile of Dewey loam, 2 to 6 percent slopes, in a field about 0.5 miles northeast of Gaylesville in the SW¼SW¼ sec. 1, T. 9 S., R. 10 E.:

Ap—0 to 8 inches; reddish brown (5YR 4/4) loam; weak fine granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

B21t—8 to 26 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

B22t—26 to 60 inches; red (2.5YR 4/6) clay that has common medium distinct brownish yellow mottles; strong medium angular blocky structure; firm; strongly acid.

Reaction ranges from medium acid to strongly acid throughout the profile. The content of chert fragments ranges from 0 to 15 percent.

The Ap horizon is brown, reddish brown, dark red, dark reddish brown, or yellowish red loam or silty clay loam.

The Bt horizon is yellowish red, red, or dark red clay, clay loam, silty clay, or silty clay loam. It is generally mottled in the lower part with shades of red, yellow, or brown.

Dewey soils are geographically associated with Allen, Chewacla, Decatur, Emory, Fullerton, and Minvale soils. They have a more clayey B horizon than Allen and Emory soils and they are better drained than Chewacla soils. They have a less red B horizon than Decatur soils and contain fewer chert fragments than Fullerton or Minvale soils.

DeB—Dewey loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Allen, Chewacla, Decatur, Emory, Fullerton, and Minvale soils. Also included are areas of soils that have a gravelly loam or silty clay loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. Capability unit IIe–1; woodland suitability group 3o7.

DeC—Dewey loam, 6 to 10 percent slopes. This soil has a profile similar to the one described as representative of the series.

Included with this soil in mapping are small areas of Allen, Chewacla, Decatur, Emory, Fullerton, and Minvale soils. Also included are areas of soils that have a gravelly loam or silty clay loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content. If this soil is tilled, the hazard of erosion is moderately high. Capability unit IIIe–1; woodland suitability group 3o7.

DfC—Dewey silty clay loam, 6 to 15 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is silty clay loam.

Included with this soil in mapping are small areas of Allen, Chewacla, Decatur, Emory, Fullerton, and Minvale soils. Also included are areas of soils that have a loam or clay loam surface layer.

This soil is not suited to cultivated crops because it is eroded. Many areas have shallow gullies and rills. Seedbed preparation and maintenance are difficult. The moisture range within which this soil can be tilled is narrow, and the soil clods and crusts if tilled when too wet. It is suited to pasture and woodland. Capability unit VIe–1; woodland suitability group 4c3.

Ellisville Series

The Ellisville series consists of deep, well drained soils on first bottoms. These soils formed in mixed alluvium washed from sandstone, chert, and shale uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown silty clay loam about 6 inches thick. The upper 8 inches of the subsoil is dark brown silty clay loam. Below this, the subsoil is brown silty clay loam to a depth of 29 inches and dark yellowish brown silty clay loam to a depth of 52 inches. Next, to a depth of 75 inches or more, it is dark yellowish brown silt loam that has light yellowish brown and brown mottles.

Permeability is moderate. The organic-matter content and natural fertility are medium. The available water capacity is high to very high. The native vegetation was dominantly mixed hardwoods, but most of the acreage has been cleared and is now used for corn, soybeans, or pasture.

Representative profile of Ellisville silty clay loam, approximately 30 feet west of Terrapin Creek bridge on the Hokes Bluff road in the SE¼NW¼ sec. 34, T. 10 S., R. 9 E.:

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

B1—6 to 14 inches; dark brown (10YR 3/3) silty clay loam; weak granular and weak medium subangular blocky structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

B21—14 to 29 inches; brown (10YR 4/3) silty clay loam; weak and moderate medium subangular blocky structure; friable; few medium roots; strongly acid; gradual wavy boundary.

B22—29 to 52 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak and moderate medium subangular blocky structure; friable; few medium roots; strongly acid; gradual wavy boundary.

B3—52 to 75 inches; dark yellowish brown (10YR 4/4) silt loam that has common medium distinct light yellowish brown and brown mottles; weak medium subangular blocky structure; very friable; very strongly acid.

The solum is about 4 to more than 8 feet thick. Reaction ranges from strongly acid in the upper part to very strongly acid in the lower part.

The A horizon is brown or dark yellowish brown.

The B1 horizon is brown, dark brown, dark yellowish brown,

yellowish brown, or light brown silty clay loam or silt loam. The B2 horizon is brown, dark yellowish brown, yellowish brown, or dark brown silty clay loam or silt loam. In places it has mottles in shades of brown or gray below a depth of 24 inches. The B3 horizon is dark yellowish brown or dark brown silt loam or silty clay loam. It is generally mottled with shades of brown or gray.

Ellisville soils are geographically associated with Chewacla, McQueen, Toccoa, and Wickham soils. They are better drained than Chewacla soils and not so red in the B horizon as McQueen soils. They are more clayey in the A horizon and in the upper part of the B horizon than Toccoa soils. They are not so red in the B2 horizon as Wickham soils.

Ea—Ellisville silty clay loam. This is the only Ellisville soil mapped in the county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Chewacla, McQueen, Toccoa, and Wickham soils. Also included are areas of soils that have slopes of more than 2 percent and that have a loam, sandy loam, or silt loam surface layer.

This soil is suited to most crops grown in the county. Flooding generally occurs during winter, and crops are seldom damaged. This soil is easy to work and has a wide moisture range within which it can be tilled. Capability unit IIw–2; woodland suitability group 1o7.

Emory Series

The Emory series consists of deep, well drained soils on first bottoms and in depressions. These soils formed in alluvium washed from cherty limestone uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark reddish brown loam about 6 inches thick. The upper 10 inches of the subsoil is dark reddish brown silt loam. Below this, the subsoil is dark reddish brown silty clay loam to a depth of 26 inches and dark red silty clay loam to a depth of 62 inches. Next, it is dark red clay to a depth of 95 inches or more.

Permeability is moderate. The organic-matter content is medium, and natural fertility is medium to high. The available water capacity is high to very high. The native vegetation was mixed hardwoods and pines, but most of the acreage has been cleared and is used for row crops.

Representative profile of Emory loam in an idle field about 6 miles southwest of Ellisville in the NE¼NE¼ sec. 24, T. 12 S., R. 9 E.:

Ap—0 to 6 inches; dark reddish brown (5YR 3/3) loam; weak fine granular structure; very friable; few fine roots; 5 percent small pebbles; medium acid; clear smooth boundary.

B2—6 to 16 inches; dark reddish brown (5YR 3/3) silt loam; weak medium subangular blocky structure; very friable; few fine roots; 5 percent small pebbles; medium acid; gradual wavy boundary.

A1b—16 to 20 inches; dark reddish brown (5YR 3/3) silty clay loam; weak fine granular structure; very friable; few fine roots; medium acid; clear wavy boundary.

B1b—20 to 26 inches; dark reddish brown (5YR 3/4) silty clay loam; weak medium subangular blocky structure; friable; medium acid; gradual wavy boundary.

B21tb—26 to 62 inches; dark red (2.5YR 3/6) silty clay loam; moderate medium subangular blocky structure; friable; very thin patchy clay films; strongly acid; gradual wavy boundary.

B22tb—62 to 95 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; firm; very thin patchy clay films; 10 percent small black concretions; strongly acid.

Reaction ranges from medium acid in the A and B horizons to strongly acid in the Btb horizon. Small black concretions and small pebbles make up as much as 15 percent of the soil throughout the solum. Depth to bedrock is 6 to more than 10 feet. These soils have a slightly thinner A horizon and a slightly wider color range for the B horizon than defined in the range for the series, but this difference does not alter their usefulness and behavior.

The A horizon is dark reddish brown.

The B horizon is dark reddish brown, dark brown, or dusky red silty clay loam or silt loam. The Ab horizon is dark reddish brown or dark brown loam, silt loam, or silty clay loam. The Btb horizon is yellowish red, dark reddish brown, dark red, or red silty clay loam, silty clay, or clay. Brown and gray mottles are in the Btb horizon in some places.

Emory soils are geographically associated with Decatur and Dewey soils. They have a less clayey B2t horizon than these soils. They also contain a buried B horizon, and Decatur and Dewey soils do not.

Eb—Emory loam. This is the only Emory soil mapped in the county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Decatur and Dewey soils. Also included are areas of soils that have gray mottles in the subsoil and areas of soils that have a silt loam surface layer.

This soil is suited to all crops grown in the county. Flooding and ponding generally occur during the winter and early in spring, and crops are seldom damaged. This soil is easy to work and has a wide moisture range within which it can be tilled. Capability unit IIw–2; woodland suitability group 2o7.

Ennis Series

The Ennis series consists of deep, well drained soils on first bottoms. These soils formed in alluvium washed from sandstone and cherty uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark yellowish brown cherty loam about 5 inches thick. The upper 6 inches of the subsoil is dark yellowish brown cherty loam. Below this, the subsoil is brown cherty loam to a depth of 60 inches or more.

Permeability is moderately rapid. The organic-matter content and natural fertility are medium. The available water capacity is moderate. The native vegetation was dominantly mixed hardwoods and pines, but about half of the acreage has been cleared and is used mostly for pasture and hay. A few areas are used for row crops.

Representative profile of Ennis cherty loam, from an area of Ennis-Lobelville complex in a wooded area about 2 miles southeast of Mountain Spring Church in the NW¼SW¼ sec. 5, T. 12 S., R. 10 E.:

A—0 to 5 inches; dark yellowish brown (10YR 4/4) cherty loam; weak fine granular structure; very friable; 15 percent small chert fragments; many fine roots; very strongly acid; clear smooth boundary.

B1—5 to 11 inches; dark yellowish brown (10YR 4/4) cherty loam, weak fine granular and weak medium subangular blocky structure; friable; 15 percent small chert fragments; few fine and medium roots; very strongly acid; gradual wavy boundary.

B2—11 to 60 inches; brown (10YR 4/3) cherty loam; weak medium subangular blocky structure; friable; 30 percent small chert fragments; few medium roots; very strongly acid.

Reaction is strongly acid or very strongly acid. Small cherty fragments range from 10 to 35 percent throughout.

The A horizon is dark yellowish brown, dark grayish brown, yellowish brown, or brown.

The B1 horizon is dark yellowish brown, yellowish brown, or brown cherty loam or cherty silty clay loam. It is mottled in places with shades of yellow or brown. The B2 horizon is brown, dark yellowish brown, or yellowish brown cherty loam, cherty silty clay loam, or cherty clay loam. It is mottled in places with shades of yellow, brown, or gray.

Ennis soils are geographically associated with Bodine, Lobelville, Minvale, and Stemley soils. They contain fewer coarse fragments than Bodine soils and are better drained than Lobelville soils. They have a browner B horizon than Minvale soils, and they do not have the fragipan characteristic of Stemley soils.

Ec—Ennis-Lobelville complex. This complex is about 50 percent Ennis soils and about 36 percent Lobelville soils. The remaining 14 percent is Stemley and Minvale soils. Slopes range from 0 to 2 percent.

The Ennis and Lobelville soils have the profiles described as representative of their respective series.

Included with this complex in mapping are small areas of Bodine and Lobelville soils. Also included are areas of soils in which small chert fragments make up less than 10 percent of some layers and some areas of soils that have a cherty silt loam and cherty sandy loam surface layer.

This complex is suited to some row crops. Flooding generally occurs during the winter, but occasionally a spring flood will damage crops. The complex is suited to adapted pasture grasses, hardwoods, and pines. Capability unit IIIw–2; woodland suitability group 2w8.

Firestone Series

The Firestone series consists of moderately deep, well drained soils on uplands. These soils formed in residuum weathered from shale bedrock. They have moderate to high shrink-swell potential in the subsoil (fig. 8). Slopes range from 2 to 45 percent.

In a representative profile the surface layer is brown gravelly silt loam about 5 inches thick. The upper 4 inches of the subsoil is strong brown silty clay loam. Below this, the subsoil is yellowish red clay and silty clay mottled with yellow to a depth of 32 inches and mottled yellowish red, yellow, light brownish gray, and strong brown silty clay to a depth of 36 inches. The underlying material is horizontal beds of partly weathered, fractured shale.

Permeability is slow. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines, but about one-fourth of the acreage has been cleared and is used mainly for pasture and small grains. A small acreage is used for row crops.

Representative profile of Firestone gravelly silt loam, 2 to 6 percent slopes, in a wooded area about 0.25 mile east of Mount Olive Church in the SW¼SW¼ sec. 4, T. 11 S., R. 9 E.:

A1—0 to 5 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable; many fine and medium roots; 20 percent small pebbles; very strongly acid; clear smooth boundary.

B1—5 to 9 inches; strong brown (7.5YR 5/7) silty clay loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual wavy boundary.

B21t—9 to 23 inches; yellowish red (5YR 5/8) clay that has few fine distinct yellow mottles; strong medium angular blocky structure; firm, very plastic and sticky; few medium roots; nearly continuous very thin clay films on surfaces of peds; 10 percent soft shale fragments; very strongly acid; gradual wavy boundary.

B22t—23 to 32 inches; yellowish red (5YR 5/8) silty clay that has common fine distinct yellow mottles; moderate medium angular blocky structure; firm, plastic and sticky; nearly continuous very thin clay films on surfaces of peds; 10 percent soft shale fragments; very strongly acid; gradual wavy boundary.

B3—32 to 36 inches; mottled yellowish red (5YR 5/8), yellow (10YR 7/8), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silty clay; weak thick platy structure; firm, plastic and sticky; many thin patchy clay films on surfaces of peds; 20 percent soft shale fragments; very strongly acid; clear wavy boundary.

C—36 to 50 inches; partly weathered fractured shale in horizontal beds; rock-controlled structure; few fine roots in partings between shale fragments at intervals.

Figure 8.—**Cracks form in the subsoil of Firestone silt loam because of its moderate to high shrink-swell potential.**

Reaction is strongly acid or very strongly acid throughout the solum except where the soil has been limed, but it is commonly medium acid just above the weathered shale. Depth to weathered shale ranges from 24 to 40 inches.

The A horizon is brown, yellowish brown, dark brown, dark grayish brown, or dark yellowish brown gravelly silt loam, silt loam, gravelly loam, or loam. The content of siliceous pebbles ranges from 0 to 20 percent.

The B1 horizon is reddish yellow, strong brown, brown, or yellowish brown silty clay loam, clay loam, or silty clay. The B21t horizon is yellowish red, reddish yellow, red, or, in only a few places, strong brown. It is commonly mottled with various shades of brown, yellow, or red. The B22t horizon is yellowish red mottled with various shades of red, yellow, brown, or gray. The gray mottles are thought to have inherited their color from parent material. The B2t and B3 horizons are silty clay or clay. The content of soft shale fragments in these horizons is 10 to 30 percent.

Firestone soils are geographically associated with Bomar, Conasauga, Holston, Leesburg, and Montevallo soils. They have a redder B2 horizon than Bomar, Conasauga, Holston, and Leesburg soils. They have a more clayey B2 horizon than Montevallo soils.

FaB—Firestone gravelly silt loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Bomar, Conasauga, Holston, Leesburg, and Montevallo soils. Also included are areas of soils in which pebbles make up less than 10 percent of the surface layer, areas of soils that have a loam surface layer, and areas of soils deeper than 40 inches to weathered shale.

This soil is moderately well suited to most crops grown in the county. It is fairly easy to work, but the moisture range within which it can be tilled is narrow. It clods and crusts easily if tilled when too wet. Capability unit IIIe–5; woodland suitability group 4o1.

FaC—Firestone gravelly silt loam, 6 to 15 percent slopes. This soil has a profile similar to the one described as representative of the series, but it is 11 inches shallower to weathered shale.

Included with this soil in mapping are small areas of Bomar, Conasauga, Holston, Leesburg, and Montevallo soils. Also included are areas of soils in which small pebbles make up less than 10 percent of the surface layer, areas of soils that have a loam surface layer, and areas of soils deeper than 40 inches to weathered shale.

This soil is suited to pasture and woodland. It has a narrow moisture range within which it can be tilled. It clods and crusts easily if tilled when too wet. Capability unit IVe–5; woodland suitability group 4o1.

FcD—Firestone-Conasauga-Rock outcrop complex, 6 to 25 percent slopes. This complex is about 49 percent Firestone soils, about 31 percent Conasauga soils, and about 20 percent Rock outcrop.

The Firestone soil has a profile similar to the one described as representative of the Firestone series, but it is 6 inches shallower to weathered shale and has a surface layer of silt loam.

Rock outcrop is limestone bedrock exposed at the surface. Outcrops range from about 1 foot to about 15 feet across. In some places they are level with the surface; in others they extend as much as 5 feet above the surface.

Included with this complex in mapping are small areas of Bomar, Gaylesville, Holston, Leesburg, and Montevallo soils. Also included are areas of soils deeper than 40 inches to weathered shale.

This complex is suited to pasture and woodland. It is poorly suited to cultivated row crops. Seedbed preparation and pasture maintenance operations are difficult because of the outcrops of rock. Capability unit VIe–5; woodland suitability group 5x3.

FD—Firestone-Montevallo association, steep. These steep soils are on hillsides and are underlain dominantly by shale. Slopes range from 20 to 45 percent.

The areas of this mapping unit are generally larger and more generalized and inclusive than the areas of most other mapping units in the county. Mapped areas range from about 100 to 1,000 acres in size. Each mapped area contains both Firestone and Montevallo soils and generally one or more less extensive soils. The pattern of these soils is fairly uniform, but the extent of each may differ in each mapped area. Estimates of soil percentages are based on the combined acreage of all mapped areas.

This association is about 37 percent Firestone soils and about 33 percent Montevallo soils. The remaining 30 percent is Chewacla, Conasauga, and Gaylesville soils.

Firestone soils are mostly on ridgetops and toe slopes but are also on steep side slopes. They have a profile similar to the one described as representative of the series, but the surface layer is gravelly loam and the soil is 3 inches shallower to weathered shale.

Montevallo soils are mostly on steep side slopes but are also on ridgetops and toe slopes. They have a profile similar to the one described as representative of the series, but the subsoil is yellowish brown.

This association is suited to trees, and nearly all the acreage is wooded. Adapted pine trees are suited to the soils. Capability unit VIIe–5; Firestone part in woodland suitability group 4o1, Montevallo part in woodland suitability group 5d3.

FE—Firestone-Montevallo-Leesburg association, steep. These steep soils are on hillsides and are underlain by interbedded shale and sandstone. Slopes range from 20 to 45 percent.

There is only one area of this mapping unit, but it covers 10,384 acres. The area of this mapping unit is more generalized and inclusive than the areas of most other mapping units in the county. The pattern of the soils within the mapping unit is fairly uniform, but the extent of each soil differs somewhat in different parts of the mapped area. Estimates of soil percentages are based on the combined acreage of the mapped area.

This association is about 29 percent Firestone soils, about 24 percent Montevallo soils, and about 20 percent Leesburg soils. The remaining 27 percent is Chewacla, Nella, and Allen soils.

Firestone soils are mostly on toe slopes and side slopes but are also on ridgetops at higher elevations. They have a profile similar to the one described as representative of the series, but the surface layer is loam and the soil is 4 inches shallower to weathered shale.

Montevallo soils are mostly on steep side slopes but are also on ridgetops and toe slopes. They have a profile similar to the one described as representative of the series, but the subsoil is yellowish brown.

Leesburg soils are cobbly. They are mostly on ridgetops at the highest elevations, but they are also on toe slopes and side slopes. They have a profile similar to the one described as representative of the series, but the surface layer is cobbly loam.

This association is suited to trees and nearly all of the acreage is wooded. Adapted pine trees are suited to the soils. Capability unit VIIe–5; Firestone part in woodland suitability group 4o1, Montevallo part in woodland suitability group 5d3, Leesburg part in woodland suitability group 3o7.

Fullerton Series

The Fullerton series consists of deep, well drained soils on uplands. These soils formed in thick beds of residuum weathered from cherty limestone. Slopes range from 6 to 15 percent.

In a representative profile the surface layer is brown cherty silt loam about 4 inches thick. The upper 8 inches of the subsoil is yellowish red cherty silty clay loam. Below this, the subsoil is yellowish red cherty silty clay to a depth of 18 inches. Next, to a depth of 65 inches, it is yellowish red cherty silty clay that has brownish yellow mottles.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity

is moderate. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage was once cleared and cultivated but is now in pasture or pine trees.

Representative profile of Fullerton cherty silt loam, 6 to 15 percent slopes, in a pine plantation about 2 miles northeast of Jamestown in the NW¼SE¼ sec. 23, T. 7 S., R. 10 E.:

Ap—0 to 4 inches; brown (7.5YR 4/4) cherty silt loam; weak fine granular structure; very friable; many fine roots; 20 percent chert fragments; strongly acid; abrupt smooth boundary.

B21t—4 to 12 inches; yellowish red (5YR 4/8) cherty silty clay loam; moderate medium angular blocky structure; firm; few fine roots; very thin patchy clay films; 25 percent chert fragments; very strongly acid; gradual wavy boundary.

B22t—12 to 18 inches; yellowish red (5YR 4/8) cherty silty clay; moderate medium angular blocky structure; firm; very thin patchy clay films; 15 percent chert fragments; very strongly acid; gradual wavy boundary.

B23t—18 to 65 inches; yellowish red (5YR 4/8) cherty silty clay that has common fine distinct brownish yellow mottles; moderate medium angular blocky structure; firm; very thin patchy clay films; 30 percent fragments; very strongly acid.

Reaction ranges from strongly acid in the A horizon to very strongly acid in the B2t horizon. Chert content ranges from 15 to 35 percent throughout.

The A horizon is brown or dark yellowish brown.

The B2t horizon is yellowish red or red cherty clay, cherty clay loam, cherty silty clay loam, or cherty silty clay. It is generally mottled in the lower part with shades of brown, yellow, or red.

Fullerton soils are geographically associated with Bodine, Decatur, Dewey, Minvale, and Stemley soils. They contain fewer chert fragments than Bodine soils, and are not so dark red in the B horizon as Decatur soils. They contain more coarse fragments than Dewey soils, and they are more clayey in the upper part of the B horizon than Minvale soils. They do not have the fragipan characteristic of Stemley soils.

FfC—Fullerton cherty silt loam, 6 to 15 percent slopes. This is the only Fullerton soil mapped in the county.

Included with this soil in mapping are small areas of Bodine, Decatur, Dewey, Minvale, and Stemley soils. Also included are areas of soils that have a silt loam or loam surface layer, areas of soils that are dark red throughout the subsoil, and areas of soils which are less than 6 feet deep to bedrock.

This soil is moderately suited to most crops grown in the county. It is fairly easy to work, but chert fragments can interfere with cultivation of row crops. When this soil is tilled, erosion is a hazard. Capability unit IVe–1; woodland suitability group 3o7.

Gaylesville Series

The Gaylesville series consists of deep, somewhat poorly drained to poorly drained soils on stream terraces. These soils formed in thick beds of alluvium washed from sandstone, shale, and limestone uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is light olive brown silty clay loam about 3 inches thick. The upper 11 inches of the subsoil is mottled light gray, strong brown, and yellowish red silty clay loam. Below this, the subsoil is mottled yellowish brown, light gray, brownish yellow, and yellowish red silty clay to a depth of 72 inches or more.

Permeability is slow. The organic-matter content is medium, and natural fertility is low. The available water capacity is high. The native vegetation was dominantly mixed hardwoods. Most of the acreage is still wooded, but some has been cleared and is used for pasture.

Representative profile of Gaylesville silty clay loam, in a wooded area about 3 miles south of Centre in the NE¼SE¼ sec. 3, T. 11 S., R. 9 E.:

A—0 to 3 inches; light olive brown (2.5Y 5/4) silty clay loam; weak fine granular structure; friable; many fine roots; extremely acid; clear smooth boundary.

B1—3 to 14 inches; mottled light gray (2.5Y 7/2), strong brown (7.5YR 5/6), and yellowish red (5YR 4/6) silty clay loam; moderate medium angular blocky structure that has light brownish gray (10YR 6/2) and brownish yellow coating on peds; firm; few fine roots; very thin patchy clay films; extremely acid; gradual wavy boundary.

B21tg—14 to 22 inches; mottled yellowish brown (10YR 5/6) and light gray (2.5Y 7/2) silty clay; moderate medium angular blocky structure that has light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) coating on peds; firm; few fine and medium roots; very thin patchy clay films; extremely acid; gradual wavy boundary.

B22tg—22 to 33 inches; mottled brownish yellow (10YR 6/6) and light gray (10YR 7/2) silty clay; strong medium angular blocky structure that has light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) coating on peds; firm; very thin patchy clay films; strongly acid; gradual wavy boundary.

B23tg—33 to 72 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and yellowish red (5YR 5/6) silty clay; strong medium angular blocky structure that has light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) coatings on peds; firm; strongly acid.

Reaction ranges from strongly acid to extremely acid throughout the profile.

The A horizon is light olive brown, yellowish brown, brown, grayish brown, dark grayish brown, or dark yellowish brown.

The B1 horizon is silty clay loam or silty clay mottled with shades of yellow, red, brown, or gray. In some pedons it has a yellowish brown or pale brown matrix. The B2tg horizon is silty clay or clay mottled with shades of yellow, brown, red, and gray. Coatings in shades of gray or yellow are on the exteriors of the peds.

Gaylesville soils are geographically associated with Bomar, Cedarbluff, Cloudland, Conasauga, and Guthrie soils. They do not have the fragipan characteristic of Bomar, Cloudland, and Guthrie soils and have a more clayey B horizon than Cedarbluff soils. They are more poorly drained than Conasauga soils.

Ga—Gaylesville silty clay loam. This is the only Gaylesville soil mapped in the county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Bomar, Cedarbluff, Cloudland, Conasauga, and Guthrie soils. Also included are areas of soils that have a silt loam surface layer.

This soil is poorly suited to cultivated crops because drainage is poor and water ponds on the surface. Drainage outlets are seldom available. It is suited to adapted pasture grasses and woodland. Capability unit IVw–5; woodland suitability group 3w9.

Guthrie Series

The Guthrie series consists of deep, poorly drained soils on stream terraces. These soils formed in thick beds of alluvium washed from cherty limestone, sandstone, and shale uplands. They have a fragipan in the lower part of the subsoil. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is black silt loam about 3 inches thick. The subsurface layer is light gray silt loam 7 inches thick and has yellowish brown mottles. The upper 10 inches of the subsoil is gray silt loam that has yellowish brown mottles. The fragipan is 23 inches thick. The upper 12 inches is gray silt loam that has brownish yellow and yellowish brown mottles, and the lower 11 inches is gray silt loam that has strong brown and yellowish brown mottles. The subsoil below the fragipan is light gray silty

clay loam that has olive yellow and brownish yellow mottles and extends to a depth of 60 inches or more.

Permeability is slow. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods. Most of the acreage is wooded, but some of it has been cleared and is used for pasture.

Representative profile of Guthrie silt loam, in a wooded area about 0.5 mile southwest of Livcington Junior High School in the SE¼NW¼ sec. 26, T. 10 S., R. 8 E.:

A1—0 to 3 inches; black (10YR 2/1) silt loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

A2—3 to 10 inches; light gray (10YR 6/1) silt loam that has few fine distinct yellowish brown mottles; weak fine granular structure; very friable; many fine roots; strongly acid; gradual wavy boundary.

Bg—10 to 20 inches; gray (10YR 6/1) silt loam that has common medium distinct yellowish brown mottles; weak fine granular structure; friable; few fine roots; few thin silt coatings; very strongly acid; gradual wavy boundary.

Bx1—20 to 32 inches; gray (10YR 6/1) silt loam that has common medium distinct brownish yellow (10YR 6/8) and yellowish brown (10YR 5/6) mottles; weak coarse prisms about 4 to 6 inches in diameter breaking to weak medium subangular blocky structure; about 65 percent of horizontal cross section is firm and brittle; few thin silt coatings on surfaces of prisms; few fine roots in gray vertical veins in a polygonal network; very strongly acid; clear irregular boundary.

Bx2—32 to 43 inches; gray (10YR 6/1) silt loam that has common coarse distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/8) mottles; moderate coarse prisms about 4 to 6 inches in diameter parting to weak medium platy structure; about 70 percent of the horizontal cross section is firm and brittle; few thin silt coatings on surfaces of prisms; 5 percent small chert fragments; few fine roots in gray vertical veins in a polygonal network; extremely acid; clear irregular boundary.

B3g—43 to 60 inches; light gray (N 7/0) silty clay loam that has common medium distinct olive yellow and brownish yellow mottles; weak medium subangular blocky structure; friable; 5 percent small chert fragments; extremely acid.

Reaction ranges from strongly acid in the A horizon to extremely acid in the lower part of the B horizon. Chert fragments make up as much as 5 percent on the surface and throughout the profile. Depth to bedrock is 5 to more than 10 feet.

The A1 horizon is black, dark grayish brown, pale brown, or brown. The A2 horizon is light gray or gray and is mottled in places with shades of brown.

The Bg horizon is gray or light grayish brown silt loam or silty clay loam. It is generally mottled with shades of brown. Depth to the fragipan ranges from 20 to 36 inches. The Bx and B3 horizons are gray, light gray, or light grayish brown silt loam, silty clay, loam, clay loam, or sandy clay loam. They are generally mottled with shades of brown and yellow.

Guthrie soils are geographically associated with Cedarbluff, Cloudland, and Gayesville soils. They are more poorly drained than Cedarbluff and Cloudland soils, and they are less clayey in the upper part of the B horizon than Gaylesville soils. In addition, they contain a fragipan, and Cedarbluff and Gaylesville soils do not.

Gb—Guthrie silt loam. This is the only Guthrie soil mapped in the county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are small areas of Cedarbluff, Cloudland, and Gaylesville soils. Also included are areas of soils that have a loam surface layer and areas of soils that do not have a fragipan in the subsoil.

This soil is poorly suited to cultivated crops because drainage is poor and water ponds on the surface. Drainage outlets are seldom available. The soil is suited to adapted pasture grasses and woodland. Capability unit IVw–5; woodland suitability group 2w9.

Hartsells Series

The Hartsells series consists of moderately deep, well drained soils on uplands. These soils formed in residuum weathered from sandstone. Slopes range from 2 to 40 percent.

In a representative profile the surface layer is yellowish brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown loam to a depth of 28 inches. The underlying material is mottled yellowish red, brownish yellow, and very pale brown sandy loam about 4 inches thick. Sandstone bedrock is at a depth of 32 inches.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines, but about two-thirds of the acreage has been cleared and is used for row crops and pasture. Cotton and corn are the main crops.

Representative profile of Hartsells fine sandy loam, 6 to 10 percent slopes, in a field about 5 miles northeast of Leesburg in the NW¼SE¼ sec. 7, R. 9 S., R. 9 E.:

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

B1—5 to 11 inches; yellowish brown (10YR 5/6) loam; weak fine subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B21t—11 to 23 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; clay bridges and coatings on most sand grains; strongly acid; gradual wavy boundary.

B22t—23 to 28 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; 5 to 10 percent small sandstone fragments; clay bridges and coatings on most sand grains; strongly acid; clear wavy boundary.

C—28 to 32 inches; mottled brownish yellow (10YR 6/6), very pale brown (10YR 7/3), and yellowish red (5YR 5/6) sandy loam; single grained; very friable; strongly acid; clear abrupt boundary.

R—32 inches; sandstone.

Reaction ranges from medium acid in the A horizon to very strongly acid in the B2t horizon. Depth to bedrock is 20 to 40 inches.

The A horizon is brown, yellowish brown, very dark grayish brown, dark yellowish brown, or dark grayish brown.

The B1 horizon is yellowish brown or dark yellowish brown sandy loam or loam. The B2t horizon is yellowish brown, brown, or strong brown loam, sandy clay loam, clay loam, or sandy loam. It is mottled in the lower part in places with shades of yellow, red, or brown. The B3 or C horizons are similar to the lower part of the B2t horizon in color and texture.

Hartsells soils are geographically associated with Hector, Linker, and Townley soils. They are deeper to bedrock than Hector soils, and they have a yellower Bt horizon than Linker soils. They have a less clayey B2t horizon than Townley soils.

HaB—Hartsells fine sandy loam, 2 to 6 percent slopes. This soil has a profile similar to the one described as representative of the series, but the subsoil is sandy clay loam and it is 7 inches deeper to sandstone bedrock.

Included with this soil in mapping are small areas of Hector, Linker, and Townley soils. Also included are areas of soils that have a loam surface layer and areas of soils deeper than 40 inches to bedrock.

This soil is suited to all crops grown in the county. It responds well to fertilizer. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. Capability unit IIe–2; woodland suitability group 4o1.

HaC—Hartsells fine sandy loam, 6 to 10 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Hector, Linker, and Townley soils. Also included are small areas of soils that have a loam surface layer, areas of soils in which pebbles make up more than 15 percent of the surface layer, and areas of soils deeper than 40 inches to sandstone bedrock.

This soil is suited to all crops grown in the county. It responds well to fertilizer. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. Erosion is a hazard if this soil is cultivated. Capability unit IIIe–2; woodland suitability group 4o1.

HC—Hartsells-Rock outcrop association, steep. These steep soils are on the sides of Lookout Mountain. This area includes the sandstone bluffs that run along the rim of the mountain in a broken pattern. These bluffs range in height from about 15 to more than 200 feet. The ground surface immediately below the bluffs, and continuing down the side slopes, is littered with sandstone stones and boulders that range from 1 foot to 30 feet in diameter. These soils are between the bluffs and the fragments of sandstone. Slopes range from 15 to 50 percent.

The areas of this mapping unit are generally larger and more generalized and inclusive than the areas of most other mapping units in the county. Mapped areas range from about 300 to about 12,000 acres in size. Each mapped area contains both Hartsells soils and Rock outcrop and generally one or more less extensive soils. The pattern and extent of these soils are fairly uniform, but estimates of soil percentages are based on the combined acreage of all mapped areas.

This association is about 30 percent Hartsells soils and about 30 percent Rock outcrop and broken sandstone fragments. The remaining 40 percent is Hector, Linker, Townley, and Allen soils.

Hartsells soils are in most of the areas between areas of Rock outcrop and broken sandstone fragments. They have a profile similar to the one described as representative of the series, but they are 4 inches deeper to sandstone.

Rock outcrop includes the sandstone bluffs and exposed, broken sandstone fragments between the bluffs.

This association is suited to trees and recreation. Nearly all of the acreage is wooded. Capability unit VIIe–6; Hartsells part in woodland suitability group 4o1; Rock outcrop part not placed in a woodland suitability group.

Hector Series

The Hector series consists of shallow, well drained soils on uplands. These soils formed in residuum weathered from sandstone. Slopes range from 2 to 10 percent.

In a representative profile the surface layer is very dark grayish brown fine sandy loam about 4 inches thick. The subsoil is dark yellowish brown fine sandy loam 13 inches thick. Sandstone bedrock is at a depth of 17 inches.

Permeability is rapid. The organic-matter content and natural fertility are low. The available water capacity is low to very low. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage is still wooded, but some of it has been cleared and is used for pasture.

Representative profile of Hector fine sandy loam, from an area of Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes, in a wooded area about 12 miles northeast of Gaylesville in the NW¼SE¼ sec. 1, T. 7 S., R. 10 E.:

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

B2—4 to 17 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; few fine and medium roots; very strongly acid; clear wavy boundary.

R—17 inches; sandstone.

Reaction is strongly acid or very strongly acid throughout the profile. Depth to sandstone bedrock is 8 to 20 inches.

The A horizon is dark brown, very dark grayish brown, dark grayish brown, brown, or yellowish brown.

The B horizon is yellowish brown, dark yellowish brown, or light yellowish brown fine sandy loam or loam.

Hector soils are geographically associated with Hartsells, Linker, and Townley soils. They are shallower to sandstone bedrock than Hartsells or Linker soils, and they have a less clayey B horizon than Townley soils.

HdC—Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes. This complex is about 36 percent Hector soils, about 27 percent Hartsells soils, and about 27 percent Rock outcrop. The remaining 10 percent is Linker and Townley soils.

The Hector soils have the profile described as representative of the series.

Rock outcrop is sandstone bedrock exposed at the surface. Outcrops range from about 3 feet to 50 feet across. In some places they are level with the surface; in others they extend as much as 5 feet above the surface.

This complex is suited to woodland and pasture. It is not suited to cultivated row crops. Seedbed preparation and pasture maintenance operations are difficult because of the outcrops of rock. Capability unit VIe–7; woodland suitability group 4x3.

Herndon Series

The Herndon series consists of deep, well drained soils on uplands. These soils formed in residuum weathered from shale. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is dark yellowish brown gravelly loam about 6 inches thick. The upper 9 inches of the subsoil is yellowish brown clay loam. Below this, the subsoil is strong brown clay to a depth of 27 inches and mottled strong brown, yellowish brown, yellow, yellowish red, and red clay to a depth of 53 inches. Next, it is mottled red, reddish yellow, and very pale brown silty clay to a depth of 64 inches. The underlying material is soft shale.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage is used for woodland. Some of it was once cleared but is now idle.

Representative profile of Herndon gravelly loam, 2 to 10 percent slopes, about 800 feet north of U.S. Highway 278 in the SW¼NE¼ sec. 25, T. 12 S., R. 11 E.:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak fine granular structure; very friable; many fine to coarse roots; 25 to 30 percent pebbles; strongly acid; clear smooth boundary.

B1—6 to 15 inches; yellowish brown (10YR 5/6) clay loam; weak fine to medium subangular blocky structure; friable; many fine roots; 10 percent quartz fragments; very thin patchy clay films; strongly acid; gradual wavy boundary.

B21t—15 to 27 inches; strong brown (7.5YR 5/6) clay; moderate fine to medium subangular blocky structure; friable to firm; few fine roots; 5 percent quartz fragments; very thin patchy clay films; strongly acid; gradual wavy boundary.

B22t—27 to 53 inches; mottled strong brown (7.5YR 5/6), yellow-

ish brown (10YR 5/6), yellow (10YR 7/6), yellowish red (5YR 5/6), and red (2.5YR 5/6) clay; moderate medium angular blocky structure; friable to firm; 20 percent shale and quartz fragments; strongly acid; clear wavy boundary.

B3—53 to 64 inches; mottled red (2.5YR 5/6), reddish yellow (7.5YR 6/6), and very pale brown (10YR 7/3) silty clay; weak medium subangular blocky structure; firm; 25 percent shale fragments; very thin patchy clay films; strongly acid; clear wavy boundary.

C—64 inches; soft shale.

Reaction is strongly acid thoughout the profile. Shale or quartz fragments are not in the profile in places but range to about 30 percent throughout the profile in other places. Depth to soft shale ranges from about 40 to 70 inches.

The A horizon is dark yellowish brown, very dark grayish brown, yellowish brown, brown, light yellowish brown, or strong brown.

The B1 horizon is yellowish brown clay loam or silty clay loam, and in some profiles it is mottled with shades of brown, yellow, and red. The B2t horizon is yellowish brown, brownish yellow, strong brown, yellowish red, or reddish yellow clay or silty clay. It is generally mottled in the lower part with shades of brown, yellow, and red. The B3 horizon has colors similar to those in the lower part of the B2t horizon, but it has a higher percentage of weathered shale fragments.

Herndon soils are geographically associated with Montevallo soils. They have a more clayey B horizon and they are deeper to weathered shale than these soils.

HeC—Herndon gravelly loam, 2 to 10 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Montevallo soils. Also included are areas of soils that have a silt loam or silty clay loam surface layer, areas of soils shallower than 40 inches to weathered shale, and areas of soils that have gray mottles in the subsoil.

This soil is suited to pasture, woodland, and most row crops grown in the county. It has a narrow moisture range within which it can be tilled without clodding or crusting. Capability unit IIIe–5; woodland suitability group 3o7.

Holston Series

The Holston series consists of deep, well drained soils on high stream terraces. These soils formed in thick beds of alluvial material washed from sandstone and shale uplands. Slopes range from 0 to 6 percent.

In a representative profile the surface layer is yellowish brown loam about 7 inches thick. The upper 18 inches of the subsoil is yellowish brown loam. Below this, to a depth of 50 inches, the subsoil is yellowish brown clay loam that has yellow, brownish yellow, and yellowish red mottles. Next, it is mottled red, yellowish red, brown, and strong brown clay that extends to a depth of 72 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines, but most of the acreage has been cleared and is used for cotton, corn, and soybeans.

Representative profile of Holston loam, 2 to 6 percent slopes, in a cultivated field about 2 miles north of Centre in the NW¼NE¼ sec. 10, T. 10 S., R. 9 E.:

Ap—0 to 7 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; very friable; few fine roots; medium acid; clear smooth boundary.

B21t—7 to 25 inches; yellowish brown (10YR 5/6) loam; weak and moderate medium subangular blocky structure; friable; few fine roots; clay bridges and coatings on most sand grains; very strongly acid; gradual wavy boundary.

B22t—25 to 50 inches; yellowish brown (10YR 5/8) clay loam that has common medium distinct yellow, brownish yellow, and yellowish red mottles; few light gray clean sand pockets; moderate medium subangular blocky structure; friable; few fine mica flakes; very thin patchy clay films; very strongly acid; gradual wavy boundary.

B23t—50 to 72 inches; mottled red (2.5YR 4/6), yellowish red (5YR 4/8), strong brown (7.5YR 5/6), and brown (10YR 5/3) clay; moderate medium subangular blocky structure; friable; few fine mica flakes; very thin patchy clay films; very strongly acid.

Reaction ranges from strongly acid to medium acid in the A horizon to very strongly acid in the B2t horizon. Some profiles contain a mottled clay loam, sandy clay loam, or silty clay loam B3 horizon.

The A horizon is brown, yellowish brown, or dark yellowish brown loam or fine sandy loam.

The B2t horizon is yellowish brown, brownish yellow, or strong brown loam, sandy clay loam, and clay loam. In places it is clay in the lower part.

Holston soils are geographically associated with Allen, Cedarbluff, Chewacla, Cloudland, Conasauga, Firestone, Leesburg, and Nella soils. They are yellower in the upper part of the B2 horizon than Allen and Nella soils, and they are better drained than Cedarbluff, Chewacla, Cloudland, and Conasauga soils. They are less clayey in the upper part of the B2 horizon than Firestone soils, and they contain fewer coarse fragments than Leesburg soils.

HfA—Holston fine sandy loam, 0 to 2 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is fine sandy loam.

Included with this soil in mapping are small areas of Allen, Cedarbluff, Chewacla, Cloudland, Conasauga, Firestone, Leesburg, and Nella soils. Also included are areas of soils in which pebbles make up more than 15 percent of the surface layer and areas of soils that have a loam or silt loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. The fields are large and well suited to multi-row farm equipment (fig. 9). Capability unit I–2; woodland suitability group 3o7.

HgB—Holston loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Allen, Cedarbluff, Chewacla, Cloudland, Conasauga, Firestone, Leesburg, and Nella soils. Also included are areas of soils in which pebbles make up more than 15 percent of the surface layer and areas of soils that have a sandy loam or silt loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide moisture range without clodding or crusting. Capability unit IIe–2; woodland suitability group 3o7.

Leesburg Series

The Leesburg series consists of deep, well drained soils on high stream terraces and uplands. These soils formed in thick beds of alluvial and colluvial material washed and rolled from sandstone and shale uplands. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is brown gravelly fine sandy loam about 6 inches thick. The upper 10 inches of the subsoil is brownish yellow gravelly loam. Below this, the subsoil is yellowish brown gravelly clay loam to a depth of 24 inches. Next, it is mottled yellowish brown, very pale brown, and strong brown gravelly clay loam to a depth of 65 inches or more.

Permeability is moderate. The organic-matter content

Figure 9.—**Large field of Holston fine sandy loam, 0 to 2 percent slopes. This soil is well suited to multi-row farm equipment.**

and natural fertility are low. The available water capacity is low to high. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage of soils that have slopes of less than 15 percent has been cleared and is used for row crops. Most of the acreage of soils that have slopes greater than 15 percent is still wooded.

Representative profile of Leesburg gravelly fine sandy loam, 2 to 6 percent slopes, in a field about 1¼ miles northeast of Centre airport in the SE¼SW¼ sec. 7, T. 10 S., R. 10 E.:

Ap—0 to 6 inches; brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 15 percent rounded pebbles; medium acid; clear smooth boundary.

B1—6 to 16 inches; brownish yellow (10YR 6/6) gravelly loam; weak fine granular and weak medium subangular blocky structure; friable; few fine roots; 15 percent round pebbles; strongly acid; gradual wavy boundary.

B21t—16 to 24 inches; yellowish brown (10YR 5/8) gravelly clay loam; moderate medium subangular blocky structure; friable; few fine roots; 30 percent rounded pebbles; very thin patchy clay films; strongly acid; gradual wavy boundary.

B22t—24 to 65 inches; mottled yellowish brown (10YR 5/6), very pale brown (10YR 7/3), and strong brown (7.5YR 5/6) gravelly clay loam; moderate medium subangular blocky structure; firm; 15 percent rounded pebbles; very thin patchy clay films; very strongly acid.

Reaction ranges from medium acid to very strongly acid throughout the profile. Content of coarse fragments, mainly rounded pebbles or cobbles, ranges from 10 to about 30 percent throughout the profile.

The A horizon is brown, dark grayish brown, yellowish brown, or light yellowish brown gravelly fine sandy loam, gravelly silt loam, or cobbly loam.

The B2t horizon is yellowish brown, brownish yellow, or strong brown gravelly loam, gravelly clay loam, gravelly sandy clay loam, and in only a few places, gravelly silty clay loam. It is generally mottled in the lower part with shades of yellow, red, or brown.

Leesburg soils are geographically associated with Allen, Cedarbluff, Cloudland, Conasauga, Firestone, Holston, and Nella soils. They have a yellower B2t horizon than Allen, Firestone, and Nella soils, and they are better drained than Cedarbluff, Cloudland, and Conasauga soils. They have a less clayey B2t horizon than Firestone soils, and they contain more coarse fragments than Holston soils.

LaB—Leesburg gravelly fine sandy loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Allen, Cedarbluff, Cloudland, Conasauga, Firestone, Holston, and Nella soils. Also included are small areas of soils in which pebbles make up less than 15 percent of some horizons and areas of soils that have a silt loam or loam surface layer.

This soil is suited to all crops grown in the county. It can be tilled within a wide range of moisture content without clodding or crusting, but coarse fragments tend to make it somewhat droughty and interfere with tillage operations. Capability unit IIIs–2; woodland suitability group 3o7.

LaC—Leesburg gravelly fine sandy loam, 6 to 15 percent slopes. This soil has a profile similar to the one described as representative of the series.

Included with this soil in mapping are small areas of Allen, Cedarbluff, Cloudland, Conasauga, Firestone, Holston, and Nella soils. Also included are areas of soils in which pebbles make up less than 15 percent of some layers and areas of soils that have a loam or silt loam surface layer.

This soil is moderately suited to row crops. It can be tilled within a wide moisture range without clodding or crusting, but coarse fragments interfere with tillage operations. It is

suited to woodland. Capability unit IVs–2; woodland suitability group 3o7.

LC—Leesburg-Allen association, steep. These steep soils are on hillsides and are underlain dominantly by sandstone. Slopes range from 20 to 45 percent.

The areas of this mapping unit are generally larger and more generalized and inclusive than the areas of most other mapping units in the county. Mapped areas range from about 200 to about 8,000 acres in size. Each mapped area contains both Leesburg and Allen soils and generally one or more less extensive soils. The pattern of these soils is fairly uniform, but the extent of each may differ in each mapped area. Estimates of soil percentages are based on the combined acreage of all mapped areas.

This association is about 43 percent Leesburg soils and about 34 percent Allen soils. The remaining 23 percent is Firestone soils, Herndon soils, and Rock outcrop.

Leesburg soils are in all positions within the mapped areas but are mostly at the highest elevations. They have a profile similar to the one described as representative of their series, but the surface layer is cobbly loam.

Allen soils are also in all positions within the mapped areas but are mostly at the lower elevations. They have a profile similar to the one described as representative of their series, but the surface layer is fine sandy loam.

This association is suited to trees, and nearly all the acreage is wooded. Capability unit VIIs–2; woodland suitability group 3o7.

Linker Series

The Linker series consists of moderately deep, well drained soils on uplands. These soils formed in residuum weathered from sandstone. Slopes range from 2 to 10 percent.

In a representative profile the surface layer is dark yellowish brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown sandy loam 6 inches thick. The subsoil is yellowish red loam 22 inches thick. Sandstone bedrock is at a depth of 33 inches.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate. The native vegetation was dominately mixed hardwoods and pines, but about two-thirds of the acreage has been cleared and is used for row crops and pasture. Cotton and corn are the main crops.

Representative profile of Linker fine sandy loam, 6 to 10 percent slopes, in a wooded area about 3 miles southwest of the point where Little River crosses Alabama Highway 35 in the NE¼NE¼ sec. 12, T. 8 S., R. 9 E.:

A1—0 to 5 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

A2—5 to 11 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

B2t—11 to 33 inches; yellowish red (5YR 4/8) loam; weak medium subangular blocky structure; friable; very thin patchy clay films; very strongly acid; clear wavy boundary.

R—33 inches; sandstone.

Reaction is very strongly acid to extremely acid throughout the profile. The content of small sandstone fragments ranges from 0 to 15 percent throughout the profile. Depth to bedrock is 20 to 40 inches.

The A horizon is dark yellowish brown, yellowish brown, or brown.

The B2t horizon is yellowish red or red loam, sandy clay loam, or clay loam.

Linker soils are geographically associated with Hartsells, Hector, and Townley soils. They are deeper to bedrock than Hector soils, and they have a redder B horizon than Hartsells soils. They have a less clayey B2 horizon than Townley soils.

LdB—Linker fine sandy loam, 2 to 6 percent slopes. This soil has a profile similar to the one described as representative of the series, but it is 2 inches shallower to sandstone bedrock.

Included with this soil in mapping are small areas of Hartsells, Hector, and Townley soils. Also included are areas of soils in which fragments make up more than 15 percent of the surface layer, areas of soils that have a sandy clay loam or loam surface layer, and areas of soils deeper than 40 inches to bedrock.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide range of moisture content without clodding or crusting. Capability unit IIe–2; woodland suitability group 4o1.

LdC—Linker fine sandy loam, 6 to 10 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Hartsells, Hector, and Townley soils. Also included are small areas of soils in which fragments make up more than 15 percent of the surface layer, areas of soils that have a sandy clay loam or loam surface layer, and areas of soils deeper than 40 inches to bedrock.

This soil is suited to all crops grown in the county. It is easy to work and can be tilled within a wide moisture range without clodding or crusting. Erosion is a hazard if this soil is cultivated. Capability unit IIIe–2; woodland suitability group 4o1.

Lobelville Series

The Lobelville series consists of deep, moderately well drained soils on first bottoms. These soils formed in alluvium washed from sandstone and cherty uplands. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown cherty loam 6 inches thick. The subsoil to a depth of 17 inches is dark brown cherty loam that has yellowish brown mottles. Below this, it is mottled grayish brown, brown, and light yellowish brown cherty loam to a depth of 60 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are medium. The available water capacity is low to moderate. The native vegetation was dominantly mixed hardwoods and pines, but about half of the acreage has been cleared and is used mainly for pasture and hay. Some of the acreage is used for row crops.

Lobelville soils are mapped only in a complex with Ennis soils in this county.

Representative profile of Lobelville cherty loam, from an area of Ennis-Lobelville complex, in a wooded area about 2 miles southeast of Mountain Springs Church in the NW¼SW¼ sec. 5, T. 12 S., R. 10 E.:

A—0 to 6 inches; brown (10YR 4/3) cherty loam; weak fine granular structure; friable; many fine roots; 10 percent small chert fragments; strongly acid; clear smooth boundary.

B1—6 to 12 inches; dark brown (10YR 4/3) cherty loam; weak fine granular and weak medium subangular blocky structure;

friable; many fine roots; 10 percent small chert fragments; strongly acid; gradual wavy boundary.

B21—12 to 17 inches; dark brown (10YR 4/3) cherty loam that has common medium distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few fine and medium roots; 20 percent small chert fragments; strongly acid; gradual wavy boundary.

B22—17 to 60 inches; mottled grayish brown (10YR 5/2), brown (10YR 5/3), and light yellowish brown (10YR 6/4) cherty loam; weak medium subangular blocky structure; friable; few medium roots; 20 percent small chert fragments; strongly acid.

Reaction is strongly acid or very strongly acid throughout. Chert fragments range from 10 to 35 percent in the upper part of the solum and generally increase with depth.

The A horizon is brown or dark grayish brown.

The B horizon is brown, dark brown, yellowish brown, or pale brown cherty loam or cherty clay loam. It is generally mottled in the lower part with shades of brown, yellow, and gray.

Lobelville soils are geographically associated with Bodine, Ennis, Minvale, and Stemley soils. They contain fewer coarse fragments than Bodine soils, and they are more poorly drained than Ennis and Minvale soils. They do not have the fragipan common in Stemley soils.

McQueen Series

The McQueen series consists of deep, well drained soils on stream terraces. These soils formed in thick beds of alluvium washed from sandstone and shale uplands. Slopes range from 0 to 6 percent.

In a representative profile the surface layer is brown loam about 4 inches thick. The upper 16 inches of the subsoil is red silty clay. Below this, the subsoil is yellowish red clay to a depth of 42 inches and strong brown silty clay loam to a depth of 78 inches. The underlying material is mottled yellowish brown, yellowish red, and light brownish gray silty clay loam.

Permeability is slow. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods, but most of the acreage has been cleared and is used for cotton, corn, and soybeans.

Representative profile of McQueen loam, 2 to 6 percent slopes, in a cottonfield about 1½ miles west and south of Centre in the NE¼SE¼ sec. 30, T. 10 S., R. 9 E.:

Ap—0 to 4 inches; brown (7.5YR 4/4) loam; weak fine granular structure; very friable; few fine roots; few small mica flakes; strongly acid; clear smooth boundary.

B21t—4 to 20 inches; red (2.5YR 5/8) silty clay; moderate medium angular blocky structure; firm; few fine roots; very thin patchy clay films; common small mica flakes; strongly acid; gradual wavy boundary.

B22t—20 to 42 inches; yellowish red (5YR 5/8) clay; moderate medium angular blocky structure; firm; very thin patchy clay films; common small mica flakes; very strongly acid; gradual wavy boundary.

B3t—42 to 78 inches; strong brown (7.5YR 5/8) silty clay loam; weak medium subangular blocky structure; firm; common small mica flakes; very strongly acid; gradual wavy boundary.

C—78 to 96 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 5/8), and light brownish gray (10YR 6/2) silty clay loam; massive; firm; common small mica flakes; very strongly acid.

The solum is 50 to 80 inches thick. Reaction ranges from strongly acid to very strongly acid throughout the profile. Mica flakes range from few to common.

The A horizon is brown or yellowish brown.

The B2 horizon is yellowish red, red, or strong brown clay, silty clay, silty clay loam, or clay loam. In places it is mottled in the lower part with shades of red, yellow, and brown. The B3 and C horizons are strong brown or yellowish red silty clay loam, sandy clay loam, or sandy loam. They are mottled with shades of yellow, brown, and red.

McQueen soils are geographically associated with Bomar, Cloudland, Ellisville, Toccoa, and Wickham soils. They do not have the fragipan characteristic of Bomar and Cloudland soils, and they have a redder B2 horizon than Ellisville soils. They are more clayey in the upper part of the B horizon than Toccoa and Wickham soils.

MaA—McQueen loam, 0 to 2 percent slopes. This soil is occasionally flooded. It has a profile similar to the one described as representative of the series, but the surface layer is 2 inches thicker.

Included with this soil in mapping are small areas of Bomar, Cloudland, Ellisville, Toccoa, and Wickham soils. Also included are areas of soils that have a sandy loam or silt loam surface layer, areas of soils that have a brown subsoil, and areas of soils that have slopes steeper than 2 percent and that do not flood.

This soil is suited to all crops grown in the county. Flooding generally occurs during winter, and crops are seldom damaged. This soil is easy to work and has a wide moisture range within which it can be tilled. Capability unit I–1; woodland suitability group 3o7.

MaB—McQueen loam, 2 to 6 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Bomar, Cloudland, Ellisville, Toccoa, and Wickham soils. Also included are areas of soils that have a sandy loam or silt loam surface layer and areas of soils that have a brown subsoil.

This soil is suited to all crops grown in the county. It is easy to work and has a wide moisture range within which it can be tilled. Capability unit IIe–1; woodland suitability group 3o7.

Minvale Series

The Minvale series consists of deep, well drained soils on uplands. These soils formed in thick beds of residuum weathered from cherty limestone. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is dark yellowish brown cherty loam about 4 inches thick. The upper 10 inches of the subsoil is yellowish brown cherty loam. Below this, the subsoil is strong brown cherty silt loam to a depth of 36 inches. Next, it is yellowish red cherty silty clay loam that has faint reddish yellow mottles and that extends to a depth of 72 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Much of the acreage was once cleared and used for row crops but is now idle or has been planted to pines. The acreage still cultivated is used mainly for corn, soybeans, and pasture (fig. 10).

Representative profile of Minvale cherty loam, 6 to 10 percent slopes, in a wooded area about 2¼ miles northeast of Jamestown in the NW¼SE¼ sec. 24, T. 7 S., R. 10 E.:

A1—0 to 4 inches; dark yellowish brown (10YR 4/4) cherty loam; weak fine granular structure; very friable; many fine roots; 15 percent chert fragments; very strongly acid; clear smooth boundary.

B1—4 to 14 inches; yellowish brown (10YR 5/6) cherty loam; weak medium subangular blocky structure; very friable; few fine roots; 15 percent chert fragments; very strongly acid; gradual wavy boundary.

B21t—14 to 36 inches; strong brown (7.5YR 5/6) cherty silt loam; moderate medium angular blocky structure; friable; few medium roots; very thin patchy clay films; 20 percent chert fragments; very strongly acid; gradual wavy boundary.

B22t—36 to 72 inches; yellowish red (5YR 5/8) cherty silty clay

Figure 10.—**Bahiagrass pasture on Minvale cherty loam, 2 to 6 percent slopes.**

loam that has few fine faint reddish yellow mottles; moderate medium angular blocky structure; friable; very thin patchy clay films; 20 percent chert fragments; very strongly acid.

Reaction ranges from strongly acid to very strongly acid throughout. Chert fragments throughout the profile range from 15 to 35 percent.

The A horizon is dark yellowish brown, brown, yellowish brown, or dark grayish brown.

The B1 horizon is yellowish brown, strong brown, or yellowish red cherty loam or cherty silt loam. The B2t horizon is strong brown, yellowish red, or yellowish brown cherty silty clay loam, cherty silt loam, cherty clay loam, or cherty clay. It is generally mottled in the lower part with shades of yellow, red, and brown.

Minvale soils are geographically associated with Bodine, Chewacla, Decatur, Dewey, Ennis, Fullerton, Lobelville, and Stemley soils. They contain fewer coarse fragments than Bodine soils, and they are better drained than Chewacla and Lobelville soils. They have a less clayey B horizon than Decatur, Dewey, and Fullerton soils, and they are redder in the lower part of the B horizon than Ennis soils. They do not have the fragipan characteristic of Stemley soils.

McB—Minvale cherty loam, 2 to 6 percent slopes. This soil has a profile similar to the one described as representative of the series, but it has a brown surface layer 1 inch thicker.

Included with this soil in mapping are small areas of Bodine, Chewacla, Decatur, Dewey, Ennis, Fullerton, Lobelville, and Stemley soils. Also included are areas of soils that have a fragipan in the subsoil, areas of soils in which chert fragments make up less than 15 percent or more than 35 percent of some part of the profile, and areas of soils that have a cherty silt loam surface layer.

This soil is suited to all crops grown in the county. It has a wide moisture range within which it can be tilled, but the content of chert fragments sometimes makes tillage difficult. Capability unit IIe–2; woodland suitability group 3o7.

McC—Minvale cherty loam, 6 to 10 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Bodine, Chewacla, Decatur, Dewey, Ennis, Fullerton, Lobelville, and Stemley soils. Also included are small areas of soils that have a fragipan in the subsoil, areas of soils in which chert fragments make up less than 15 percent or more than 35 percent of some part of the profile, and areas of soils that have a cherty silt loam surface layer.

This soil is suited to all crops grown in the county. It has a wide moisture range within which it can be tilled, but the content of chert fragments sometimes makes tillage difficult. When this soil is tilled, the hazard of erosion is moderately high. Capability unit IIIe–2; woodland suitability group 3o7.

ME—Minvale-Bodine association, steep. These steep soils are on hillsides and ridges and are underlain dominantly by cherty limestone. Slopes range from 20 to 45 percent.

The areas of this mapping unit are generally larger and more generalized and inclusive than the areas of most other mapping units in the county. Mapped areas range from about 200 to 4,000 acres in size. Each mapped area contains both Minvale and Bodine soils and generally one or more less extensive soils. The pattern of these soils is fairly uniform, but the extent of each may differ in each mapped area. Estimates of soil percentages are based on the combined acreage of all mapped areas.

This association is about 55 percent Minvale and similar soils and about 26 percent Bodine and similar soils. The remaining 19 percent is Chewacla, Dewey, Ennis, and Lobelville soils.

Minvale soils are mostly on ridgetops and toe slopes but are also on steep side slopes. They have a profile similar to

the one described as representative of the series, but the surface layer is browner and 1 inch thicker.

Bodine soils are mostly on steep side slopes but are also on ridgetops and toe slopes. They have a profile similar to the one described as representative of the series, but the surface layer is 3 inches thicker.

This association is suited to trees, and nearly all the acreage is wooded. In some areas the hardwoods have been killed; these areas have been seeded to pines (fig. 11). Capability unit VIIs–2; Minvale part in woodland suitability group 3o7; Bodine part in woodland suitability group 4f3.

Montevallo Series

The Montevallo series consists of shallow, well drained soils on uplands. These soils formed in residuum weathered from shale. Slopes range from 20 to 45 percent.

In a representative profile the surface layer is brown shaly loam about 5 inches thick. The upper 2 inches of the subsoil is dark yellowish brown shaly silt loam. Below this, the subsoil is strong brown shaly silty clay loam to a depth of 14 inches. The underlying material is weathered shale.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is very low. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage is wooded.

Representative profile of Montevallo shaly loam, from an area of Montevallo-Herndon association, steep, in a wooded area about 10 miles south of Forney in the SW¼SE¼ sec. 25, T. 12 S., R. 11 E.:

A—0 to 5 inches; brown (10YR 4/3) shaly loam; weak fine granular structure; very fragile; many fine roots; 15 percent small shale fragments; very strongly acid; clear smooth boundary.

B1—5 to 7 inches; dark yellowish brown (10YR 4/4) shaly silt loam; weak medium subangular blocky structure; friable; many fine roots; 35 percent small shale fragments; very strongly acid; gradual wavy boundary.

B2—7 to 14 inches; strong brown (7.5YR 5/6) shaly silty clay loam; moderate medium subangular blocky structure; friable; few medium roots; 35 percent small shale fragments; very strongly acid; clear irregular boundary.

C—14 to 40 inches; soft weathered shale.

Reaction is medium acid to very strongly acid throughout the profile. Shale fragments range from 10 to 30 percent in the A horizon and from 35 to 80 percent in the B horizon. Depth to weathered shale is 10 to 20 inches.

The A horizon is brown, dark brown, dark grayish brown, yellowish brown, dark yellowish brown, or light yellowish brown.

The B horizon is dark yellowish brown, yellowish brown, light yellowish brown, brown, strong brown, yellowish red, reddish yellow, or brownish yellow shaly loam, shaly silt loam, shaly silty clay loam, or shaly clay loam.

Montevallo soils are geographically associated with Conasauga, Firestone, and Herndon soils. They are shallower to shale than these soils.

Figure 11.—**Area of Minvale-Bodine association, steep, where hardwoods have been controlled. The area has been seeded to pines.**

MF—Montevallo-Herndon association, steep. These steep soils are on hillsides and are underlain dominantly by shale. Slopes range from 20 to 45 percent.

There is only one area of this mapping unit, but it covers 3,538 acres. The area of this mapping unit is larger and more generalized and inclusive than the areas of most other mapping units in the county. The mapped area contains both Montevallo and Herndon soils and generally one or more less extensive soil in a fairly uniform pattern.

This association is about 42 percent Montevallo soils and about 22 percent Herndon soils. The remaining 36 percent is less well drained soils in narrow drainageways, soils similar to Montevallo soils but deeper to shale, and soils similar to Herndon soils but having a less clayey subsoil.

Montevallo soils are mostly on steep hillsides and ridgetops but are in all positions in the landscape. These soils have the profile described as representative of their series.

Herndon soils are mostly in less sloping areas within the association but are also on steep side slopes in places. These soils have a profile similar to the one described as representative of the series, but it is 22 inches shallower to soft shale.

This association is suited to trees, and nearly all of the acreage is wooded. Adapted pine trees are suited to the soils. Capability unit VIIe–5; Montevallo part in woodland suitability group 5d3; Herndon part in woodland suitability group 3o7.

Nella Series

The Nella series consists of deep, well drained soils on uplands and stream terraces. These soils formed in thick beds of alluvial and colluvial material washed or rolled from sandstone and shale uplands. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is brown gravelly fine sandy loam about 7 inches thick. The upper 4 inches of the subsoil is yellowish red gravelly loam. Below this, the subsoil is yellowish red gravelly sandy clay loam to a depth of 30 inches. Next, it is yellowish red gravelly clay that has strong brown and red mottles and that extends to a depth of 72 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage of soils that have slopes of 15 percent or less was once cleared but is now idle. Some acreage is still used for pasture and hay.

Representative profile of Nella gravelly fine sandy loam, 10 to 25 percent slopes, in an idle field about 1.5 miles northeast of Leesburg in the NE¼SE¼ sec. 1, T. 10 S., R. 8 E.:

Ap—0 to 7 inches; brown (7.5YR 4/4) gravelly fine sandy loam; weak fine granular structure; very friable; 15 percent small pebbles; many fine roots; medium acid; clear smooth boundary.

B1—7 to 11 inches; yellowish red (5YR 4/6) gravelly loam; weak fine granular and weak medium subangular blocky structure; friable; 15 percent small pebbles; clay bridges on sand grains; few fine and medium roots; strongly acid; gradual wavy boundary.

B21t—11 to 30 inches; yellowish red (5YR 4/8) gravelly sandy clay loam; moderate medium subangular blocky structure; friable; 15 percent small pebbles; very thin patchy clay films; few medium roots; strongly acid; gradual wavy boundary.

B22t—30 to 72 inches; yellowish red (5YR 4/8) gravelly clay that has common medium distinct strong brown and red mottles; moderate medium subangular blocky structure; friable; 15 percent small pebbles; very thin patchy clay films; very strongly acid.

Reaction ranges from medium acid to very strongly acid throughout the profile. Content of coarse fragments, mainly sandstone pebbles or cobbles, ranges from 10 to 35 percent.

The A horizon is brown, dark brown, dark grayish brown, light brown, reddish brown, or dark yellowish brown gravelly fine sandy loam or cobbly fine sandy loam.

The B1 horizon is yellowish red, strong brown, or brown gravelly loam, gravelly sandy loam, or gravelly clay loam and their cobbly counterparts. The B2t horizon is yellowish red, reddish yellow, or red gravelly sandy clay loam, gravelly clay loam, gravelly loam, or gravelly clay and their cobbly counterparts. It is generally mottled in the lower part with shades of red, yellow, and brown.

Nella soils are geographically associated with Allen, Cloudland, Decatur, Holston, and Leesburg soils. They contain more coarse fragments than Allen and Decatur soils and they do not have the fragipan characteristic of Cloudland soils. They are less clayey in the upper part of the B horizon than Decatur soils, and they have a redder B horizon than Holston and Leesburg soils.

NaC—Nella cobbly fine sandy loam, 2 to 10 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is cobbly (fig. 12).

Included with this soil in mapping are small areas of Allen, Cloudland, Decatur, Holston, and Leesburg soils. Also included are areas of soils in which cobbles make up less than 10 percent of the surface layer or soils that have a loam surface layer, and small areas of Rock outcrop.

This soil is suited to woodland. It is poorly suited to cultivated crops, although they are occasionally grown. The coarse fragments interfere with tillage. Capability unit IVs–2; woodland suitability group 3o7.

NbD—Nella gravelly fine sandy loam, 10 to 25 percent slopes. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of Allen, Cloudland, Decatur, Holston, and Leesburg soils. Also included are small areas of soils in which pebbles make up less than 10 percent of some layers and areas of soils that have a loam surface layer.

This soil is suited to woodland. Coarse fragments interfere with tillage and also result in lower available water capacity, causing droughty conditions. Capability unit VIs–2; woodland suitability group 3o7.

Rock Outcrop

Rock outcrop is either limestone or sandstone bedrock exposed at the surface. In some areas it is level with the surface, and in other areas it protrudes several feet above the surface. Exposures are in such an intricate pattern that they are impractical to map separately. In this county Rock outcrop is mapped only as part of the following units: CfB—Conasauga-Firestone-Rock outcrop complex, 2 to 6 percent slopes; FcD—Firestone-Conasauga-Rock outcrop complex, 6 to 25 percent slopes; HC—Hartsells-Rock outcrop association, steep; HdC—Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes.

Figure 12.—**Profile of Nella cobbly fine sandy loam, 2 to 10 percent slopes, showing cobbles throughout the profile.**

Stemley Series

The Stemley series consists of deep, moderately well drained soils on stream terraces and toe slopes. These soils formed in thick beds of alluvial and colluvial material washed or rolled mainly from cherty uplands. They have a cherty fragipan in the lower part of the subsoil. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is brown cherty loam about 7 inches thick. The upper 10 inches of the subsoil is yellowish brown cherty silt loam. The fragipan is 16 inches thick. The upper 4 inches is light yellowish brown cherty loam that has brown, yellowish brown, and very pale brown mottles. The lower 12 inches is mottled yellowish brown, light gray, light yellowish brown, dark grayish brown, and strong brown cherty sandy clay loam. The subsoil below the fragipan is mottled light gray, strong brown, yellowish red, and red cherty loam to a depth of 65 inches or more.

Permeability is moderate above the fragipan and slow in

the fragipan. The available water capacity is low to very low. The organic-matter content and natural fertility are low. The native vegetation was dominantly mixed hardwoods and pines. Most of the acreage was once cleared and cultivated but is now idle or has been planted to pine trees.

Representative profile of Stemley cherty loam, 0 to 3 percent slopes, in a pine plantation about 1¼ miles northeast of Round Mountain in the NW¼SW¼ sec. 22, T. 9 S., R. 9 E.:

Ap—0 to 7 inches; brown (10YR 4/3) cherty loam; weak fine granular structure; very friable; 15 percent small chert fragments; many fine and few medium roots; slightly acid; clear smooth boundary.

B2t—7 to 17 inches; yellowish brown (10YR 5/6) cherty silt loam; weak medium subangular blocky structure; friable; 15 percent small chert fragments; few fine and medium roots; clay bridges on sand grains; strongly acid; clear wavy boundary.

Bx1&A'2—17 to 21 inches; light yellowish brown (2.5Y 6/4) cherty loam that has common medium distinct yellowish brown, brown, and very pale brown mottles; very coarse prismatic structure; about 70 percent of the horizonal cross section is firm and brittle; 60 percent small chert fragments; few fine roots mainly in very pale brown vertical veins in polygonal network; strongly acid; gradual wavy boundary.

Bx2—21 to 33 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/2), light yellowish brown (2.5Y 6/4), strong brown (7.5YR 5/8), and dark grayish brown (10YR 4/2) cherty sandy clay loam; moderate coarse prismatic structure parting to weak medium subangular blocky; about 80 percent of the horizonal cross section is firm and brittle; 80 percent small chert fragments; few fine and medium roots mainly in light gray vertical veins in polygonal network; very strongly acid; gradual wavy boundary.

B3—33 to 65 inches; mottled light gray (10YR 6/1), strong brown (7.5YR 5/8), yellowish red (5YR 5/8), and red (2.5YR 4/8) cherty loam; massive; firm; 25 percent small chert fragments; clay bridges between sand grains; very strongly acid.

Reaction ranges from slightly acid to very strongly acid in the A horizon and from very strongly acid to extremely acid in the B horizon. Chert content ranges from 15 to 35 percent above and below the fragipan and from 30 to 80 percent in the fragipan. Depth to the fragipan ranges from 17 to 36 inches. Depth to bedrock is 5 to more than 8 feet.

The A horizon is brown, dark yellowish brown, dark brown, or dark grayish brown.

The B2t horizon is yellowish brown, brownish yellow, light yellowish brown, or olive yellow cherty loam, cherty silty clay loam, or cherty silt loam. It is mottled with shades of brown in places. The Bx and B3 horizons are cherty sandy clay loam, cherty loam, or cherty silty clay loam. They are mottled in shades of red, yellow, brown, and gray, or they are brown or light yellowish brown.

Stemley soils are geographically associated with Bodine, Ennis, Fullerton, Lobelville, and Minvale soils. They contain fewer coarse fragments in the upper part of the B horizon than Bodine soils, and they are more poorly drained than Ennis, Fullerton, and Minvale soils. They have a fragipan, and Lobelville soils do not.

SaB—Stemley cherty loam, 0 to 3 percent slopes. This is the only Stemley soil mapped in the county. It is subject to occasional, brief flooding.

Included with this soil in mapping are small areas of Bodine, Ennis, Fullerton, Lobelville, and Minvale soils. Also included are areas of soils that do not have a fragipan in the subsoil, areas of soils in which coarse fragments make up less than 15 percent of some parts of the profile, and areas of soils that have a cherty sandy loam or cherty silt loam surface layer.

This soil is suited to most crops grown in the county. Chert fragments on the surface can interfere with cultivation of small plants, and the fragipan hinders deep root development. The soil can be tilled within a medium moisture range without clodding or crusting. Tillage is generally delayed in the spring because of wetness. Capability unit IIw–9; woodland suitability group 3o7.

Toccoa Series

The Toccoa series consists of deep, well drained soils on first bottoms. These soils formed in thick beds of alluvial material. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown sandy loam about 10 inches thick. The underlying material is brown sandy loam to a depth of 40 inches; brown loamy sand mottled with light yellowish brown to a depth of 50 inches; and yellowish red silty clay mottled with strong brown, light gray, and yellowish brown to a depth of 90 inches or more.

Permeability is moderately rapid. The organic-matter content and natural fertility are low. The available water capacity is low to moderate. The native vegetation was dominantly mixed hardwoods and pines, but most of the acreage has been cleared and is used for row crops and pasture.

Representative profile of Toccoa sandy loam, from an area of Toccoa soils, in a cornfield about 1¾ miles southwest of Centre in the SE¼SW¼ sec. 28, T. 10 S., R. 9 E.:

Ap—0 to 10 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many small mica flakes; few fine roots; slightly acid; clear smooth boundary.

C1—10 to 40 inches; brown (10YR 4/3) sandy loam that has common fine distinct strong brown, dark yellowish brown, and light yellowish brown mottles; weak fine granular structure; very friable; many small mica flakes; medium acid; gradual wavy boundary.

C2—40 to 50 inches; brown (10YR 5/3) loamy sand that has few fine faint light yellowish brown mottles; single grained; very friable; many small mica flakes; medium acid; clear wavy boundary.

Bb—50 to 90 inches; yellowish red (5YR 5/6) silty clay that has common medium distinct strong brown, light gray, and yellowish brown mottles; moderate medium angular blocky structure; firm; very thin patchy clay films; strongly acid.

Reaction ranges from slightly acid in the A horizon to medium acid in the C horizon. Small mica flakes range from common to many in the A and C horizons.

The A horizon is brown or dark yellowish brown loamy sand, sandy loam, or loam

The C horizon is brown or yellowish brown loam, sandy loam, or loamy sand. It is generally mottled in the lower part with shades of brown and red. Some profiles contain thin bands of silty and sandy soil material in the lower part of the C horizon. The buried B horizon, which is not in all profiles, is yellowish red, yellowish brown, or brown and is mottled with shades of brown and gray. It is at a depth of 40 inches or more.

Toccoa soils are geographically associated with Chewacla, Ellisville, McQueen, and Wickham soils. They are better drained than Chewacla soils, and they are coarser textured in the upper part of the profile than Ellisville, McQueen, and Wickham soils.

Ta—Toccoa soils. This is the only unit of Toccoa soils mapped in the county. They are adjacent to some of the larger streams in the county. These soils have a surface layer of loamy sand, sandy loam, or loam. The pattern and extent of the frequently flooded Toccoa soils are not uniform. The areas along the old river channel from Weiss Dam flood gates and downstream to the Etowah County line have not flooded since the completion of Weiss Dam, but there is still a possibility that these soils can be flooded. Slopes range from 0 to 2 percent.

Included with these soils in mapping are small areas of Chewacla, Ellisville, McQueen, and Wickham soils.

This soil is suited to most crops grown in the county. Flooding generally occurs in winter or early in spring, and crops are seldom damaged. These soils are droughty during

dry seasons. Capability unit IIw-2; woodland suitability group 1o7.

Townley Series

The Townley series consists of moderately deep, well drained soils on uplands. These soils formed in residuum weathered from acid shale. Slopes range from 2 to 10 percent.

In a representative profile the surface layer is brown sandy loam about 3 inches thick. The upper 4 inches of the subsoil is brown loam. Below this, the subsoil is yellowish red silty clay to a depth of 26 inches. Next, it is yellowish red clay that has red mottles and that extends to a depth of 30 inches. The underlying material is soft shale at a depth of 30 inches.

Permeability is slow. The organic-matter content and natural fertility are low. The available water capacity is moderate to high. The native vegetation was dominantly mixed hardwoods and pines, but about two-thirds of the acreage has been cleared and is used for row crops and pasture.

Representative profile of Townley sandy loam, 2 to 10 percent slopes, in a pasture about 1 mile southwest of Sandrock in the SE¼SE¼ sec. 22, T. 9 S., R. 8 E.:

Ap—0 to 3 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent shale fragments; strongly acid; clear smooth boundary.

B1—3 to 7 inches; brown (7.5YR 5/4) loam; weak fine granular and weak medium subangular blocky structure; friable; few fine roots; 5 percent shale fragments; strongly acid; gradual wavy boundary.

B21t—7 to 26 inches; yellowish red (5YR 5/6) silty clay; moderate medium angular blocky structure; friable; very thin patchy clay films; 5 percent shale fragments; very strongly acid; gradual wavy boundary.

B22t—26 to 30 inches; yellowish red (5YR 5/6) clay that has common medium distinct red mottles; moderate medium angular blocky structure; friable; 20 percent shale fragments; very strongly acid; clear irregular boundary

C—30 inches; soft shale.

Reaction ranges from strongly acid in the A horizon to very strongly acid in the Bt horizon. Shale and sandstone fragments in the solum range from 5 to 20 percent in the upper part and from 15 to 30 percent in the lower part. Depth to shale ranges from 23 to 30 inches.

The A horizon is brown, yellowish brown, or strong brown.

The B1 horizon is brown or strong brown loam or clay loam. It is mottled in places with shades of yellow or brown. The B2t horizons are strong brown or yellowish red silty clay loam, silty clay, or clay. They are generally mottled in the lower part with shades of red, brown, yellow, and in places, gray. The gray mottles inherited their color from the parent material.

Townley soils are geographically associated with Hartsells, Hector, and Linker soils. They have a more clayey B2 horizon than those soils.

TbC—Townley sandy loam, 2 to 10 percent slopes. This is the only Townley soil mapped in the county.

Included with this soil in mapping are small areas of Hartsells, Hector, and Linker soils. Also included are areas of soils that are less than 23 inches or more than 30 inches deep to shale.

This soil is suited to woodland, pasture, and some row crops. When this soil is tilled, erosion is a hazard. Capability unit IVe-5; woodland suitability group 4o1.

Udorthents

UaE—Udorthents, 0 to 40 percent slopes. This mapping unit consists of mines, mine dumps, and made land. Slopes range from 0 to 40 percent.

The mines and mine dumps parts of Udorthents consist of old strip type mines from which iron ore and bauxite were extracted. The pits range from about 5 feet to as much as 100 feet in depth, and some now hold water. The area around the pits is covered with excess soil material, impurities, and refuse from the mine pits. This refuse consists of soil material, low-grade or impure ore, and rocks as much as several feet across. Many of these areas are partly covered with young pines. The areas are located throughout the county, but the largest ones are around Rockrun, Bluffton, and Tecumseh.

The made land part of this mapping unit consists mostly of cuts and fills in areas being prepared for or used for building sites, channel spoils, and other similar uses. The soil has been removed or reworked in these areas to the extent that soil profiles can no longer be identified. The material ranges from cherty silty clay loam or clay to exposed pieces of shale and limestone. Reaction ranges from extremely acid to neutral. The organic-matter content and natural fertility are low. In some areas where vegetation is to be grown, topsoil and fertilizer are needed. Made land is not used for farming. Erosion is a hazard where the soil material is bare.

This mapping unit is too variable to rate for land capability or woodland suitability.

Wickham Series

The Wickham series consists of deep, well drained soils on stream terraces. These soils formed in thick beds of alluvial material washed from sandstone and shale uplands. Slopes range from 0 to 6 percent.

In a representative profile the surface layer is brown fine sandy loam about 8 inches thick. The upper 4 inches of the subsoil is mixed brown and yellowish red sandy clay loam. Below this, the subsoil is yellowish red sandy clay loam to a depth of 41 inches. The underlying material is yellowish red sandy loam that has brown, light yellowish brown, and strong brown mottles and that extends to a depth of 70 inches or more.

Permeability is moderate. The organic-matter content and natural fertility are low. The available water capacity is moderate. The native vegetation was dominantly mixed hardwoods, but most of the acreage has been cleared and is used for row crops and pasture. Cotton and soybeans are the main crops.

Representative profile of Wickham fine sandy loam, 0 to 2 percent slopes, in a cottonfield about 2 miles southeast of Weiss Dam in the NE¼SE¼ sec. 35, T. 10 S., R. 8 E.:

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

B1—8 to 12 inches; mixed brown (7.5YR 5/4) and yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine mica flakes; few fine roots; clay coatings on sand grains; medium acid; gradual wavy boundary.

B21t—12 to 20 inches; yellowish red (5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; common fine mica flakes; few fine roots; clay coatings on sand grains; strongly acid; gradual wavy boundary.

B22t—20 to 41 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine mica flakes; clay coatings on sand grains; strongly acid; clear wavy boundary.

C—41 to 70 inches; yellowish red (5YR 4/6) sandy loam that has common medium distinct brown, light yellowish brown, and strong brown mottles; single grained; very friable; common fine mica flakes; strongly acid.

The solum is 40 to 70 inches thick. Reaction ranges from medium acid to very strongly acid throughout the profile. Mica flakes range from few to common throughout the profile. Depth to bedrock is 6 to more than 10 feet.

The A horizon is brown or light yellowish brown.

The B1 horizon is mixed brown and yellowish red or strong brown sandy clay loam or loam. The B2t horizon is yellowish red sandy clay loam, sandy clay, or silty clay loam. The lower part is mottled in places with shades of yellow or brown. The C horizon is yellowish red or strong brown and is mottled with shades of yellow, brown, or red.

Wickham soils are geographically associated with Chewacla, Ellisville, McQueen, and Toccoa soils. They are better drained than Chewacla soils, and they have a redder B2 horizon than Ellisville soils. They have a less clayey B2 horizon than McQueen soils and are more clayey in the upper part of the profile than Toccoa soils.

WaA—Wickham fine sandy loam, 0 to 2 percent slopes. This soil is flooded occasionally in winter. It has the profile described as representative of the series.

Included with this soil in mapping are small areas of Chewacla, Ellisville, McQueen, and Toccoa soils. Also included are areas of soils that have a sandy loam or sandy clay loam surface layer and areas of soils that have slopes steeper than 2 percent and that are never flooded.

This soil is suited to all crops grown in the county. Flooding generally occurs during winter, and crops are seldom damaged. This soil is easy to work and has a wide moisture range within which it can be tilled. Capability unit I–2; woodland suitability group 2o7.

WaB—Wickham fine sandy loam, 2 to 6 percent slopes. This soil has a profile similar to the one described as representative of the series, but the surface layer is 2 inches thinner.

Included with this soil in mapping are small areas of Chewacla, Ellisville, McQueen, and Toccoa soils. Also included are areas of soils that have a loam or sandy clay loam surface layer.

This soil is suited to all crops grown in the county. It is easy to work and has a wide moisture range within which it can be tilled. Capability unit IIe–2; woodland suitability group 2o7.

Use and Management of the Soils

In this section, the use and management of the soils in Cherokee County for crops, woodland, and wildlife habitat are discussed. Management of the soils for the production of crops, timber, and wildlife is explained. In addition, the soils are rated for recreational, engineering, and urban uses.

Use of the Soils for Crops [2]

In this section, management of the soils of Cherokee County for crops and pasture is explained. Management practices for groups of soils that have similar potentials and requirements are discussed and the capability classification system used by the Soil Conservation Service is described. Then estimates of the average yields of the crops commonly grown are given.

About 20 percent of Cherokee County is in crops; mainly cotton, corn, soybeans, wheat, and oats. Fescue, orchardgrass, and bermudagrass are the main pasture grasses. The most pressing concerns in management are controlling erosion on sloping land, removing excess water from wet soils, and selecting plants that are better suited to a particular soil. Conservation practices are discussed in the section "General Principles of Soil Management."

General principles of soil management

Cropland.—Good crop management practices that result in good stands and rapid growth provide some protection from soil erosion, increase the amount of crop residues to be returned to the soil, and improve crop yields.

Some of the good management practices that are needed on all cropland soils include:

1. *Lime and Fertilizer.*—Lime and fertilizer needs should always be determined by soil testing. All soils in Cherokee County respond well to lime and fertilizer.
2. *Crop Varieties.*—Those varieties that have been tested and recommended for the area by Auburn University Experiment Station should be used.
3. *Land Preparation.*—Seedbeds should be adequately prepared for the crop to be grown. If seedbeds are prepared too far in advance of planting, excessive soil erosion results.
4. *Planting.*—Crops should be planted by a suitable method, at the proper rate, and at the right time.
5. *Weed, Insect, and Disease Control.*—Controlling crop pests is essential to growing strong, healthy crops.

Conservation practices need to be specifically planned to fit the soil and the sequence of crops to be grown. Soils that are almost level generally do not require extensive conservation practices, but strongly sloping soils generally require several practices to reduce erosion and runoff effectively.

Some of the most common practices used on sloping upland soils are:

1. *Conservation Cropping Systems.*—This is often referred to as crop rotation. Cropping systems that include the use of close-growing sod crops control erosion, reduce runoff, diminish the effect of crop pests, and increase crop yields.
2. *Contour Farming.*—Contour rows and tillage operations slow runoff, giving it more time to be absorbed by the soil.
3. *Minimum Tillage.*—Reduce the number of tillage operations reduces soil compaction. Minimum tillage practices, including planting in a narrow seedbed and leaving residue on the rest of the surface, reduce erosion and runoff.
4. *Terraces.*—Properly constructed terraces reduce erosion. Well established grassed waterways or grassed disposal areas are essential for safe disposal of runoff at terrace outlets. Terrace systems with underground tile outlets can be used on some soils where waterways are difficult to establish and maintain.
5. *Contour Stripcropping.*—Alternate strips of cultivated crops and close-growing crops that follow the contour control erosion.
6. *Grassed Waterways.*—Perennial, sod-forming grass should be established and maintained in natural drainageways or constructed outlets to prevent

[2] LEWIS D. WILLIAMS, conservation agronomist, Soil Conservation Service, helped prepare this section.

gullies from forming where concentrated runoff leaves the field.

7. *Crop Residue Management.*—Crop residue should be shredded and left on the surface until the land is prepared for the next crop.
8. *Cover Crops.*—Cover crops should be planted on soils that are left bare after harvest to prevent erosion and provide residue for return to the soil.

Grassland.—Good management practices are very important in establishing and maintaining pasture and hayland. Several practices apply to all soils used for grassland. They are:

1. *Proper Fertilization.*—Lime and fertilizers should be applied according to soil test analysis.
2. *Rotational Grazing.*—Removing livestock from pastures to allow for plant regrowth increases the life of the stand.
3. *Proper Grazing or Cutting Heights.*—A good ground cover should be maintained at all times by rotational grazing or by adjusting stocking rates. Overgrazing causes weak plants that can die or become infested with weeds.
4. *Weed Control.*—Weeds should be controlled by mowing or by spraying with herbicides.
5. *Scattering Droppings.*—Dropping sometimes need to be scattered on heavily grazed pastures to increase use of forage.

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The groups are made according to the limitations of the soils when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

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

In the capability system, all kinds of soils are grouped at three levels: the capability class, subclass, and unit. These are discussed in the following paragraphs.

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, 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, that require special conservation practices, or both.

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

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife. (None in Cherokee County.)

Class VI soils have severe limitations that make them generally unsuited to cultivation and that limit their use largely to pasture, range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial plants and restrict their use to recreation, wildlife, water supply, or to esthetic purposes. (None in Cherokee County.)

Capability Subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is the hazard of erosion unless 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 parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

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

Capability Units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–2 or IIIe–5. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

In the following pages the capability units in Cherokee County are described. The capability units are not numbered consecutively because not all the units used in Alabama are used in this county.

Management by capability units

In this section the soils of the county that require about the same kind of management are grouped in capability units. The significant features of the soils in each capability unit and their hazards and limitations are described, and suggestions for use and management are given. The capability unit in which each soil has been placed can be found in the "Guide to Mapping Units" at the back of this survey.

Specific suggestions about the amount of lime and kinds and amount of fertilizer to use are not given in this section. Lime and fertilizer should be applied according to the results of soil tests and field trials.

Further information about specific management can be obtained from the local representative of the Soil Conserva-

tion Service, the Extension Service, or the Agricultural Experiment Station.

CAPABILITY UNIT I–1

McQueen loam, 0 to 2 percent slopes, is the only soil in this unit. It is a deep, well drained soil on low stream terraces. This soil has a loamy surface layer and a clayey subsoil.

Infiltration is medium. Runoff is slow, and erosion is not a concern.

This soil is suited to all crops commonly grown in the county. Cultivated row crops can be grown each year. Returning crop residues helps maintain organic-matter content.

CAPABILITY UNIT I–2

This unit consists of deep, well drained soils on stream terraces. The soils have a loamy surface layer and subsoil. Slopes are 0 to 2 percent.

Infiltration is medium. Runoff is slow, and erosion is not a concern.

These soils are suited to all crops commonly grown in the county. Cotton is the main crop. Cultivated row crops can be grown each year. Returning crop residues helps maintain organic-matter content.

CAPABILITY UNIT IIe–1

This unit consists of deep, well drained soils on stream terraces and uplands. The soils have a loamy surface layer and a clayey subsoil. Slopes are 2 to 6 percent.

Infiltration is medium. Runoff is slow to medium, and the hazard of erosion is slight to moderate.

These soils are suited to all crops commonly grown in the county. Cotton (fig. 13) and corn are the main row crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, terraces, grassed waterways, and minimum tillage are effective in reducing erosion on cultivated fields. Returning crop residues helps maintain organic-matter content and promote good tilth. Cultivated crops can be grown each year if good conservation practices are applied.

CAPABILITY UNIT IIe–2

This unit consists of deep and moderately deep, well drained soils on uplands and stream terraces. The soils have a loamy surface layer and subsoil. Slopes are 2 to 6 percent.

Infiltration is medium. Runoff is slow to medium, and the hazard of erosion is slight to moderate.

These soils are well suited to all crops commonly grown in the county. Cotton, corn, soybeans, small grain, tall fescue, white clover, annual grasses and legumes, and bermudagrass are the main crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, terraces, grassed waterways (fig. 14), minimum tillage, and crop residue management are effective in reducing erosion. Cultivated row crops can be grown each year if good conservation practices are applied.

Figure 13.—Skiprow cotton on McQueen loam, 2 to 6 percent slopes.

Figure 14.—**Bermudagrass waterway on Holston loam, 2 to 6 percent slopes.**

CAPABILITY UNIT IIw–2

This unit consists of deep, well drained soils on first bottoms and in depressions. The soils have a loamy surface layer and subsoil. Slopes are 0 to 2 percent.

Infiltration is medium to rapid. Runoff is medium to slow, and erosion is not a serious hazard.

These soils are well suited to most crops commonly grown in the county. Cotton is poorly suited to some of the soils. These soils are subject to flooding or ponding for brief periods, but crops are seldom damaged by flooding. Ponding is often a problem in depressions. Shallow ditches can be used in many places to reduce ponding, but flooding is difficult to control. Returning crop residues helps maintain organic-matter content. Cultivated crops can be grown each year.

CAPABILITY UNIT IIw–9

This unit consists of deep, moderately well drained soils on stream terraces and toeslopes. The soils have a loamy surface layer and a loamy and clayey subsoil. They have a fragipan. Slopes are 0 to 3 percent.

Infiltration is medium. Runoff is medium to slow, and erosion is not a serious hazard.

These soils are suited to most crops grown in the county. Cotton can be grown on fields where drainage systems are installed to reduce wetness. Tillage is generally delayed in the spring because of wetness. Returning crop residues helps maintain organic-matter content. Cultivated crops can be grown each year.

CAPABILITY UNIT IIIe–1

This unit consists of deep, well drained soils on uplands. The soils have a loamy surface layer and a clayey subsoil. Slopes are 6 to 10 percent.

Infiltration is medium. Runoff is medium, and the hazard of erosion is moderately high.

These soils are suited to all crops commonly grown in the county. Cotton, corn, soybeans, small grain, tall fescue, white clover, and bermudagrass are the main crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, grassed waterways, terraces, and minimum tillage are effective in controlling erosion. Stripcropping is effective on many fields where terraces are difficult to install. Returning crop residues helps maintain organic-matter content and promote good tilth. Cropping systems that include the use of a perennial sod crop about two-thirds of the time are needed.

CAPABILITY UNIT IIIe–2

This unit consists of deep and moderately deep, well drained soils on uplands. The soils have a loamy surface layer and subsoil. Some of the soils contain chert fragments throughout the profile. Slopes are 2 to 10 percent.

Figure 15.—**Fescue pasture on Conasauga silt loam, 1 to 5 percent slopes.**

Infiltration is medium. Runoff is medium, and the hazard of erosion is moderately high.

These soils are suited to all crops commonly grown in the county. Cotton, corn, soybeans, small grain, tall fescue, white clover, and bermudagrass are the main crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, grassed waterways, terraces, and minimum tillage are effective in controlling erosion. Stripcropping is effective on many fields where terraces are difficult to install. Returning crop residues helps maintain organic-matter content and promote good tilth. Cropping systems that include the use of a perennial sod crop about two-thirds of the time are needed.

CAPABILITY UNIT IIIe-5

This unit consists of moderately deep and deep, well drained and moderately well drained soils on uplands. The soils have a loamy surface layer, are loamy in the upper part of the subsoil, and are clayey in the lower part of the subsoil. Slopes are 1 to 10 percent.

Infiltration is slow in these soils. Runoff is medium, and the hazard of erosion is moderately high.

These soils are suited to tall fescue pasture (fig. 15). Cotton, corn, soybeans, and small grain are suitable crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, grassed waterways, terraces, and minimum tillage are effective in controlling erosion. Returning crop residues helps maintain organic-matter content. Cropping systems that include the use of perennial sod crops about two-thirds of the time are needed.

CAPABILITY UNIT IIIw-2

This unit consists of deep, well drained to somewhat poorly drained soils on first bottoms. The soils have a loamy surface layer and subsoil. Some of the soils contain chert fragments throughout the profile. Slopes are 0 to 2 percent.

Infiltration is medium. Runoff is slow to medium, and erosion is not a hazard.

These soils are suited to corn, soybeans, small grain, tall fescue, white clover, and bermudagrass. They are subject to flooding for short periods, and all crops are occasionally damaged by flooding. Field ditches and diversions can reduce ponding in many places. Returning crop residue helps maintain organic-matter content. Cultivated crops can be grown each year.

CAPABILITY UNIT IIIw-9

Cedarbluff fine sandy loam is the only soil in this unit. It is a deep, somewhat poorly drained soil on first bottoms and in depressions. The soil has a loamy surface layer and subsoil. Slopes are 0 to 2 percent.

Infiltration is slow to medium. Runoff is slow to medium, and erosion is not a hazard.

This soil is suited to corn, soybeans, small grain, tall fescue, white clover, and bermudagrass. Cotton can be grown on fields that are protected from flooding. This soil

is subject to ponding for short periods, and all crops are occasionally damaged by ponded water. Field ditches and diversions can reduce ponding in many places. Returning crop residues helps maintain organic-matter content. Cultivated crops can be grown each year.

CAPABILITY UNIT IIIs-2

Leesburg gravelly fine sandy loam, 2 to 6 percent slopes, is the only soil in this unit. It is a deep, well drained soil on stream terraces and uplands. The soil has a loamy surface layer and subsoil, and it contains coarse fragments. Slopes are 2 to 6 percent.

Infiltration is medium. Runoff is medium to slow, and the hazard of erosion is moderate.

This soil is suited to all crops commonly grown in the county, but the coarse fragments tend to make it somewhat droughty and they interfere with tillage. Cotton, corn, soybeans, small grain, tall fescue, and white clover are the main crops. Conservation practices are needed when this soil is used for cultivated crops. Contour farming, grassed waterways, terraces, and minimum tillage are effective conservation practices. Returning crop residues helps maintain organic-matter content. Crops often suffer from lack of soil moisture. Cropping systems that include the use of close-growing crops about one-half of the time are needed.

CAPABILITY UNIT IVe-1

Fullerton cherty silt loam, 6 to 15 percent slopes, is the only soil in this unit. It is a deep, well drained, cherty soil on uplands. The soil has a loamy surface layer and a clayey subsoil.

Infiltration is medium. Runoff is medium to rapid, and the hazard of erosion is moderately high.

This soil is well suited to pasture and close-growing crops such as small grain. It is moderately suited to cultivated row crops. Conservation practices are needed when this soil is used for cultivated crops. Contour farming, grassed waterways, and minimum tillage are effective conservation practices. Cropping systems that include the use of perennial sod crops at least three years out of four are needed.

CAPABILITY UNIT IVe-5

This unit consists of moderately deep, well drained soils on uplands. The soils have a loamy surface layer and a clayey subsoil. Slopes are 2 to 15 percent.

Infiltration is medium to slow. Runoff is medium to rapid, and the hazard of erosion is moderately high.

These soils are well suited to pasture and close-growing crops such as small grain. They are poorly suited to cultivated row crops. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, grassed waterways, and minimum tillage are effective conservation practices. Cropping systems that include the use of perennial sod crops at least three years out of four are needed.

CAPABILITY UNIT IVw-5

This unit consists of deep, somewhat poorly drained to poorly drained soils on low stream terraces. The soils have a loamy surface layer and a loamy and clayey subsoil. Slopes are 0 to 2 percent.

Infiltration is medium. Runoff is slow, and erosion is not a hazard.

These soils are poorly suited to row crops. Tall fescue and white clover are suitable pasture crops. Soybeans and corn can be grown on fields if good drainage systems are installed, but drainage outlets are seldom available. These soils are subject to ponding for brief and moderately brief periods. Seedbed preparation and planting are generally delayed because of wetness. Surface field ditches are needed for both pasture and crops. Erosion control practices are not needed on these soils.

CAPABILITY UNIV IVs-2

This unit consists of deep, well drained to excessively drained soils on uplands. The soils have a loamy surface layer and subsoil, and they contain coarse fragments. Slopes are 2 to 15 percent.

Infiltration is medium to rapid. Runoff is medium to rapid, and the hazard of erosion is moderately high.

These soils are suited to pasture. Sericea lespedeza and tall fescue are suitable pasture crops. Cultivated row crops are occasionally grown on some of the soils. Chert, gravel, and cobbles interfere with tillage. Conservation practices are needed when these soils are used for cultivated crops. Contour farming, grassed waterways, and minimum tillage are effective in controlling erosion. Cropping systems that include the use of perennial sod at least three-fourths of the time are needed.

CAPABILITY UNIT VIe-1

This unit consists of deep, well drained, eroded soils on uplands. The soils have a loamy surface layer and a clayey subsoil. Slopes are 6 to 15 percent.

Infiltration is medium. Runoff is medium to rapid, and the hazard of erosion is high.

These soils are used mostly for pasture. They are not suited to cultivated row crops. Sericea lespedeza and tall fescue are suitable pasture crops. Land shaping is needed on some fields where gullies are present. Good fertilization and good management practices are needed on pastures to ensure long life stands.

CAPABILITY UNIT VIe-5

This unit consists of moderately deep, well drained and moderately well drained soils on uplands. The soils have a loamy surface layer, are loamy in the upper part of the subsoil, and are clayey in the lower part of the subsoil. Slopes are 2 to 25 percent.

Infiltration is medium to slow. Runoff is medium to rapid, and the hazard of erosion is moderately high.

These soils are suited to pasture and close growing crops such as small grain. They are not suited to cultivated row crops.

CAPABILITY UNIT VIe-7

Only the soils in the Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes, are in this unit. They are shallow to moderately deep, well drained soils on uplands. The soils have a loamy surface layer and subsoil.

Infiltration is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to high.

These soils are suited to pasture. Tall fescue and sericea lespedeza are suitable pasture plants. These soils are not suited to cultivated row crops. Seedbed preparation and pasture maintenance operations are difficult on fields that contain rock outcrops (fig. 16).

Figure 16.—Sandstone rock outcrop in Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes.

CAPABILITY UNIT VIs–2

Nella gravelly fine sandy loam, 10 to 25 percent slopes, is the only soil in this unit. It is a deep, well drained soil on uplands. The soil has a loamy surface layer and subsoil, and it contains gravel.

Infiltration is medium. Runoff is medium to rapid, and the hazard of erosion is moderate to high.

This soil is suited to pasture. Sericea lespedeza and tall fescue are suitable pasture crops. This soil is not suited to cultivated row crops. The gravel content interferes with tillage and makes the soil droughty. Pasture maintenance is difficult in the more sloping areas.

CAPABILITY UNIT VIIe–5

This unit consists of shallow to deep, well drained and moderately well drained soils on uplands. The soils have a loamy surface layer and a loamy or clayey subsoil. Slopes are 15 to 45 percent.

Infiltration is medium. Runoff is medium, and the hazard of erosion is moderately high.

These soils are not suited to crops or pasture.

CAPABILITY UNIT VIIe–6

Only the soils in the Hartsells-Rock outcrop association, steep, are in this unit. They are moderately deep, well drained soils on uplands. The soils have a loamy surface layer and subsoil. Slopes range from 15 to 50 percent.

Infiltration is medium. Runoff is medium, and the hazard of erosion is moderately high.

These soils are not suited to crops or pasture.

CAPABILITY UNIT VIIs–2

This unit consists of deep, well drained to excessively drained soils on uplands. The soils have a loamy surface layer and subsoil, and contain coarse fragments. Slopes are 20 to 45 percent.

Infiltration is rapid to medium. Runoff is medium to rapid, and the hazard of erosion is moderate to high.

These soils are not suited to crops or pasture.

Estimated yields

The estimated average yields per acre of the principal crops grown in Cherokee County are shown in table 2 for each soil mapped. The estimates assume a high level of management. They are based on records of actual yields on local farms, on yields obtained in long-term experiments, and on estimates made by agricultural workers who have had experience with the crops and the soils. All estimates are based on an average amount of rainfall in the area over a long period of time without irrigation.

TABLE 2.—*Estimated average yields per acre of principal crops*

[Yields are those that can be expected under highest feasible management practices. Dashed lines indicate that the crop is not commonly grown or that yields are too variable for meaningful estimates to be made]

Soil	Cotton (lint)	Corn	Soybeans	Oats	Wheat	Fescue orchard grass	Coastal bermuda-grass	Lespedeza (Sericea)
	Lbs	*Bu*	*Bu*	*Bu*	*Bu*	*AUM* [1]	*Tons*	*Tons*
Allen fine sandy loam, 2 to 6 percent slopes	800	75	35	80	42	8.0	4.6	2.8
Allen gravelly fine sandy loam, 6 to 10 percent slopes	625	68	30	70	37	6.0	4.0	2.6
Allen sandy clay loam, 2 to 10 percent slopes, eroded	600	65	27	60	35	6.0	3.5	1.8
Bodine cherty loam, 5 to 15 percent slopes						4.0	3.5	2.6
Bomar silt loam	700	70	35	65	25	7.0	4.5	2.8
Cedarbluff fine sandy loam		50	25	55	35	6.5	4.0	2.5
Chewacla soils		90	35	75	40	7.0	4.6	
Cloudland loam	700	75	25	70	30	7.5	4.5	2.8
Conasauga silt loam, 1 to 5 percent slopes	750	60	30	80	35	6.0		2.8
Conasauga silt loam, 5 to 15 percent slopes						5.5		
Conasauga-Firestone-Rock outcrop complex, 2 to 6 percent slopes								
Conasauga-Leesburg complex, 15 to 45 percent slopes								
Decatur loam, 2 to 6 percent slopes	900	90	35	75	40	8.5	4.5	3.0
Decatur loam, 6 to 10 percent slopes	850	80	30	70	35	8.0	4.1	2.7
Decatur silty clay loam, 6 to 15 percent slopes						5.0	3.4	1.9
Dewey loam, 2 to 6 percent slopes	800	80	35	70	40	7.5	4.5	3.0
Dewey loam, 6 to 10 percent slopes	750	75	30	65	35	7.0	4.1	2.7
Dewey silty clay loam, 6 to 15 percent slopes						4.5	3.4	1.9
Ellisville silty clay loam	750	100	40	80	50	8.5	5.0	3.0
Emory loam	800	100	30	80	35	8.0	6.5	3.3
Ennis-Lobelville complex		75	25	70	30	6.5	3.4	2.3
Firestone gravelly silt loam, 2 to 6 percent slopes	550	50	35	80	40	6.0		2.8
Firestone gravelly silt loam, 6 to 15 percent slopes			25	70	40	5.5		2.6
Firestone-Conasauga-Rock outcrop complex, 6 to 25 percent slopes								
Firestone-Montevallo association, steep								
Firestone-Montevallo-Leesburg association, steep								
Fullerton cherty silt loam, 6 to 15 percent slopes	650	60	25	50	40	5.5	3.4	3.0
Gaylesville silty clay loam		50	25			6.5		
Guthrie silt loam		45	25			5.5		
Hartsells fine sandy loam, 2 to 6 percent slopes	900	90	30	80	35	8.0	4.6	2.8
Hartsells fine sandy loam, 6 to 10 percent slopes	750	75	25	75	30	7.5	4.0	2.6
Hartsells-Rock outcrop association, steep								
Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes						5.0		
Herndon gravelly loam, 2 to 10 percent slopes	500	70	20	70	30	5.5	3.4	2.8
Holston fine sandy loam, 0 to 2 percent slopes	1,000	85	38	85	45	7.0	6.2	3.2
Holston loam, 2 to 6 percent slopes	900	85	38	80	45	7.0	6.0	3.1
Leesburg gravelly fine sandy loam, 2 to 6 percent slopes	700	70	25	70	40	6.5	5.7	2.9
Leesburg gravelly fine sandy loam, 6 to 15 percent slopes	600	60	22	65	30	5.5	4.5	2.7
Leesburg-Allen association, steep								
Linker fine sandy loam, 2 to 6 percent slopes	900	80	30	85	30	8.0	4.6	2.8
Linker fine sandy loam, 6 to 10 percent slopes	700	70	25	75	25	7.5	4.0	2.6
McQueen loam, 0 to 2 percent slopes	1,000	90	40	85	40	10.0	6.0	3.2
McQueen loam, 2 to 6 percent slopes	900	80	35	80	35	9.5	5.5	3.1
Minvale cherty loam, 2 to 6 percent slopes	750	70	30	60	35	6.0	4.0	2.8
Minvale cherty loam, 6 to 10 percent slopes	650	65	25	55	30	5.5	3.5	2.6
Minvale-Bodine association, steep								
Montevallo-Herndon association, steep								
Nella cobbly fine sandy loam, 2 to 10 percent slopes		55			35	6.0		
Nella gravelly fine sandy loam, 10 to 25 percent slopes						6.0		2.1
Stemley cherty loam, 0 to 3 percent slopes	650	60	25	65	25	6.0	4.5	2.7
Toccoa soils		90	25	90	35	6.5	4.0	3.2
Townley sandy loam, 2 to 10 percent slopes	450	40	25	60	35	5.0		
Udorthents, 0 to 40 percent slopes								
Wickham fine sandy loam, 0 to 2 percent slopes	900	95	35	90	45	7.5	6.2	3.3
Wickham fine sandy loam, 2 to 6 percent slopes	800	90	33	85	40	7.0	6.0	3.2

[1] A.U.M. stands for animal-unit-month. The figures represent the number of months that 1 acre will provide grazing for one animal (1,000 pounds live weight), or the number of months the pasture can be grazed multiplied by the number of animal units an acre will support.

TABLE 3.—*Woodland suitability groups, potential productivity,*

Woodland suitability group, descriptions, and soil map symbols	Species suitability		Potential soil productivity
	Favor in existing stands	Use for planting	Species
1o7: Deep, well drained soils that have a loamy surface layer and subsoil; on first bottoms. Slopes are 0 to 2 percent. Ea, Ta.	Loblolly pine, yellow-poplar, black walnut, sycamore, cottonwood, white oak, red oak, sweetgum, ash.	Loblolly pine, yellow-poplar, black walnut, sycamore, cottonwood.	Loblolly pine Yellow-poplar Shortleaf pine Sweetgum Sycamore Oaks
1w8: Deep, somewhat poorly drained soils that have a loamy surface layer and subsoil; on first bottoms. Slopes are 0 to 2 percent. Cb.	Loblolly pine, yellow-poplar, white oak, sweetgum, red oak, black walnut, sycamore.	Yellow-poplar, loblolly pine, cottonwood, black walnut, sycamore.	Yellow-poplar Loblolly pine Shortleaf pine Red oak
2o7: Deep, well drained soils that have a loamy surface layer and subsoil; on first bottoms and stream terraces. Slopes are 0 to 6 percent. Eb, WaA, WaB.	Loblolly pine, yellow-poplar, sweetgum, white oak, red oak, black walnut, cottonwood, sycamore.	Loblolly pine, yellow-poplar, sycamore, cottonwood, sweetgum, black walnut.	Loblolly pine Yellow-poplar Sweetgum White oak
2w8: Deep, somewhat poorly drained to well drained soils that have a loamy surface layer and subsoil; on stream terraces and first bottoms. Some of these soils contain chert fragments throughout the profile. Slopes are 0 to 2 percent. Ca, Ec.	Yellow-poplar, loblolly pine, shortleaf pine, sweetgum, black walnut, white oak, red oak, sycamore.	Yellow-poplar, loblolly pine, cottonwood, black walnut, sycamore.	Yellow-poplar Loblolly pine Shortleaf pine Red oak
2w9: Deep, poorly drained soils that have a fragipan; on stream terraces. They have a loamy surface layer and subsoil. Slopes are 0 to 2 percent. Gb.	Loblolly pine, sweetgum, shortleaf pine, yellow-poplar, red oak, white oak, sycamore, black walnut.	Loblolly pine, yellow-poplar, sweetgum, cottonwood, red oak.	Yellow-poplar Loblolly pine Bottomland oaks Sweetgum
3o7: Deep, well drained and moderately well drained soils; on uplands, stream terraces, and toe slopes. They have a loamy surface layer and a loamy and clayey subsoil. Some of these soils contain a fragipan, and some contain gravel and chert fragments. Slopes are 0 to 45 percent. AaB, AbC, AcC2, Bb, Cc, DcB, DcC, DeB, DeC, Leesburg part of FE, FfC, HeC, HfA, HgB, LaB, LaC, LC, MaA, MaB, McB, McC, Minvale part of ME, Herndon part of MF, NaC, NbD, SaB.	Loblolly pine, shortleaf pine, yellow-poplar, Virginia pine, black walnut, white oak, red oak.	Loblolly pine, yellow-poplar, black walnut, Virginia pine, eastern red oak.	Loblolly pine Yellow-poplar Virginia pine Shortleaf pine Upland oaks Eastern redcedar
3c2: Moderately deep, moderately well drained soils; on uplands. They have a loamy surface layer and a subsoil that is loamy in the upper part and clayey in the lower part. Slopes are 1 to 15 percent. CdB, CdC.	Shortleaf pine, loblolly pine, Virginia pine, eastern redcedar, yellow-poplar, white oak.	Loblolly pine, Virginia pine.	Loblolly pine Shortleaf pine Virginia pine Eastern redcedar Red oak
3w9: Deep, somewhat poorly drained to poorly drained soils; on stream terraces. They have a loamy surface layer and a subsoil that is loamy in the upper part and clayey in the lower part. Slopes are 0 to 2 percent. Ga.	Loblolly pine, sweetgum, yellow-poplar, white oak, sycamore.	Yellow-poplar, loblolly pine.	Yellow-poplar Sweetgum Loblolly pine
3f8: Deep, well drained to excessively drained soils that contain many chert fragments; on uplands. These soils have a loamy surface layer and subsoil. Slopes are 5 to 15 percent. BaC.	Loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, eastern redcedar, white oak, red oak, black walnut.	Loblolly pine, Virginia pine, yellow-poplar.	Loblolly pine Shortleaf pine Virginia pine Yellow-poplar Upland oaks
3r8: Deep and moderately deep, well drained and moderately well drained, steep soils; on uplands. They have a loamy surface layer and a loamy or clayey subsoil. Slopes are 15 to 45 percent. CgE.	Loblolly pine, Virginia pine, shortleaf pine, yellow-poplar, black walnut, red oak, white oak.	Yellow-poplar, loblolly pine, Virginia pine, black walnut.	Yellow-poplar Shortleaf pine Loblolly pine Virginia pine Upland oaks Eastern redcedar

hazards or limitations and species suitability

Potential soil productivity—Continued			Management hazards or limitations				
Site index	Yield per acre		Seedling mortality	Erosion hazard	Windthrow hazard	Plant competition	Equipment limitations
	Board feet	*Cords*					
100	750	1.8	Slight	Slight	Slight	Slight	Slight.
100	560	1.7					
90	720	1.8					
100	510	1.6					
100							
90	350	1.3					
100	560	1.7	Moderate	Slight	Moderate	Moderate	Moderate.
90	590	1.8					
80	504	1.6					
80	250	1.4					
90	590	1.5	Slight	Slight	Slight	Slight	Slight.
100	560	1.7					
90	400	1.5					
90	350	1.3					
100	560	1.7	Slight	Slight	Slight	Moderate	Moderate.
90	590	1.8					
80	504	1.6					
80	250	1.4					
100	560	1.7	Severe	Slight	Moderate	Moderate	Severe.
80	470	1.3					
90	350	1.3					
90	400	1.5					
80	470	1.3	Slight	Slight	Slight	Slight	Slight
90	410	1.3					
70	375	1.1					
60	410	1.4					
70	180	0.6					
60	290						
70	360	1.1	Moderate	Slight	Slight	Slight	Slight.
70	410	1.4					
70	375	1.1					
50	220						
70	180	0.6					
90	560	1.7	Slight	Slight	Moderate	Moderate	Moderate.
80							
70							
70	360	1.1	Slight	Slight	Slight	Slight	Moderate.
60	320	1.1					
70	375	1.1					
90	410	1.3					
70	180	0.6					
90	410	1.3	Moderate	Slight	Slight	Slight	Severe.
70	410	1.4					
70	360	1.1					
70	375	1.1					
70	180	0.6					
60	290						

TABLE 3.—*Woodland suitability groups, potential productivity,*

Woodland suitability group, descriptions, and soil map symbols	Species suitability		Potential soil productivity
	Favor in existing stands	Use for planting	Species
4o1: Moderately deep, well drained soils; on uplands. They have a loamy surface layer and a loamy or clayey subsoil. Slopes are 2 to 45 percent. FaB, FaC, Firestone parts of FD and FE, HaB, HaC, Hartsells part of HC, LdB, LdC, TbC.	Loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, eastern redcedar.	Loblolly pine, Virginia pine, yellow-poplar.	Loblolly pine Shortleaf pine Virginia pine Yellow-poplar Upland oaks
4c3: Deep, well drained, eroded soils; on uplands. They have a loamy surface layer and a clayey subsoil. Slopes are 6 to 15 percent. DdC, DfC.	Loblolly pine, shortleaf pine, Virginia pine, yellow-poplar, eastern redcedar.	Loblolly pine, Virginia pine, eastern redcedar.	Loblolly pine Virginia pine Eastern redcedar Shortleaf pine
4f3: Deep, well drained to excessively drained, steep soils that contain many chert fragments; on uplands. These soils have a loamy surface layer and subsoil. Slopes are 20 to 45 percent. Bodine part of ME.	Loblolly pine, shortleaf pine, Virginia pine, eastern redcedar.	Loblolly pine, Virginia pine, eastern redcedar.	Virginia pine Upland oaks Eastern redcedar
4x3: Shallow to moderately deep, well drained soils that have rock outcrops and a loamy surface layer and subsoil; on uplands. Slopes are 2 to 10 percent. HdC.	Loblolly pine, shortleaf pine, Virginia pine, eastern redcedar.	Loblolly pine, Virginia pine, eastern redcedar.	Virginia pine Loblolly pine Shortleaf pine Upland oaks Eastern redcedar
5d3: Shallow, well drained, steep soils; on uplands. They have a loamy surface layer and subsoil that contain shale fragments. Slopes are 20 to 45 percent. Montevallo parts of FD, FE, and MF.	Loblolly pine, shortleaf pine, Virginia pine, eastern redcedar.	Virginia pine, eastern redcedar.	Loblolly pine Shortleaf pine Virginia pine Eastern redcedar
5x3: Moderately deep, well drained and moderately well drained soils; on uplands. They have rock outcrops. They have a surface layer and a loamy or clayey subsoil. Slopes are 2 to 25 percent. CfB, FcD.	Virginia pine, shortleaf pine, longleaf pine, eastern redcedar, loblolly pine.	Eastern redcedar.	Eastern redcedar

The management required to obtain the yields shown in table 2 are as follows:

1. Fertilizer and lime are added according to the needs indicated by soil tests.
2. Cropping systems suggested in the section describing the capability units are followed.
3. Water is used or is disposed of by means of contour cultivation or artificial drainage.
4. Seedbeds are well prepared and are properly seeded.
5. Good crop varieties and seeding mixtures are used at proper planting rates and on suggested planting dates.
6. Diseases, insects, and undesirable plants are controlled.
7. Grazing is regulated.

Use of the Soils for Woodland [3]

Originally, Cherokee County was entirely covered with trees. Now, about 56 percent of the county, or 214,600 acres, is wooded (*5*). This acreage is about 73 percent upland forest types of pine or mixed pines and hardwoods. Hardwoods dominate on stream bottoms and lower slopes, but there are a few scattered pines in these areas.

The potential production of wood crops is three times as great as production is now (*5*). Desirable trees need to be established on approximately 122,100 acres, and some type of stand improvement is needed on 48,840 acres (*11*). Existing stands, on the average, are understocked.

Suggestions for woodland management are given in the following paragraphs.

In table 3, the soils of Cherokee County have been placed in woodland suitability groups to assist owners in planning the use of their soils for wood crops. Each group is made up of soils that are suited to the same kinds of trees; that need approximately the same kind of management when the vegetation on them is similar; and that have about the same potential productivity.

Each woodland group is identified by a three-part symbol, such as 1w8, 2o7, or 3r8. The first part of the symbol, always a number, indicates relative potential productivity of the soils in the group; 1 is very high, 2 is high, 3 is moderately high, 4 is moderate, and 5 is low. These ratings are based on field determinations of average site index. Site index is the height, in feet, that the dominant trees of a given species reach in a natural, unmanaged stand on a specified kind of soil in a stated number of years. For most merchantable hardwoods and softwoods in this county, the site index

[3] W. C. AIKEN and JERRY L. JOHNSON, woodland conservationists, Soil Conservation Service, helped prepare this section.

hazards or limitations and species suitability—Continued

Potential soil productivity—Continued			Management hazards or limitations				
Site index	Yield per acre		Seedling mortality	Erosion hazard	Windthrow hazard	Plant competition	Equipment limitations
	Board feet	*Cords*					
70	360	1.1	Slight	Slight	Slight	Slight	Slight.
60	320	1.1					
70	375	1.1					
90	410	1.3					
60	136	0.4					
70	360	1.1	Moderate	Moderate	Moderate	Moderate	Severe.
60	290	0.6					
40	185						
60	320	1.1					
60	290	0.6	Severe	Moderate	Slight	Slight	Severe.
55	120	0.4					
40	185						
60	290	0.6	Severe	Moderate	Slight	Slight	Severe.
70	360	1.1					
60	320	1.1					
60	130	0.4					
40	185						
60	240	0.9	Severe	Severe	Moderate	Slight	Severe.
50	210	0.9					
50	240	0.6					
30	135						
35	150		Severe	Moderate	Slight	Slight	Severe.

is the height reached in 50 years. For cottonwood, the index is the height reached in 30 years.

The five foregoing ratings are based on field determination of the average site index of an indicator forest type or species. Site indexes are grouped into site quality classes, and the classes are used to arrive at approximate expected yields per acre in cords and board feet. For this survey, conversions of average site index into volumetric growth and yield are based on research as follows: loblolly and shortleaf pines (*8*), cottonwood (*6*, *4*), oaks (*7*), and southern hardwoods (*12*).

The second part of the symbol identifying a woodland group is a small letter. This letter indicates an important soil property that imposes a slight to severe hazard or limitation in managing the soils of the group for wood crops. A letter *c* shows that the main limitation is the kind or amount of clay in the upper part of the soils in the group; *f* shows that the main limitation is large amounts of coarse fragments in the profile; *d* shows limitations resulting from restricted rooting depths, such as shallowness to rock; *o* shows that the soils have few limitations that restrict their use for trees; *r* shows that the main limitation is steep slopes; *s* shows that the soils are sandy and dry, have little or no difference in texture between surface layer and subsoil (or B horizon), have low available water capacity, and generally have a low supply of plant nutrients; *w* shows that water in or on the soil, either seasonally or year round, is the chief limitation; and *x* shows that the main limitation is the presence of rocks or stones.

The third part of the symbol indicates degree of hazard or limitation and general suitability of the soils for certain kinds of trees. The numeral 1 indicates soils that have no or only slight limitations and that are better suited to needleleaf trees. The numeral 2 indicates soils that have one or more moderate limitations and are better suited to needleleaf trees. The numeral 3 indicates soils that have one or more severe limitations and that are better suited to needleleaf trees. The numeral 4 indicates soils that have no or only slight limitations and are better suited to broadleaf trees. The numeral 5 indicates soils that have one or more moderate limitations and are better suited to broadleaf trees. The numeral 6 indicates soils that have one or more severe limitations and are better suited to broadleaf trees. The numeral 7 indicates soils that have no or only slight limitations and are suited to either needleleaf or broadleaf trees. The numeral 8 indicates soils that have one or more moderate limitations and are suited to either needleleaf or broadleaf trees. The numeral 9 indicates soils that have one or more severe limitations and are suited to either needleleaf or broadleaf trees. The numeral 0 indicates that the soils are not suitable for producing timber commercially.

Suitable species to favor in existing stands and when

establishing new stands are listed. Potential productivity of the soils for several tree species is expressed in terms of site index and board feet and cords per acre.

The hazards or limitations that affect management of soils for woodland are seedling mortality, erosion hazard, windthrow hazard, plant competition, and equipment limitations.

To facilitate management, the soils of Cherokee County have been rated for these hazards or limitations in table 3. These ratings are slight, moderate, or severe. The following explanations of these ratings apply to the descriptions of all the woodland suitability groups in Cherokee County.

Seedling mortality refers to the expected degree of mortality of planted seedlings as influenced by kinds of soil when plant competition is not a limiting factor. Considered in the ratings are depth to the water table, hazard of flooding, drainage, soil depth and structure, and degree of erosion. Normal rainfall, good planting stock, and proper planting are assumed. A rating of slight indicates an expected loss of less than 25 percent of the planted seedlings; moderate, a loss of 25 to 50 percent of the seedlings; and severe, a loss of more than 50 percent of the seedlings. Special preparation of the site is needed before planting for soils rated severe and for most soils rated moderate.

Erosion hazard refers to the potential hazard of soil losses in well-managed woodland. The hazard is slight if expected soil losses are small; moderate if some soil losses are expected and care is needed during logging and construction to reduce soil losses; severe if special methods of operation are necessary for preventing excessive soil losses. In Cherokee County only the steep soils are subject to severe erosion.

Windthrow hazard measures the effect of the soils on root development and the ability of the soil to hold trees firmly. The hazard is slight when effective rooting is more than 20 inches and the tree withstands most wind; moderate when effective rooting is from 10 to 20 inches and some trees are blown down during periods of excessive soil wetness and strong wind; severe when effective rooting is 10 inches or less and trees will not stand alone in strong wind.

Plant competition is rated on the basis of the degree to which unwanted plants invade openings in the tree canopy. Considered in the ratings are available moisture capacity, fertility, drainage, and degree of erosion. A rating of slight means that competition from other plants is not a problem; moderate, that plant competition delays development of fully stocked stands of desirable trees; and severe, that plant competition prevents establishment of a desirable stand unless intensive site preparation and such practices as weeding are used to control undesirable plants.

Equipment limitations are rated on the basis of soil characteristics that restrict or prohibit the use of equipment commonly used in tending and harvesting the trees. In Cherokee County soil characteristics having the most limiting effect are drainage, depth to the water table, slope, and the texture of the surface layer. Slight means there is no restriction in the kind of equipment or in the time of year it is used; moderate means that use of equipment is restricted for less than 3 months of the year; and severe means that special equipment is needed and its use is restricted for more than 3 months of the year.

Soil Interpretation for Wildlife Habitat [4]

The wildlife population of any area depends upon the availability of food, cover, and water in suitable combinations. Habitats are maintained or created by establishing desirable vegetation and by developing water supplies in suitable places.

In table 4 each of the soils in Cherokee County is rated according to its suitability for the elements that make up wildlife habitat and also for three kinds of wildlife habitat—openland, woodland, and wetland. The ratings refer to only the suitability of the soil. They do not take into account present land use or the distribution and density of wildlife and human populations. The suitability of individual sites must be determined by onsite inspection.

The soils are rated as good, fair, poor, or very poor, according to their suitability for producing the elements of wildlife habitat.

Grain and seed crops refers to domestic grain or other seed-producing annuals that are commonly planted to produce food for wildlife. Examples are corn, sorghum, wheat, oats, barley, millet, cowpeas, soybeans, and sunflowers.

Domestic grasses and legumes are perennial grasses and herbaceous legumes that are commonly planted to produce food or cover, or both, for wildlife. Examples are fescue, lovegrass, orchardgrass, clovers, and vetches.

Wild herbaceous plants are native or naturally established dryland herbaceous grasses and forbs (including weeds) that provide either food or cover, or both, for wildlife. Examples are goldenrod, beggarweed, milkpeas, ragweeds, partridgepea, pokeweed, crotons, fescues, and gramas.

Hardwood trees include nonconiferous trees and associated woody understory plants that provide either wildlife cover or produce nuts, buds, catkins, twigs, bark, or foliage used as food by wildlife.

Coniferous plants are cone-bearing trees, shrubs, or ground cover that furnish wildlife cover or supply food in the form of browse, seeds, or fruitlike cones. These plants are commonly established through natural processes, but they may be planted or transplanted. Examples are pines, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants which grow on moist to wet sites. Submerged and floating aquatic plants are not included. These plants provide food or cover, or both, for wetland forms of wildlife. Examples are smartweed, wild millets, rushes, sedges, reeds, wildrice, cutgrass, cordgrass, and cattail.

Shallow water areas are areas of surface water that are useful to wildlife. Their average depth is less than 5 feet. They may be natural wet areas or those created by dams, levees, or water-control devices in marshes or streams. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, wildlife ponds, and beaver ponds.

In table 4 the soils are also rated according to their suitability for producing openland, woodland, and wetland wildlife habitat. A rating of "good" means that habitats are easily improved, maintained, or created; that there are few or no soil limitations in habitat management; and that satisfactory results can be expected. "Fair" means that habitats can be improved, maintained, or created; that moderate soil limitations affect habitat management or development; and that moderate intensity of management and fairly frequent attention may be required to ensure satisfactory results. "Poor" means that habitats can be improved, maintained, or created; that soil limitations are severe; and that habitat management may be difficult and expensive and may require intensive effort. Results are questionable. "Very poor" means that under the prevailing soil conditions it is impractical to attempt to improve, maintain, or create habitats. Unsatisfactory results are probable.

[4] ROBERT E. WATERS, biologist, helped prepare this section.

Openland wildlife are birds and mammals of cropland, pasture, meadows, lawns, and areas overgrown with grasses, herbs, shrubs, and vines. Examples are bobwhite quail, meadowlark, field sparrow, killdeer, cottontail rabbit, mourning dove, and red fox.

Woodland wildlife are birds and mammals of wooded areas containing either hardwood or coniferous trees and shrubs, or a mixture of both. Examples are wild turkey, woodcock, thrushes, vireos, woodpeckers, squirrels, gray fox, raccoon, and white-tailed deer.

Wetland wildlife are birds and mammals of swampy, marshy, or open water areas. Examples are ducks, geese, herons, shore birds, rails, kingfisher, muskrat, mink, beaver, and otter.

Engineering Uses of the Soils[5]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

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

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

Most of the information in this section is presented in tables 5, 6, and 7, which show, respectively, several estimated soil properties significant to engineering; interpretations for various engineering uses; and results of engineering laboratory tests on soil samples.

This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in table 6, and it also can be used to make other useful maps.

This information, however, does not eliminate the need for further investigations at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than 6 feet. Also, inspection of sites, especially the small ones, is needed because many mapped areas of a given soil contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Some of the terms used in this soil survey have special meaning to soil scientists, but this meaning may not be known to all engineers. The Glossary defines many of these terms as they are commonly used in soil science.

Engineering soil classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*3*) used by the SCS engineers, Department of Defense, and others, and the AASHTO system (*2*) adopted by the American Association of State Highway and Transportation Officials.

In the Unified system soils are classified according to particle size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, CL–ML.

The AASHTO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. When laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHTO classification for tested soils in Cherokee County, with group index numbers in parentheses, is shown in table 7; the estimated classification, without group index numbers, is given in table 5 for all soils mapped in the survey area.

USDA texture is determined by the relative proportions of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter. "Sand," "silt," "clay," and some of the other terms used in the USDA textural classification are defined in the Glossary.

Soil properties significant in engineering

Several estimated soil properties significant in engineering are given in table 5. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other counties. Following are explanations of some of the columns in table 5.

Depth to bedrock is distance from the surface of the soil to the upper surface of the rock layer.

[5] JESSE C. BUSH, civil engineer, Soil Conservation Service, helped prepare this section.

TABLE 4.—*Suitability of soils for elements of*

Soil series and map symbols	Elements of wildlife habitat			
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees
Allen:				
AaB	Good	Good	Good	Good
AbC, AcC2	Fair	Good	Good	Good
Bodine: BaC	Poor	Poor	Fair	Fair
Bomar: Bb	Good	Good	Good	Good
Cedarbluff: Ca	Fair	Good	Good	Good
Chewacla: Cb	Fair	Fair	Good	Good
Cloudland: Cc	Good	Good	Good	Good
Conasauga:				
CdB, CfB [1]	Fair	Good	Good	Good
CdC	Fair	Good	Good	Good
CgE [1]	Very poor	Poor	Good	Good
Decatur:				
DcB	Good	Good	Good	Good
DcC, DdC	Fair	Good	Good	Good
Dewey:				
DeB	Good	Good	Good	Good
DeC	Fair	Good	Good	Good
DfC	Poor	Fair	Fair	Good
Ellisville: Ea	Good	Good	Good	Good
Emory: Eb	Good	Good	Good	Good
Ennis: Ec [1]	Good	Good	Good	Good
Firestone:				
FaB	Fair	Good	Good	Good
FaC	Fair	Good	Good	Good
FcD [1]	Poor	Fair	Good	Good
FD [1], FE [1]	Very poor	Very poor	Fair	Good
Fullerton: FfC	Fair	Good	Good	Good
Gaylesville: Ga	Poor	Fair	Fair	Fair
Guthrie: Gb	Poor	Fair	Fair	Fair
Hartsells:				
HaB	Good	Good	Good	Good
HaC	Fair	Good	Good	Good
HC [1]	Very poor	Very poor	Very poor	Very poor
Hector: HdC [1]	Very poor	Poor	Poor	Poor
Herndon: HeC	Fair	Good	Good	Good
Holston: HfA, HgB	Good	Good	Good	Good
Leesburg:				
LaB	Fair	Good	Good	Good
LaC	Fair	Good	Good	Good
LC [1]	Poor	Poor	Good	Good
Linker:				
LdB	Good	Good	Good	Good
LdC	Fair	Good	Good	Good
McQueen: MaA, MaB	Good	Good	Good	Good

wildlife habitat and kinds of wildlife

Elements of wildlife habitat—Continued			Kinds of wildlife		
Coniferous plants	Wetland plants	Shallow water areas	Openland	Woodland	Wetland
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Fair	Very poor	Very poor	Poor	Fair	Very poor.
Good	Poor	Poor	Good	Good	Poor.
Good	Fair	Fair	Good	Good	Fair.
Good	Fair	Fair	Fair	Good	Fair.
Good	Poor	Poor	Good	Good	Poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Poor	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Fair	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Fair	Good	Very poor.
Good	Very poor	Very poor	Poor	Fair	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Fair	Good	Fair	Fair	Fair	Fair.
Fair	Good	Fair	Fair	Fair	Fair.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Poor	Very poor	Very poor	Poor	Poor	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Fair	Good	Very poor.
Good	Very poor	Very poor	Poor	Good	Poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.

TABLE 4.—*Suitability of soils for elements of*

Soil series and map symbols	Elements of wildlife habitat			
	Grain and seed crops	Domestic grasses and legumes	Wild herbaceous plants	Hardwood trees
Minvale:				
McB	Good	Good	Good	Good
McC	Fair	Good	Good	Good
ME [1]	Very poor	Very poor	Good	Good
Montevallo: MF [1]	Very poor	Poor	Fair	Fair
Nella:				
NaC	Fair	Good	Good	Good
NbD	Poor	Fair	Good	Good
Stemley: SaB	Good	Good	Good	Good
Toccoa: Ta	Good	Good	Good	Good
Townley: TbC	Fair	Good	Good	Good
Udorthents: UaE. Too variable to rate.				
Wickham: WaA, WaB	Good	Good	Good	Good

[1] Rated according to dominant soil.

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

USDA soil texture is described in table 5 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loamy sand."

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic state; and the liquid limit, from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. Liquid limit and plasticity index are estimated in table 5, but in table 7 the data on liquid limit and plasticity index are based on tests of soil samples.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on basis of soil characteristics observed in the field, particularly structure and texture. The estimates in table 5 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

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

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

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

Corrosivity, as used in table 5, pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. Rate of corrosion of uncoated steel is related to soil properties such as drainage, texture, total acidity, and electrical conductivity of the soil material. Corrosivity for concrete is influenced mainly by the content of sodium or magnesium sulfate, but also by soil texture and acidity. Installations of uncoated steel that intersect soil boundaries or soil horizons are more susceptible to corrosion than installations entirely in one kind of soil or in one soil horizon. A corrosivity rating of *low* means that there is a low probability of soil-induced corrosion damage. A rating of *high* means that there is a high probability of damage, so that protective measures for steel and more resistant concrete should be used to avoid or minimize damage.

Engineering interpretations of soils

The estimated interpretations in table 6 are based on the engineering properties of soils shown in table 5, on test data for soils in this survey area and in others nearby or adjoining, and on the experience of engineers and soil scientists with the

wildlife habitat and kinds of wildlife—Continued

Elements of wildlife habitat—Continued			Kinds of wildlife		
Coniferous plants	Wetland plants	Shallow water areas	Openland	Woodland	Wetland
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Poor	Fair	Very poor.
Fair	Very poor	Very poor	Poor	Fair	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Fair	Good	Very poor.
Good	Poor	Poor	Good	Good	Poor.
Good	Poor	Very poor	Good	Good	Very poor.
Good	Very poor	Very poor	Good	Good	Very poor.
Good	Poor	Very poor	Good	Good	Very poor.

soils of Cherokee County. In table 6, ratings are used to summarize suitability of the soils for the listed purposes.

Following are explanations of the columns in table 6.

Pond reservoir areas hold water behind a dam or embankment. Soils suitable for pond reservoir areas have low seepage, which is related to their permeability and depth to fractured or permeable bedrock or other permeable material.

Dikes, levees, and other embankments require soil material resistant to seepage and piping and of favorable stability, shrink-swell potential, shear strength, and compactibility. Presence of stones or organic material in a soil are among factors that are unfavorable.

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

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

Terraces and diversions are embankments, or ridges, constructed across the slope to intercept runoff so that it soaks into the soil or flows slowly to a prepared outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock or other unfavorable material; presence of stones; permeability; and resistance to water erosion, soil slipping, and soil blowing. A soil suitable for these structures provides outlets for runoff and is not difficult to vegetate.

Engineering test data

Table 7 contains engineering test data for some of the major soil series in Cherokee County. These tests were made to help evaluate the soils for engineering purposes. The engineering classifications given are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods.

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

Tests to determine liquid limit and plastic limit measure the effect of water on the consistence of soil material, as has been explained for table 5.

Town and Country Planning

Cherokee County is near the cities of Gadsden, Alabama and Rome, Georgia and is readily accessible from major highways. Its population is steadily expanding into areas formerly used for farming. Along with this expansion is an increasing demand for housing, shopping centers, schools, parks, and other developments.

This section was prepared chiefly for planners, builders, landscape architects, zoning officials, private and potential landowners, and others interested in the use of soils for purposes other than farming. It contains four tables which show

TABLE 5.—*Estimated soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such to other series that appear in the first column of this table.

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	USDA texture (typical profile)	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table			Unified (For range of series)	AASHTO (For range of series)	
	Ft	*Ft*	*In*				*Pct*
Allen: AaB, AbC, AcC2	>6	>6	0–4	Gravelly fine sandy loam.	CL–ML, SC–SM	A–2–4 or A–4	0–5
			4–72	Loam, clay loam	CL	A–4 or A–6	0–3
Bodine: BaC	>5	>5	0–7	Cherty loam	ML, GM, SM	A–2 or A–4	5–20
			7–14	Cherty silt loam	GM	A–1 or A–2	5–20
			14–70	Cherty silty clay loam.	GM, GC–GM	A–1	5–20
Bomar: Bb	5	2.5–4.0	0–7	Silt loam	ML, CL, CL–ML	A–4	
			7–33	Silty clay or silty clay loam.	CL	A–6 or A–7	
			33–73	Silty clay	CL	A–6	
			73–100	Clay loam	CL	A–6	
Cedarbluff: Ca	>5	0.5–2.5	0–9	Fine sandy loam or silt loam.	ML, SM	A–4	
			9–18	Loam	CL–ML, ML	A–4	
			18–65	Clay loam	CL	A–6	
Chewacla: Cb	>5	2.0–4.0	0–5	Silty clay loam	CL, ML	A–4 or A–6, A–7	
			5–35	Silt loam	CL–ML, ML	A–4	
			35–62	Stratified loam and silty clay loam.			
Cloudland: Cc	>5	2.0–4.0	0–22	Loam or silt loam	CL–ML	A–4	
			22–62	Loam	CL	A–6	
*Conasauga: CdB, CdC, CfB, CgE For Firestone part of CfB and Leesburg part of CgE, refer to Firestone and Leesburg series.	1.5–3.5	1.5–3.5	0–4	Silt loam	CL–ML, ML	A–4	
			4–10	Silty clay loam	CL–ML, CL	A–4	
			10–19	Silty clay loam	CL	A–7	
			19–30	Silty clay	CL, CH	A–7	
			30	Weathered shale.			
Decatur: DcB, DcC, DdC	>5	>6	0–5	Loam	CL–ML, ML, CL	A–4	
			5–9	Silty clay loam	ML	A–7	
			9–65	Clay	ML	A–7	
Dewey: DeB, DeC, DfC	>5	>6	0–8	Loam	CL–ML, CL	A–4	
			8–60	Clay	CL, CH, MH	A–6 or A–7	
Ellisville: Ea	>6	>5	0–6	Silty clay loam	CL–ML, CL, SM–SC, SC	A–4 or A–6	
			6–75	Silt loam and silty clay loam.	CL	A–4 or A–6	
Emory: Eb	>6	>6	0–16	Loam or silt loam	CL–ML, ML	A–4	
			16–62	Silty clay loam	CL	A–6	
			62–95	Clay	CL, ML, CH, MH	A–6 or A–7	
*Ennis: Ec For Lobelville part of Ec, refer to Lobelville series.	>5	>5	0–60	Cherty loam	SC, SC–SM, CL, CL–ML, GC, GM–GC	A–4 or A–6	0–5

significant in engineering

mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring The symbol > means more than; the symbol < means less than]

Percentage less than 3 inches passing sieve—				Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)							Uncoated steel	Concrete
						In per hr	*In per in of soil*	*pH*			
80–100	75–100	55–85	25–55	20–30	4–9	0.6–2.0	0.14–0.17	5.1–6.0	Low	Low	Moderate to high.
95–100	90–100	80–95	55–75	28–41	9–20	0.6–2.0	0.15–0.18	4.5–5.5	Low	Low	Moderate to high.
50–75	40–65	35–60	30–55	<35	[1] NP–10	2.0–6.0	0.07–0.12	4.5–6.0	Low	Low	Moderate.
15–60	8–50	5–40	5–35	<30	NP–6	2.0–6.0	0.05–0.10	4.5–5.5	Low	Low	Moderate.
15–55	8–50	5–40	5–35	<35	NP–6	2.0–6.0	0.05–0.10	4.5–5.5	Low	Low	Moderate.
100	100	95–100	75–90	25–30	4–10	0.6–2.0	0.18–0.20	4.5–5.5	Low	High	High.
100	100	95–100	80–95	25–45	11–25	0.2–0.6	0.15–0.18	4.5–5.5	Low to moderate.	High	High.
100	100	95–100	75–90	25–40	11–25	0.06–0.2	0.06–0.08	4.2–5.0	Low	High	High.
100	100	70–90	65–85	25–40	11–25	0.06–0.2	0.06–0.08	4.2–5.0	Moderate	High	High.
100	100	85–90	40–65	<20	NP	0.2–6.0	0.11–0.15	5.1–6.0	Low	High	Moderate to high.
100	100	95–100	75–90	25–35	5–10	0.6–2.0	0.18–0.20	5.1–5.5	Low	High	Moderate to high.
100	100	70–90	65–85	25–40	11–25	0.06–0.2	0.12–0.14	5.1–5.5	Moderate	High	Moderate to high.
99–100	96–100	81–97	50–96	30–42	7–13	0.6–2.0	0.13–0.15	5.1–6.0	Low	High	Moderate.
	96–100	70–98	50–93	<22	NP–7	0.6–2.0	0.17–0.19	5.1–6.0	Low	High	Moderate.
						0.6–2.0	0.17–0.19	5.1–6.0	Low	High	Moderate.
95–100	90–100	75–90	50–60	20–30	4–7	0.6–2.0	0.14–0.15	4.5–6.0	Low	Moderate	High.
90–95	90–95	80–95	60–75	25–40	11–20	0.06–0.2	0.06–0.09	4.5–5.5	Low	Moderate	High.
98–100	93–97	75–80	65–70	26–30	4–6	0.6–2.0	0.16–0.20	4.3–5.5	Low	High	High.
98–100	94–98	77–82	68–72	26–30	6–8	0.06–0.2	0.12–0.18	4.3–5.5	Moderate	High	High.
98–100	94–98	85–90	80–85	41–45	18–22	0.06–0.2	0.12–0.18	4.3–5.5	Moderate	High	High.
98–100	93–97	85–90	80–85	48–52	25–29	0.06–0.2	0.08–0.15	4.3–6.5	Moderate	High	High.
98–100	90–98	85–98	65–70	25–32	5–9	0.6-2.0	0.18–0.20	4.5–6.0	Low	High	Moderate to high.
98–100	98–100	88–99	78–82	45–49	12–18	0.6–2.0	0.14–0.17	4.5–6.0	Moderate	High	Moderate to high.
98–100	98–100	88–99	75–80	45–49	12–20	0.6–2.0	0.13–0.16	4.5–5.5	Moderate	High	Moderate to high.
98–100	90–98	80–85	65–70	24–30	6–9	0.6–2.0	0.16–0.19	5.1–6.0	Low	High	Moderate to high.
98–100	98–100	85–90	75–80	30–60	12–26	0.6–2.0	0.11–0.15	5.1–6.0	Moderate	High	Moderate to high.
100	100	55–100	40–100	18–38	4–15	0.6–2.0	0.12–0.22	5.1–5.5	Low	Moderate	Moderate.
100	100	80–100	65–100	23–38	8–15	0.6–2.0	0.18–0.22	4.5–5.5	Low	Moderate	Moderate.
100	100	85–95	60–75	18–28	3–7	0.6–2.0	0.18–0.20	5.6–6.0	Low	Low	Moderate.
98–100	95–100	90–95	80–95	25–40	11–18	0.6–2.0	0.15–0.20	5.1–6.0	Low	Low	Moderate.
98–100	95–100	90–100	70–95	40–55	11–25	0.6–2.0	0.11–0.15	5.1–6.0	Low	Low	Moderate.
55–85	50–85	40–80	36–70	20–30	5–15	2.0–6.0	0.10–0.15	4.5–5.5	Low	Low	Moderate.

TABLE 5.—*Estimated soil properties*

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	USDA texture (typical profile)	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table			Unified (For range of series)	AASHTO (For range of series)	
	Ft	*Ft*	*In*				*Pct*
*Firestone: FaB, FaC, FcD, FD, FE	2.0–3.5	>4	0–9	Gravelly silt loam and silty clay loam.	ML	A–4	0–10
For Conasauga part of FcD, Montevallo parts of FD and FE, and Leesburg part of FE, refer to Conasauga, Montevallo, and Leesburg series.			9–36	Clay, silty clay	MH, CH	A–7–5	
			36	Weathered shale.			
Fullerton: FfC	>5	>5	0–4	Cherty silt loam	CL, GC	A–4 or A–2–4	0–2
			4–12	Cherty silty clay loam.	CL, GC, SC	A–6 or A–2–6	0–2
			12–65	Cherty silty clay	GM, GC, ML, CL, SM, SC	A–6 or A–7–6	0–2
Gaylesville: Ga	>5	0	0–14	Silty clay loam	CL, ML	A–4, A–6, or A–7	
			14–33	Silty clay	CL, ML	A–6 or A–7	
			33–72	Silty clay	CL, ML, CH, MH	A–7	
Guthrie: Gb	>5	0	0–20	Silt loam	CL, ML, CL–ML	A–4	
			20–43	Silt loam	CL, CL–ML	A–6 or A–4	
			43–60	Silty clay loam	CL, CL–ML	A–6 or A–4	
Hartsells: HaB, HaC, HC	1.5–3.5	>4.5	0–5	Fine sandy loam	ML, SM	A–4	0–5
			5–28	Loam	CL, ML, CL–ML, SC	A–4 or A–6	0–5
			28–32	Sandy loam	CL, ML, CL–ML, SC, SM	A–4 or A–6	0–10
			32	Sandstone.			
*Hector: HdC	0.5–1.5	>1.5	0–17	Fine sandy loam	SM	A–2–4 or A–4	0–5
For Hartsells part of HdC, refer to Hartsells series.			17	Sandstone.			
Herndon: HeC	3.5–6.0	>6	0–6	Gravelly loam	ML	A–4	0–3
			6–15	Clay loam	MH	A–7–5	
			15–64	Clay, silty clay	MH	A–7–5	
Holston: HfA, HgB	>5	>5	0–25	Loam	CL–ML, ML, SM, SM–SC, SC, CL	A–4	
			25–50	Clay loam	CL, CL–ML, ML	A–4 or A–6	
			50–72	Clay	CL, SC, CL–ML, ML	A–5, A–2, or A–6	
*Leesburg: LaB, LaC, LC	>5	>5	0–6	Gravelly fine sandy loam.	SM	A–1–6 or A–2	0–30
For Allen part of LC refer to Allen series.			6–16	Gravelly loam	SM, ML, SC–SM, CL–ML, GM, GM–GC	A–4	0–30
			16–65	Gravelly clay loam	SM, ML	A–4	0–30
Linker: LdB, LdC	1.5–3.5	>5	0–11	Fine sandy loam, sandy loam.	SM, ML, SC, CL, CL–ML, SM–SC	A–4	
			11–33	Loam	ML, CL–ML, CL	A–4	
			33	Sandstone.			
Lobelville	>5	1.0–2.5	0–60	Cherty loam, loam	SC, SC–SM, CL, CL–ML GC, GM–GC	A–4 or A–6	0–5
Mapped only in complex with Ennis soils.							

significant in engineering—Continued

Percentage less than 3 inches passing sieve—				Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)							Uncoated steel	Concrete
						In per hr	*In per in of soil*	*pH*			
76–100	70–88	60–80	56–77	29–37	4–10	0.6–2.0	0.12–0.14	4.5–5.5	Low	Moderate	Moderate.
98–100	97–100	80–99	74–99	58–94	26–48	0.06–0.2	0.12–0.18	4.5–5.5	High	Moderate	Moderate.
60–90	50–75	40–75	30–65	20–30	5–10	0.6–2.0	0.10–0.16	5.1–5.5	Low	High	High.
60–90	50–75	40–75	30–65	25–40	10–20	0.6–2.0	0.10–0.14	4.5–5.5	Low	High	High.
60–90	50–75	45–75	40–70	35–50	10–25	0.6–2.0	0.10–0.14	4.5–5.5	Low	High	High.
100	95–100	95–100	85–95	30–45	8–15	0.2–0.6	0.17–0.19	4.0–5.5	Moderate	High	High.
100	95–100	95–100	85–95	35–50	11–20	0.06–0.2	0.15–0.19	4.0–5.5	Moderate	High	High.
100	95–100	95–100	85–95	45–60	20–35	0.06–0.2	0.15–0.17	4.0–5.5	Moderate	High	High.
95–100	95–100	95–100	90–100	<30	NP–10	0.6–2.0	0.20–0.23	4.5–5.5	Low	High	High.
95–100	95–100	95–100	90–100	20–40	5–20	0.06–2.0	0.07–0.09	4.0–5.5	Low	High	High.
95–100	95–100	90–100	85–100	20–50	4–25	0.06–2.0	0.07–0.09	4.0–4.5	Low	High	High.
85–100	85–100	70–95	40–75	<30	NP–5	2.0–6.0	0.12–0.18	5.1–6.0	Low	Moderate	High.
85–100	85–100	60–100	40–70	NP–35	5–15	0.6–2.0	0.13–0.18	4.5–5.5	Low to moderate.	Moderate	High.
85–100	80–100	50–100	40–70	NP–35	5–15	0.6–2.0	0.10–0.16	4.5–5.5	Low	Moderate	High.
90–100	90–100	60–70	30–40		NP	6.0–20.0	0.10–0.15	4.5–5.5	Low	Low	Moderate to high.
85–98	80–95	65–80	55–75	<30	NP–5	0.6–2.0	0.12–0.17	5.1–5.5	Low	High	High.
100	100	95–99	80–90	55–60	18–25	0.6–2.0	0.13–0.18	5.1–5.5	Moderate	High	High.
100	100	95–99	80–90	55–70	18–25	0.6–2.0	0.13–0.18	5.1–5.5	Moderate	High	High.
85–100	80–100	65–100	36–67	<21	NP–10	0.6–2.0	0.12–0.20	5.1–6.0	Low	Low	Moderate.
85–100	80–100	65–100	50–75	20–40	6–20	0.6–2.0	0.12–0.20	4.5–5.5	Low	Low	Moderate.
80–100	80–100	60–100	30–75	20–42	5–20	0.6–2.0	0.12–0.20	4.5–5.5	Low	Low	Moderate.
70–90	65–85	40–75	12–20		NP	2.0–6.0	0.08–0.16	4.5–6.0	Low	Moderate	Moderate.
70–90	65–85	60–70	40–60	<20	NP–6	0.6–2.0	0.09–0.18	4.5–6.0	Low	Low	Moderate.
70–90	65–85	60–70	45–65	<37	NP–9	0.6–2.0	0.09–0.18	4.5–6.0	Low	Low	Moderate.
95–100	90–100	70–90	40–60	<30	NP–8	0.6–2.0	0.12–0.16	4.0–5.0	Low	Moderate	High.
100	100	85–95	60–75	15–30	2–10	0.6–2.0	0.16–0.19	4.0–5.0	Low	Moderate	High.
55–85	50–85	40–80	36–70	20–30	5–15	0.6–2.0	0.09–0.14	4.5–5.5	Low	Moderate	Moderate.

TABLE 5.—*Estimated soil properties*

Soil series and map symbols	Depth to—		Depth from surface (typical profile)	USDA texture (typical profile)	Classification		Coarse fraction greater than 3 inches
	Bedrock	Seasonal high water table			Unified (For range of series)	AASHTO (For range of series)	
	Ft	*Ft*	*In*				*Pct*
McQueen: MaA, MaB	>6	>6	0–4	Loam	ML	A–4	
			4–42	Clay, silty clay	CL, ML	A–6, A–7	
			42–96	Silty clay loam	CL	A–6	
*Minvale: McB, McC, ME For Bodine part of ME, refer to Bodine series.	>5	>5	0–14	Cherty loam	CL–ML, CL, ML	A–4	3–10
			14–36	Cherty silt loam	GC, SC, CL, CL–ML, SM–SC, GM–GC	A–4 or A–6	3–10
			36–72	Cherty silty clay loam.	CL, CL–ML, GC, SC, GC–GM, SC–SM	A–4	3–10
*Montevallo: MF For Herndon part of MF, refer to Herndon series.	1.0–1.5	>1.5	0–7	Shaly loam or shaly silt loam.	SM	A–4	0–5
			7–14	Shaly silty clay loam.	SM, GM	A–2–4 or A–4	0–5
			14	Weathered shale.			
Nella: NaC, NbD	>6	>6	0–11	Gravelly fine sandy loam, gravelly loam.	CL, SC, GC, GM, ML, SM, CL–ML, SC–SM, GC–GM	A–4	0–30
			11–30	Gravelly sandy clay loam.	CL, SC, GC	A–4 or A–6	0–30
			30–72	Gravelly clay	CL, SC, GC	A–4 or A–6	0–30
Stemley: SaB	>5	2.5–4.5	0–7	Cherty loam	ML, SM, SC, CL–ML, GM, GC	A–2–4, A–4, or A–1	0–5
			7–17	Cherty silt loam	SC, CL, GC	A–6, A–2	0–5
			17–33	Cherty loam or cherty sandy clay loam.	GC–GM, SM–SC	A–1 or A–2–4	5–10
			33–65	Cherty loam	CL–ML, GC–GM, SM–SC	A–1, A–2–4 or A–4	0–5
Toccoa: Ta	>5	>5	0–50	Sandy loam, loamy sand.	SM, ML	A–2–4 or A–4	
			50–90	Silty clay	CL	A–7–6	
Townley: TbC	2.0–2.5	>3	0–7	Sandy loam, loam	CL–ML, CL, ML	A–4	0–1
			7–26	Silty clay	CL	A–7–6 or A–6	0–1
			26–30	Clay	CL, CH	A–7–6 or A–6	0–1
			30	Weathered shale.			
Udorthents: UaE. Too variable to be rated.							
Wickham: WaA, WaB	>6	>6	0–8	Fine sandy loam	SM	A–4	
			8–41	Sandy clay loam	CL–ML, SC–SM, SC, CL	A–4	
			41–70	Sandy loam	SM, ML	A–4	

[1] NP = Nonplastic.

significant in engineering—Continued

Percentage less than 3 inches passing sieve—				Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential	Corrosivity	
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)							Uncoated steel	Concrete
						In per hr	*In per in of soil*	*pH*			
95–100	95–100	85–95	70–80	<30	NP	0.6–2.0	0.12–0.16	4.5–5.5	Low	Moderate	Moderate.
95–100	95–100	90–100	85–95	30–50	10–25	0.06–0.2	0.14–0.18	4.5–5.5	Moderate	Moderate	Moderate.
95–100	95–100	85–95	80–90	30–40	10–20	0.2–0.6	0.14–0.18	4.5–5.5	Low	Moderate	Moderate.
70–90	65–85	60–75	50–70	<30	NP–10	0.6–2.0	0.13–0.18	4.5–5.5	Low	Moderate	High.
70–90	60–85	50–70	36–60	20–30	5–12	0.6–2.0	0.12–0.18	4.5–5.5	Low	Moderate	High.
60–90	60–90	55–85	45–55	20–30	5–10	0.6–2.0	0.10–0.16	4.5–5.5	Low	Moderate	High.
80–85	65–75	55–65	36–50	30–40	3–7	0.6–2.0	0.10–0.12	4.5–6.0	Low	Low	High.
60–70	60–70	50–60	30–50	32–38	7–8	0.6–2.0	0.10–0.12	4.5–6.0	Low	Low	High.
65–90	60–85	45–75	36–55	20–30	3–8	0.6–2.0	0.12–0.17	4.5–6.0	Low	Low	Moderate to high.
65–85	55–75	45–65	36–55	25–35	8–17	0.6–2.0	0.12–0.17	4.5–6.0	Low	Low	Moderate to high.
65–85	60–85	50–70	45–60	30–40	15–20	0.6–2.0	0.10–0.17	4.5–6.0	Moderate	Low	Moderate to high.
55–80	50–75	40–70	20–55	<30	NP–7	0.6–2.0	0.10–0.15	4.5–6.5	Low	Moderate	High.
65–85	50–75	45–80	30–55	25–35	12–20	0.6–2.0	0.10–0.15	4.0–5.5	Low	Moderate	High.
20–60	15–50	10–40	5–25	20–30	4–7	0.06–0.2	0.01–0.04	4.0–5.5	Low	Moderate	High.
35–80	30–75	25–70	20–55	20–30	4–7	0.06–0.2	0.01–0.04	4.0–5.5	Low	Moderate	High.
95–100	95–100	65–98	30–60		NP	2.0–6.0	0.07–0.11	5.6–6.5	Low	Low	Moderate.
100	100	95–100	85–95	40–47	16–22	0.06–0.2	0.14–0.18	5.1–5.5	Low	Low	Moderate.
85–95	75–95	70–90	55–65	<35	NP–10	0.6–2.0	0.17–0.20	5.1–5.5	Low	Moderate	High.
80–98	80–98	75–95	70–90	30–45	12–25	0.06–0.2	0.12–0.18	4.5–5.0	Moderate	Moderate	High.
80–100	80–100	75–98	70–95	35–55	18–28	0.06–0.2	0.12–0.18	4.5–5.0	Moderate	Moderate	High.
98–100	95–100	95–100	36–50	<20	NP	2.0–6.0	0.12–0.14	4.5–6.0	Low	Moderate	Moderate.
98–100	95–100	95–100	36–65	25–30	5–10	0.6–2.0	0.13–0.15	4.5–6.0	Low	Moderate	Moderate.
95–100	95–100	95–100	36–55		NP	2.0–6.0	0.10–0.15	4.5–6.0	Low	Moderate	Moderate.

TABLE 6.—*Interpretations of engineering properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbols	Soil features affecting—				
	Pond reservoir areas	Dikes, levees, and other embankments	Drainage for crops and pastures	Irrigation	Terraces and diversions
Allen: AaB, AbC, AcC2	Moderate permeability.	Medium compressibility.	Well drained	Moderate permeability; medium infiltration rate.	Favorable.
Bodine: BaC	Moderately rapid permeability.	Poor resistance to piping.	Well drained	Moderately rapid permeability; medium to rapid infiltration rate.	Unfavorable; more than 35 percent chert fragments.
Bomar: Bb	Features favorable	Fair to poor compaction.	Moderately well drained; fragipan at depth of 19 to 40 inches.	Moderately slow to slow permeability; medium infiltration rate; fragipan at depth of 19 to 40 inches.	Fragipan at depth of 19 to 40 inches; terraces not needed.
Cedarbluff: Ca	Features favorable	Fair to poor compaction.	Somewhat poorly drained; outlets difficult to find.	Moderate to slow permeability; slow to medium infiltration rate.	Favorable; no terraces needed.
Chewacla: Cb	Moderate permeability.	Fair slope stability.	Somewhat poorly drained.	Moderate permeability; medium infiltration rate.	Favorable; no terraces needed.
Cloudland: Cc	Features favorable	Fair slope stability.	Moderately well drained; fragipan at depth of 18 to 28 inches.	Moderate to slow permeability; medium infiltration rate.	Fragipan at a depth of 18 to 28 inches; favorable.
*Conasauga: CdB, CdC, CfB, CgE. For Firestone part of CfB and Leesburg part of CgE, refer to Firestone and Leesburg series.	Shale at a depth of 1.5 to 3.5 feet.	Fair slope stability.	Moderately well drained; slow permeability.	Slow permeability; medium to slow infiltration rate; medium to rapid runoff on slopes of more than 5 percent.	Short, uneven slopes.
Decatur: DcB, DcC, DdC.	Moderate permeability.	Medium compressibility.	Well drained	Moderate permeability; medium infiltration rate; medium to rapid runoff on slopes of more than 6 percent.	Short, uneven slopes.
Dewey: DeB, DeC, DfC.	Moderate permeability.	Fair to good slope stability.	Well drained	Moderate permeability; medium infiltration rate; medium to rapid runoff on slopes of more than 6 percent.	Short, uneven slopes.
Ellisville: Ea	Moderate permeability.	Medium compressibility.	Well drained	Moderate permeability; medium to rapid infiltration rate.	Favorable; no terraces needed.
Emory: Eb	Moderate permeability.	Medium compressibility.	Well drained	Moderate permeability; medium to rapid infiltration rate.	Favorable; no terraces needed.
*Ennis: Ec For Lobelville part of Ec refer to Lobelville series.	Moderately rapid permeability.	Fair slope stability; fair to poor resistance to piping.	Well drained	Moderately rapid permeability; medium infiltration rate.	Favorable; no terraces needed.

TABLE 6.—*Interpretations of engineering properties*—Continued

Soil series and map symbols	Soil features affecting—				
	Pond reservoir areas	Dikes, levees, and other embankments	Drainage for crops and pastures	Irrigation	Terraces and diversions
*Firestone: FaB, FaC, FcD, FD, FE. For Conasauga part of FcD, Montevallo parts of FD and FE, and Leesburg part of FE, refer to Conasauga, Montevallo, and Leesburg series.	Depth to shale is 2.0 to 3.5 feet.	Fair slope stability.	Well drained	Slow permeability; medium to slow infiltration rate; medium to rapid runoff.	Difficult to work; difficult to build and maintain on slopes of more than 6 percent; bedrock at a depth of 2.0 to 3.5 feet.
Fullerton: FfC	Moderate permeability.	Fair slope stability; fair to poor resistance to piping.	Well drained	Moderate permeability; medium infiltration rate; medium to rapid runoff.	Short, uneven slopes.
Gaylesville: Ga	Features favorable.	Fair slope stability; good to poor resistance to piping.	Poorly drained to somewhat poorly drained; drainage outlets are seldom available.	Slow permeability; medium infiltration rate; somewhat poorly drained to poorly drained.	Poor outlets available; not needed.
Guthrie: Gb	Features favorable.	Medium compressibility.	Poorly drained; drainage outlets are seldom available.	Slow permeability; medium infiltration rate; poorly drained; fragipan at a depth of 20 to 36 inches.	Poor outlets available; not needed.
Hartsells: HaB, HaC, HC.	Bedrock at a depth of 1.5 to 3.5 feet.	Fair to poor resistance to piping.	Well drained	Moderate permeability; medium infiltration rate; bedrock at a depth of 1.5 to 3.5 feet.	Bedrock at a depth of 1.5 to 3.5 feet.
*Hector: HdC For Hartsells part of HdC, refer to Hartsells series.	Rapid permeability; bedrock at a depth of 0.5 to 1.5 feet.	Thickness of borrow material; poor resistance to piping.	Well drained; shallow to bedrock.	Rapid permeability; bedrock at a depth of 0.5 to 1.5 feet.	Bedrock at a depth of 0.5 to 1.5 feet.
Herndon: HeC	Moderate permeability.	High compressibility.	Well drained	Moderate permeability; medium to slow infiltration rate; medium to rapid runoff.	Difficult to work; pebbles on surface.
Holston: HfA, HgB	Moderate permeability.	Medium compaction; poor resistance to piping.	Well drained	Moderate permeability; medium infiltration.	Favorable.
*Leesburg: LaB, LaC, LC. For Allen part of LC, refer to Allen series.	Moderate permeability.	Fair slope stability; fair to poor resistance to piping.	Well drained	Moderate permeability; medium to rapid infiltration on slopes of more than 6 percent.	Favorable; difficult to build and maintain on slopes of more than 6 percent.
Linker: LdB, LdC	Moderate permeability; bedrock at a depth of 1.5 to 3.5 feet.	Thickness of borrow material; fair slope stability.	Well drained	Moderate permeability; medium infiltration rate.	Shallow in places; favorable.
Lobelville Mapped only in complex with Ennis soils.	Moderate permeability.	Poor resistance to piping; fair slope stability.	Moderately well drained; moderate permeability.	Moderate permeability; medium infiltration rate.	Favorable; no terraces needed.
McQueen: MaA, MaB	Moderate permeability below a depth of 3.5 feet.	Fair slope stability	Well drained	Slow permeability; medium infiltration rate.	Favorable.

TABLE 6.—*Interpretations of engineering properties*—Continued

Soil series and map symbols	Soil features affecting—				
	Pond reservoir areas	Dikes, levees, and other embankments	Drainage for crops and pastures	Irrigation	Terraces and diversions
*Minvale: McB, McC, ME. For Bodine part of ME, refer to Bodine series.	Moderate permeability.	Poor resistance to piping; fair slope stability.	Well drained	Moderate permeability; medium infiltration rate; medium to rapid runoff on slopes of more than 20 percent.	Short, uneven slopes; difficult to build and maintain on the steeper slopes.
*Montevallo: MF. For Herndon part of MF, refer to Herndon series.	Moderate permeability; bedrock at a depth of 1.0 to 1.5 feet.	Thickness of borrow material.	Well drained; shallow to bedrock.	Unfavorable; slopes are more than 20 percent; bedrock at a depth of 1.0 to 1.5 feet.	Unfavorable; steep slopes.
Nella: NaC, NbD	Moderate permeability.	Fair slope stability	Well drained	Moderate permeability; medium infiltration rate; medium to rapid runoff.	10 to 35 percent coarse fragments; difficult to build and maintain on the steeper slopes.
Stemley: SaB	Depth to permeable material.	Fair to poor resistance to piping.	Moderately well drained; fragipan at a depth of 17 to 36 inches.	Moderate to slow permeability; medium infiltration rate; fragipan at a depth of 17 to 36 inches.	Fragipan at a depth of 17 to 36 inches; 10 to 80 percent chert fragments on surface and in profile.
Toccoa: Ta	Moderately rapid permeability.	Fair slope stability; poor resistance to piping.	Well drained	Moderately rapid permeability; medium to rapid infiltration rate.	Unstable embankments; erosion hazard.
Townley: TbC	Shale at a depth of 2.0 to 2.5 feet.	Thickness of borrow material.	Well drained	Slow permeability; medium to slow infiltration rate; bedrock at a depth of 2.0 to 2.5 feet.	Difficult to work; bedrock at a depth of 2.0 to 2.5 feet.
Udorthents: UaE. Too variable to be rated.					
Wickham: WaA, WaB	Moderate permeability.	Fair to poor resistance to piping; fair to good slope stability.	Well drained	Moderate permeability; medium infiltration rate.	Favorable.

the degree and kind of limitation of each soil in the county for specified nonfarm purposes.

The suitability of the soils must be determined in selecting a site for a residence, a highway, an industry, a recreational area, or any other nonfarm purpose. The properties considered are texture, reaction, depth, shrink-swell potential, slope, permeability, depth to hard rock, depth to the water table, and the hazard of flooding.

Tables 8, 9, 10, and 11 give the degree and kind of limitations or suitability of the soils of Cherokee County for selected nonfarm uses. The degrees of limitation or suitability reflect the features that affect a particular use of a soil to a depth of about 6 feet or to a contact.

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

Soil suitability is rated by the terms *good, fair,* and *poor,* which have, respectively, meanings approximately parallel to the terms slight, moderate, and severe. In addition the term *unsuited* is used for soils that have no potential as a source of sand or gravel.

The detailed soil map and information in tables 8, 9, 10, and 11 are guides for evaluating areas for the specified uses. They do not eliminate the need for detailed onsite investigations before a final determination is made.

Interpretations of soils for sanitary facilities

Following are explanations of the columns in table 8.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic

tank into natural soil. The soil material between depths of 18 inches and 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table, and susceptibility to flooding. Slope affects difficulty of layout and construction and also the hazard of soil erosion, lateral seepage, and downslope flow of effluent.

Sewage lagoons are shallow ponds constructed to hold sewage within a depth of 2 to 5 feet long enough for bacteria to decompose the solids. A lagoon has a nearly level floor, and sides, or embankments, of compacted soil material. The assumption is made that the embankment is compacted to medium density and the pond is protected from flooding. Properties that affect the pond floor are permeability, organic matter, and slope. The soil properties that affect the embankment material are interpreted from the Unified Soil Classification and amounts of stones, if any, that influence the ease of excavation and compaction of the embankment material.

Sanitary landfill is a method of disposing of refuse. The waste is spread in thin layers, compacted, and covered with soil throughout the disposal period. Landfill areas are subject to heavy vehicular traffic. Some soil properties that affect suitability for landfill are ease of excavation, hazard of polluting ground water, and trafficability. Ratings apply only to a depth of about 6 feet, and therefore limitation ratings of *slight* or *moderate* may not be valid if excavations are to be much deeper than that. For some soils, reliable predictions can be made to a depth of 10 to 15 feet, but in most instances geologic investigations will be needed below a depth of about 6 feet.

Sanitary landfill (trench) is a dug trench in which refuse is buried daily, or more frequently if necessary. The refuse is covered with a layer of soil material at least 6 inches thick, generally with soil excavated in digging the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill.

In sanitary landfill (area), refuse is placed on the surface of the soil in successive layers. The daily and final cover material generally must be imported. A final cover of soil material at least 2 feet thick is placed over the fill when it is completed.

Daily cover for landfill generally must be obtained from a source away from the site; soils from another area may need to be given limitation ratings for use as cover. Required soil characteristics relative to both daily and final cover material are nearly enough alike for one rating to serve.

Suitability of a soil for use as cover is based on properties that reflect workability; ease of digging, moving, and spreading over the refuse daily during both wet and dry periods; slope; and thickness of the soil material.

Interpretations of soils for community development

Following are explanations of some of the columns in table 9.

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

Dwellings and small commercial buildings, as rated in table 9, are not more than three stories high and are supported by foundation footings placed in undisturbed soil. The features that affect the rating of a soil for dwellings are those that relate to capacity to support load and resist settlement under load, and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding, density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, and content of stones.

Local roads and streets, as rated in table 9, have an all-weather surface expected to carry automobile traffic all year. They have a subgrade of underlying soil material; a base consisting of gravel, crushed rock, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand, and most cuts and fills are less than 6 feet deep.

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

Interpretation of soils as source material

Following are explanations of the columns in table 10.

Road fill is soil material used in embankments for roads. The suitability ratings reflect the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage, and the relative ease of excavating the material at borrow areas.

Sand and gravel are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance about where to look for probable sources. A soil rated as a *good* or *fair* source of sand or gravel generally has a layer at least 3 feet thick, the top of which is within a depth of 6 feet. The ratings do not take into account thickness of overburden, location of the water table, or other factors that affect mining of the materials, and neither do they indicate quality of the deposit.

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

Use of soils for recreational development

Knowledge of soils is necessary in planning, developing, and maintaining areas used for recreation. In table 11 the soils of Cherokee County are rated according to limitations that affect their suitability for camp areas, playgrounds, picnic areas, and paths and trails.

TABLE 7.—*Engineering*

[Tests performed by State of Alabama

Soil name and location	Parent material	Report No. S69Ala. 10—	Depth	Moisture density [1]	
				Maximum dry density	Optimum moisture
			Inches	*Pct*	*Pct*
Conasauga silt loam: SE½SW¼NW¼ sec. 25, T. 9 S., R. 12 E. (Modal)	Residuum from shale	14–1	1–4	106	16
		14–2	4–10	113	15
		14–3	10–19	103	17
		14–4	19–30	101	19
Firestone gravelly silt loam: ¼ mile east of Mt. Olive Church, SW¼SW¼ sec. 4, T. 11 S., R. 9 E. (Modal)	Residuum from shale	6–1	0–5	99	19
		6–2	5–9	105	15
		6–3	9–23	86	28
		6–4	23–32	91	27
		6–5	32–36	100	18
Firestone silt loam: 4½ miles northwest of Weiss Dam, NE¼SW¼ sec. 16, T. 10 S., R. 8 E. (Thinner, less gravelly surface layer than modal).	Residuum from argillaceous limestone and shale.	8–1	0–3	95	20
		8–2	3–11	89	26
		8–3	11–25	87	27
		8–4	25–33	91	27
Gaylesville silty clay loam: 3 miles south of Centre, NE¼SE¼ sec. 3, T. 11 S., R. 9 E. (Modal).	Alluvium washed from soils derived from the weathering of shale, cherty limestone, and sandstone uplands.	4–1	0–3	87	24
		4–2	3–14	102	18
		4–3	14–22	100	19
		4–4	22–33	101	19
		4–5	33–72	100	17
Holston loam: SE¼NW¼NE¼ sec. 10, T. 10 S., R. 9 E. (Modal)	Alluvium washed from soils derived from sandstone and shale uplands.	19–1	0–7	119	10
		19–2	7–25	115	15
		19–3	25–50	104	17
		19–4	50–72	100	22
Wickham fine sandy loam: 2 miles southeast of Weiss Dam, NE¼SE¼ sec. 35, T. 10 S., R. 8 E. (Modal)	Alluvium washed from soils derived from the weathering of sandstone, shale, and chert uplands.	18–1	0–8	112	12
		18–2	12–20	115	15
		18–3	20–41	111	15
		18–4	41–70	115	14

[1] Based on AASHTO Designation T 99, Method A (*2*).

[2] Mechanical analyses according to the AASHTO Designation T 88–57. Results by this procedure may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-sized fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 milli-

In table 11 the soils are rated as having slight, moderate, or severe limitations for the specified uses. For all of these ratings, it is assumed that a good cover of vegetation can be established and maintained. A limitation of *slight* means that soil properties are generally favorable and limitations are so minor that they can be easily overcome. A *moderate* limitation can be overcome or modified by planning, by design, or by special maintenance. A *severe* limitation means that costly soil reclamation, special design, intense maintenance, or a combination of these is required.

Camp areas are used intensively for tents and small camp trailers and the accompanying activities of outdoor living. Little preparation of the site is required, other than shaping and leveling for tent and parking areas. Camp areas are subject to heavy foot traffic and limited vehicular traffic. The best soils have nearly level slopes, good drainage, a surface free of rocks and coarse fragments, freedom from flooding during periods of heavy use, and a surface that is firm after rains but not dusty when dry.

Picnic areas are attractive natural or landscaped tracts used mainly for preparing meals and eating outdoors. These areas are subject to heavy foot traffic. Most of the vehicular traffic, however, is confined to access roads. The best soils are firm when wet but not dusty when dry; are free of flooding during the season of use; do not have slopes or stones that greatly increase cost of leveling sites or of building access roads.

Playgrounds are areas used intensively for baseball, foot-

test data

Highway Department, Montgomery, Alabama]

Mechanical analysis [2]									Liquid limit	Plasticity index	Classification	
Percentage passing sieve—												
2 in	1½ in	1 in	¾ in	⅜ in	No. 4 (4.7 mm)	No. 8 (2.38 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)			AASHTO [3]	Unified [4]
		100			98	95	77	67	28	5	A-4(5)	ML
		100			98	96	80	70	27	7	A-4(5)	CL-ML
		100			98	96	88	82	43	20	A-7-6(18)	CL
		100			98	95	87	83	49	27	A-7-6(24)	CL
100	99	97	97	87	78	72	63	58	33	6	A-4(4)	ML
		100	99	97	92	88	80	77	29	5	A-4(6)	ML
						100	99	99	94	48	A-7-5(62)	MH
						100	98	97	78	41	A-7-5(50)	MH
		100			99	98	80	74	58	26	A-7-5(21)	MH
100		98	98	98	97	94	78	69	37	10	A-4(6)	ML
						100	98	97	83	46	A-7-5(55)	MH
						100	98	96	74	37	A-7-5(45)	MH
						100	97	96	77	41	A-7-5(49)	MH
						100	99	95	42	11	A-7-5(12)	ML
					100	99	99	92	34	11	A-6(13)	CL
						100	99	94	37	14	A-6(15)	CL
						100	99	94	41	19	A-7-6(19)	CL
						100	99	94	50	28	A-7-6(29)	CL
		100			99	99	99	55	15	1	A-4(2)	ML
		100			99	99	99	67	21	6	A-4(3)	CL-ML
					100	99	98	70	34	6	A-4(6)	ML
						100	100	68	42	5	A-5(7)	ML
						100	99	43	19	[5] NP	A-4(1)	SM
						100	100	60	26	6	A-4(3)	CL-ML
						100	99	57	28	7	A-4(3)	CL-ML
						100	99	42	23	3	A-4(1)	SM

meters in diameter is excluded from calculations of grain-sized fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[3] Based on AASHTO Designation M 145–49 and M145–66I.

[4] Based on the Unified Soil Classification System (*3*).

[5] NP = Nonplastic.

ball, badminton, and similar organized games. Soils suitable for this use need to withstand intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrops, good drainage, freedom from flooding during periods of heavy use, and a surface that is firm after rains but not dusty when dry. If grading and leveling are required, depth to rock is important.

Paths and trails are used for local and cross country travel by foot or horseback. Design and layout should require little or no cutting and filling. The best soils are at least moderately well drained, are firm when wet but not dusty when dry, are flooded not more than once during the season of use, have slopes of less than 15 percent, and have few or no rocks or stones on the surface.

Formation and Classification of the Soils

In this section, the major factors of soil formation and their effect on the soils of Cherokee County are described. The current system for classifying soils is defined.

Formation of the Soils

Soils form as a result of the interaction of certain soil-forming factors acting on materials deposited or accumulated by geological agencies. The five major soil-forming factors are: parent material, climate, plant and animal life, relief,

TABLE 8.—*Sanitary facilities*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbols	Septic tank absorption fields	Sewage lagoons	Sanitary landfill[1] (Trench)	Sanitary landfill (Area)	Daily cover for landfill
Allen: AaB, AbC, AcC2	Slight	Moderate: slope	Slight	Slight	Good.
Bodine: BaC	Moderate: slope	Severe: moderately rapid permeability; slope.	Severe: moderately rapid permeability.	Severe: moderately rapid permeability.	Poor: coarse fragments.
Bomar: Bb	Severe: moderately slow to slow permeability; high water table.	Slight	Severe: dominantly silty clay; high water table.	Severe: high water table.	Poor: dominantly silty clay.
Cedarbluff: Ca	Severe: slow permeability; high water table.	Slight	Severe: subject to ponding; high water table.	Severe: subject to ponding.	Fair: dominantly clay loam.
Chewacla: Cb	Severe: flooding; high water table.	Moderate: moderate permeability.	Severe: flooding; high water table.	Severe: flooding; high water table.	Fair: dominantly silty clay loam and loam in lower part.
Cloudland: Cc	Severe: slow permeability in fragipan; high water table.	Slight	Severe: high water table.	Severe: high water table.	Good.
*Conasauga:					
CdB, CfB For Firestone part of CfB, refer to Firestone series.	Severe: slow permeability; bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet; slope.	Severe: shale is at a depth of 1½ to 3½ feet.	Slight	Poor: dominantly silty clay loam and silty clay.
CdC, CgE For Leesburg part of CgE, refer to Leesburg series.	Severe: slow permeability; bedrock is at a depth of 1½ to 3½ feet.	Severe: slope	Severe: shale is at a depth of 1½ to 3½ feet.	Moderate: slope Severe: slopes more than 15 percent.	Poor: dominantly silty clay loam and silty clay. Slope more than 15 percent.
Decatur:					
DcB	Slight	Moderate: slope	Severe: dominantly clay.	Slight	Poor: dominantly clay.
DcC, DdC	Moderate: slope	Severe: slope	Severe: dominantly clay.	Moderate: slope	Poor: dominantly clay.
Dewey:					
DeB	Slight	Moderate: slope	Severe: dominantly clay.	Slight	Poor: dominantly clay.
DeC, DfC	Moderate: slope	Severe: slope	Severe: dominantly clay.	Moderate: slope	Poor: dominantly clay.
Ellisville: Ea	Severe: flooding	Moderate: moderate permeability.	Severe: flooding	Severe: flooding	Good.
Emory: Eb	Severe: flooding	Moderate: moderate permeability.	Severe: flooding	Severe: flooding	Good.
*Ennis: Ec For Lobelville part of Ec, refer to Lobelville series.	Severe: flooding	Severe: moderately rapid permeability.	Severe: flooding	Severe: flooding	Fair: coarse fragments.
*Firestone:					
FaB	Severe: slow permeability; bedrock is at a depth of 2 to 3½ feet.	Moderate: slope	Severe: dominantly clay.	Slight	Poor: dominantly clay.
FaC	Severe: slow permeability; bedrock is at a depth of 2 to 3½ feet.	Severe: slope	Severe: dominantly clay.	Moderate: slope	Poor: dominantly clay.

TABLE 8.—*Sanitary facilities*—Continued

Soil series and map symbols	Septic tank absorption fields	Sewage lagoons	Sanitary landfill[1] (Trench)	Sanitary landfill (Area)	Daily cover for landfill
Firestone—Continued					
FcD, FD, FE—For Conasauga part of FcD, Montevallo part of FD, and Montevallo and Leesburg parts of FE, refer to Conasauga, Montevallo, and Leesburg series.	Severe: slow permeability; slope; bedrock is at a depth of 2 to 3½ feet.	Severe: slope	Severe: dominantly clay; slope.	Severe: slope	Poor: dominantly clay; slope.
Fullerton: FfC	Moderate: moderate permeability; slope.	Severe: slope	Severe: dominantly cherty silty clay.	Moderate: slope	Poor: dominantly cherty silty clay.
Gaylesville: Ga	Severe: slow permeability; high water table.	Slight	Severe: high water table.	Severe: poorly drained; high water table.	Poor: poorly drained.
Guthrie: Gb	Severe: slow permeability; high water table.	Slight	Severe: poorly drained; high water table.	Severe: poorly drained; high water table.	Severe: poorly drained.
Hartsells:					
HaB	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Slight	Fair: thickness of material.
HaC	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Slight to moderate: slope.	Fair: thickness of material.
HC	Severe: bedrock is at a depth of 1½ to 3½ feet; slope.	Severe: bedrock is at a depth of 1½ to 3½ feet; slope.	Severe: bedrock is at a depth of 1½ to 3½ feet; slope more than 25 percent.	Severe: slope	Poor: slope.
*Hector: HdC—For Hartsells part of HdC, refer to Hartsells series.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: bedrock is at a depth of ½ at 1½ feet.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: rapid permeability.	Poor: thickness of material.
Herndon: HeC	Moderate: moderate permeability.	Moderate to severe: moderate permeability; slope.	Severe: dominantly clay.	Slight	Poor: dominantly clay.
Holston: HfA, HgB	Slight	Moderate: moderate permeability.	Moderate: dominantly clay loam.	Slight	Fair: dominantly clay loam.
*Leesburg:					
LaB	Slight	Moderate: slope; moderate permeability.	Moderate: dominantly gravelly clay loam.	Slight	Fair: coarse fragments.
LaC	Moderate: slope	Severe: slope	Moderate: dominantly gravelly clay loam.	Moderate: slope	Fair: coarse fragments.
LC—For Allen part of LC, refer to Allen series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope.
Linker:					
LdB	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Slight	Fair: thickness of material.
LdC	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Moderate: slope	Fair: thickness of material.
Lobelville—Mapped only in complex with Ennis soils.	Severe: flooding; high water table.	Severe: high water table.	Severe: flooding; high water table.	Severe: flooding	Fair: coarse fragments.

TABLE 8.—*Sanitary facilities*—Continued

Soil series and map symbols	Septic tank absorption fields	Sewage lagoons	Sanitary landfill[1] (Trench)	Sanitary landfill (Area)	Daily cover for landfill
McQueen:					
MaA	Severe: flooding; slow permeability.	Moderate: moderate permeability in lower profile.	Severe: flooding; dominantly clay.	Severe: flooding	Poor: dominantly clay.
MaB	Severe: slow permeability.	Moderate: moderate permeability in lower profile; slope.	Severe: dominantly clay.	Slight	Poor: dominantly clay.
*Minvale:					
McB	Slight	Moderate: slope	Slight	Slight	Fair: coarse fragments.
McC	Slight	Severe: slope	Slight	Slight	Fair: coarse fragments.
ME For Bodine part of ME, refer to Bodine series.	Severe: slope	Severe: slope	Severe: slope; moderately rapid permeability.	Severe: slope	Poor: slope.
*Montevallo: MF For Herndon part of MF, refer to Herndon series.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope	Poor: slope.
Nella:					
NaC	Slight	Moderate: slope; moderate permeability.	Moderate: dominantly gravelly clay.	Slight	Fair: coarse fragments.
NbD	Severe: slope	Severe: slope	Severe: dominantly gravelly clay; slope.	Severe: slope	Poor: slope.
Stemley: SaB	Severe: slow permeability; high water table.	Moderate: coarse fragments.	Severe: high water table.	Severe: high water table.	Fair: coarse fragments in upper part.
Toccoa: Ta	Severe: flooding	Severe: moderately rapid permeability.	Severe: flooding; moderately rapid permeability.	Severe: flooding	Good.
Townley: TbC	Severe: slow permeability; bedrock is at a depth of 2 to 2½ feet.	Severe: bedrock is at a depth of 2 to 2½ feet.	Severe: dominantly silty clay.	Slight	Poor: dominantly silty clay.
Udorthents: UaE. Too variable to be rated.					
Wickham:					
WaA	Severe: flooding	Moderate: moderate permeability.	Severe: flooding	Severe: flooding	Good.
WaB	Slight	Moderate: slope; moderate permeability.	Slight	Slight	Good.

[1] Onsite studies of the underlying strata, water tables, and hazards of aquifer pollution and drainage into ground water need to be made for landfills deeper than 5 or 6 feet.

and time. The relative importance of these factors differs from place to place. The effect of any one of the soil-forming factors is modified to some degree by all of the others. The five factors of soil formation are discussed in the paragraphs that follow.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineral composition of soils. The parent material of the soil in Cherokee County is of two kinds: residual material from the weathering of rocks in place, and material transported by water, or gravity and laid down as unconsolidated deposits of clay, silt, and sand.

The parent material that weathered in place consists of residuum from sandstone, shale, and limestone bedrock of several geological formations (*1*).

The soils along the larger streams in the county formed in alluvium laid down as unconsolidated deposits of sand, silt, or clay. Some of this material came from nearby uplands,

TABLE 9.—*Community development*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbols	Shallow excavations	Dwellings with basements	Dwellings without basements	Small commercial buildings	Local roads and streets
Allen: AaB, AbC, AcC2	Slight	Slight	Slight	Moderate: slope	Moderate: fair traffic supporting capacity.
Bodine: BaC	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope.
Bomar: Bb	Moderate: moderately well drained; high water table.	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding; subgrade.
Cedarbluff: Ca	Severe: somewhat poorly drained; high water table.	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Chewacla: Cb	Severe: somewhat poorly drained.	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Cloudland: Cc	Moderate: moderately well drained.	Severe: high water table.	Moderate: high water table; fair bearing strength.	Moderate: high water table; fair bearing strength.	Moderate: fair traffic supporting capacity.
Conasauga:					
CdB, CfB For Firestone part of CfB, refer to Firestone series.	Moderate: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Moderate: moderate shrink-swell.	Moderate: moderate shrink-swell.	Severe: poor traffic supporting capacity.
CdC	Moderate: bedrock is at a depth of 1½ to 3½ feet; slope.	Moderate: slope; bedrock is at a depth of 1½ to 3½ feet.	Moderate: slope; moderate shrink-swell; fair bearing strength.	Severe: slope	Severe: slope; poor traffic supporting capacity.
CgE For Leesburg part of CgE, refer to Leesburg series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope; poor traffic supporting capacity.
Decatur:					
DcB, DcC	Moderate: dominantly clay.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: slope; fair bearing strength; moderate shrink-swell.	Moderate: fair traffic supporting capacity; moderate shrink-swell.
DdC	Moderate: slope; dominantly clay.	Moderate: fair bearing strength; slope; moderate shrink-swell.	Moderate: fair bearing strength; slope; moderate shrink-swell.	Severe: slope; moderate shrink-swell.	Moderate: fair traffic supporting capacity; slope; moderate shrink-swell.
Dewey:					
DeB, DeC	Moderate: dominantly clay.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: slope; fair bearing strength; moderate shrink-swell.	Moderate: fair traffic supporting capacity; moderate shrink-swell.
DfC	Moderate: slope; dominantly clay.	Moderate: slope; fair bearing strength.	Moderate: slope; fair bearing strength.	Severe: slope	Moderate: fair traffic supporting capacity; slope; moderate shrink-swell.
Ellisville: Ea	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Emory: Eb	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
*Ennis: Ec For Lobelville part of Ec, refer to Lobelville series.	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.

TABLE 9.—*Community development*—Continued

Soil series and map symbols	Shallow excavations	Dwellings with basements	Dwellings without basements	Small commercial buildings	Local roads and streets
*Firestone: FaB, FaC	Severe: dominantly clay; bedrock is at a depth of 2 to 3½ feet.	Severe: poor bearing strength; bedrock is at a depth of 2 to 3½ feet; high shrink-swell.	Severe: poor bearing strength; high shrink-swell.	Severe: poor bearing strength; slope; high shrink-swell.	Severe: poor traffic supporting capacity; high shrink-swell.
FcD, FD, FE. For Conasauga part of FcD, Montevallo part of FD, and Leesburg and Montevallo parts of FE, refer to Conasauga, Montevallo, and Leesburg series.	Severe: dominantly clay; bedrock is at a depth of 2 to 3½ feet; slope.	Severe: slope; poor bearing strength; bedrock is at a depth of 2 to 3½ feet; high shrink-swell.	Severe: slope; poor bearing strength; high shrink-swell.	Severe: poor bearing strength; slope; high shrink-swell.	Severe: poor traffic supporting capacity; high shrink-swell; slope.
Fullerton: FfC	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope; good to fair traffic supporting capacity.
Gaylesville: Ga	Severe: somewhat poorly drained to poorly drained; high water table.	Severe: flooding; high water table.	Severe: flooding; high water table.	Severe: flooding; high water table.	Severe: flooding; somewhat poorly drained to poorly drained.
Guthrie: Gb	Severe: poorly drained; high water table.	Severe: poorly drained; high water table.	Severe: poorly drained; high water table.	Severe: poorly drained; high water table.	Severe: poorly drained.
Hartsells: HaB, HaC	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet; fair traffic supporting capacity.
HC	Severe: bedrock is at a depth of 1½ to 3½ feet; slope.	Severe: slope; bedrock is at a depth of 1½ to 3½ feet.	Severe: slope	Severe: slope	Severe: slope.
*Hector: HdC. For Hartsells part of HdC, refer to Hartsells series.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: bedrock is at a depth of ½ to 1½ feet.	Severe: bedrock is at a depth of ½ to 1½ feet.
Herndon: HeC	Moderate: dominantly clay.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate to severe: fair bearing strength; slope; moderate shrink-swell.	Moderate: fair to poor traffic supporting capacity; moderate shrink-swell.
Holston: HfA, HgB	Slight	Moderate: fair bearing strength.	Moderate: fair bearing strength.	Moderate: fair bearing strength.	Moderate: fair traffic supporting capacity.
*Leesburg: LaB	Moderate: dominantly gravelly clay loam.	Slight	Slight	Moderate: slope	Slight.
LaC	Moderate: slope dominantly gravelly clay loam.	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope.
LC. For Allen part of LC, refer to Allen series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Linker: LdB, LdC	Severe: bedrock is at a depth of 1½ to 3½ feet.	Severe: bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet.	Moderate: bedrock is at a depth of 1½ to 3½ feet; slope.	Moderate: bedrock is at a depth of 1½ to 3½ feet; fair traffic supporting capacity.

TABLE 9.—*Community development*—Continued

Soil series and map symbols	Shallow excavations	Dwellings with basements	Dwellings without basements	Small commercial buildings	Local roads and streets
Lobelville Mapped only in complex with Ennis soils.	Severe: flooding; high water table.	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
McQueen:					
MaA	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
MaB	Moderate: dominantly clay.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: fair bearing strength; moderate shrink-swell.	Moderate: fair bearing strength; slope; moderate shrink-swell.	Moderate: fair traffic supporting capacity; moderate shrink-swell.
*Minvale:					
McB, McC	Slight	Moderate: fair bearing strength.	Moderate: fair bearing strength.	Moderate: fair bearing strength.	Moderate: fair traffic supporting capacity.
ME For Bodine part of ME. refer to Bodine series.	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
*Montevallo: MF For Herndon part of MF, refer to Herndon series.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope; bedrock is at a depth of 1 to 1½ feet.
Nella:					
NaC	Moderate: dominantly gravelly clay.	Slight	Slight	Moderate: slope	Moderate: moderate shrink-swell below a depth of 2½ feet.
NbD	Severe: slope; dominantly gravelly clay.	Severe: slope	Severe: slope	Severe: slope	Moderate: slope; moderate shrink-swell below a depth of 2½ feet.
Stemley: SaB	Moderate: moderately well drained.	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding.
Toccoa: Ta	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
Townley: TbC	Moderate: dominantly silty clay; bedrock is at a depth of 2 to 2½ feet.	Moderate: fair to poor bearing strength; bedrock is at a depth of 2 to 2½ feet; moderate shrink-swell.	Moderate: fair to poor bearing strength; bedrock is at a depth of 2 to 2½ feet; moderate shrink-swell.	Moderate: bedrock is at a depth of 2 to 2½ feet; slope; fair to poor bearing strength; moderate shrink-swell.	Moderate: bedrock is at a depth of 2 to 2½ feet; fair to poor traffic supporting capacity; moderate shrink-swell.
Udorthents: UaE. Too variable to be rated.					
Wickham:					
WaA	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding.
WaB	Slight	Slight	Slight	Slight	Moderate: fair traffic supporting capacity.

and some came from a great distance. The soils on first bottoms still receive new soil material and therefore have a weakly developed profile. Soils on terrace positions have been in place long enough for distinct horizons to have developed. Narrow strips of local alluvium that has not been modified by soil-forming processes are along narrow drainageways throughout the uplands.

Climate

Climate affects the physical, chemical, and biological relationships in the soil mainly through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residues through the soil profile. The amount of water that actually percolates through the soil over a broad area depends mainly on the amount and intensity of rainfall, on the relative humidity, and on the length of the frost-free period. The rate of downward percolation is also affected by the physiographic position and permeability of the soil. Temperature influences the kinds and growth of plants and animals in and on the soils and determines the speed of physical and chemical reactions in the soils.

TABLE 10.—*Construction material*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbol	Road fill	Sand	Gravel	Topsoil
Allen: AaB, AbC, AcC2	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Fair: thickness of suitable material.
Bodine: BaC	Good	Poor: improbable source.	Poor: Unified soil group.	Poor: coarse fragments.
Bomar: Bb	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Fair: thickness of suitable material.
Cedarbluff: Ca	Fair: fair traffic supporting capacity; somewhat poorly drained; moderate shrink-swell.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
Chewacla: Cb	Fair: somewhat poorly drained; fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
Cloudland: Cc	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
*Conasauga: CdB, CdC, CfB, CgE. For Firestone part of CfB and Leesburg part of CgE refer to Firestone and Leesburg series.	Poor: poor traffic supporting capacity; slope more than 25 percent.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: thickness of suitable material; slope more than 15 percent.
Decatur: DcB, DcC, DdC	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Fair: texture of upper part of profile; slope.
Dewey: DeB, DeC, DfC	Poor: traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Fair: texture of upper part of profile; slope.
Ellisville: Ea	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
Emory: Eb	Fair to poor: fair to poor traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
*Ennis: Ec For Lobelville part of Ec, refer to Lobelville series.	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments.
*Firestone: FaB, FaC, FcD, FD, FE. For Conasauga part of FcD, Montevallo part of FD, and Montevallo and Leesburg parts of FE, refer to Conasauga, Montevallo, and Leesburg series.	Poor: poor traffic supporting capacity; slope more than 25 percent; high shrink-swell.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: thickness of suitable material; slope more than 15 percent.
Fullerton: FfC	Fair: good to fair traffic supporting capacity.	Unsuited: improbable	Unsuited: improbable	Poor: coarse fragments.
Gaylesville: Ga	Poor: somewhat poorly drained to poorly drained.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: thickness of suitable material; somewhat poorly drained to poorly drained.
Guthrie: Gb	Poor: poorly drained.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: poorly drained.

TABLE 10.—*Construction material*—Continued

Soil series and map symbol	Road fill	Sand	Gravel	Topsoil
Hartsells:				
HaB, HaC	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Poor: improbable source.	Good.
HC	Poor: slope	Unsuited: improbable source.	Poor: improbable source.	Poor: slope.
*Hector: HdC For Hartsells part of HdC, refer to Hartsells series.	Fair: fair traffic supporting capacity.	Poor: improbable source.	Poor: improbable source.	Fair: thickness of suitable material.
Herndon: HeC	Fair: fair to poor traffic supporting capacity; moderate shrink-swell.	Unsuited: improbable source.	Unsuited: improbable source.	Fair to poor: thickness of suitable material.
Holston: HfA, HgB	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
*Leesburg:				
LaB, LaC	Fair to good: fair to good traffic supporting capacity.	Unsuited: improbable source.	Poor: improbable source.	Poor: coarse fragments.
LC For Allen part of LC, refer to Allen series.	Poor: slope	Unsuited: improbable source.	Poor: improbable source.	Poor: coarse fragments; slope.
Linker: LdB, LdC	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Good.
Lobelville Mapped only in complex with Ennis soils.	Fair to good: good to fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments.
McQueen: MaA, MaB	Fair: fair traffic supporting capacity; moderate shrink-swell.	Unsuited: improbable source.	Unsuited: improbable source.	Fair: texture of upper part of profile.
*Minvale:				
McB, McC	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments.
ME For Bodine part of ME, refer to Bodine series.	Poor: slope	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments; slope.
*Montevallo: MF For Herndon part of MF, refer to Herndon series.	Poor: slope	Poor: improbable source.	Unsuited: improbable source.	Poor: thickness of suitable material; coarse fragments; slope.
Nella: NaC, NbD	Fair to good: moderate shrink-swell below a depth of 2½ feet.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments.
Stemley: SaB	Fair: fair traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Poor: coarse fragments.
Toccoa: Ta	Good to fair: good to fair traffic supporting capacity.	Poor: improbable source.	Unsuited: improbable source.	Good.
Townley: TbC	Poor: fair to poor traffic supporting capacity.	Unsuited: improbable source.	Unsuited: improbable source.	Fair to poor: texture of upper part of profile.
Udorthents: UaE. Too variable to be rated.				
Wickham: WaA, WaB	Fair: fair traffic supporting capacity.	Poor: improbable source.	Unsuited: improbable source.	Fair: thickness of suitable material; texture of upper part of profile.

TABLE 11.—*Recreation*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Allen:				
AaB	Slight	Slight	Moderate: slope	Slight.
AbC	Slight	Slight	Severe: slope	Slight.
AcC2	Moderate: surface texture.	Moderate: surface texture.	Severe: slope	Moderate: surface texture.
Bodine: BaC	Moderate: slope; coarse fragments on surface.	Moderate: slope; coarse fragments on surface.	Severe: slope; coarse fragments on surface.	Moderate: coarse fragments on surface.
Bomar: Bb	Moderate: wetness; moderately slow to slow permeability.	Moderate: wetness; flooding.	Moderate: wetness; moderately slow to slow permeability.	Slight.
Cedarbluff: Ca	Moderate: wetness; slow permeability.	Moderate: wetness	Moderate: wetness; slow permeability.	Moderate: wetness.
Chewacla: Cb	Severe: wetness; flooding.	Severe: wetness; flooding.	Severe: wetness; flooding.	Moderate: wetness; flooding.
Cloudland: Cc	Moderate: moderate to slow permeability.	Slight	Moderate: moderate to slow permeability.	Slight.
*Conasauga:				
CdB, CfB For Firestone part of CfB, refer to Firestone series.	Moderate: slow permeability; wetness.	Moderate: wetness	Moderate: slope; slow permeability; bedrock is at a depth of 1½ to 3½ feet.	Slight.
CdC	Moderate: slope; slow permeability; wetness.	Moderate: slope; wetness.	Severe: slope	Slight.
CgE For Leesburg part of CgE, refer to Leesburg series.	Severe: slope	Severe: slope	Severe: slope	Moderate to severe: slope.
Decatur:				
DcB	Slight	Slight	Moderate: slope	Slight.
DcC	Slight	Slight	Severe: slope	Slight.
DdC	Moderate: slope; surface texture.	Moderate: slope; surface texture.	Severe: slope	Moderate: surface texture.
Dewey:				
DeB	Slight	Slight	Moderate: slope	Slight.
DeC	Slight	Slight	Severe: slope	Slight.
DfC	Moderate: slope; surface texture.	Moderate: slope; surface texture.	Severe: slope	Moderate: surface texture.
Ellisville: Ea	Moderate: surface texture.	Moderate: flooding; surface texture.	Moderate: surface texture.	Moderate: surface texture.
Emory: Eb	Severe: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding.
*Ennis: Ec For Lobelville part of Ec, refer to Lobelville series.	Severe: flooding	Moderate: coarse fragments on surface; flooding.	Severe: coarse fragments on surface; flooding.	Slight.
*Firestone:				
FaB	Moderate: slow permeability.	Slight	Moderate: slope; slow permeability; bedrock is at a depth of 2 to 3½ feet.	Slight.
FaC	Moderate: slow permeability; slope.	Moderate: slope	Severe: slope	Slight.

TABLE 11.—*Recreation*—Continued

Soil series and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Firestone—Continued.				
FcD	Severe: slope; slow permeability.	Severe: slope	Severe: slope	Moderate: slope.
For Conasauga part of FcD, refer to Conasauga series.				
FD, FE	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
For Montevallo part of FD and Montevallo and Leesburg parts of FE, refer to Montevallo and Leesburg series.				
Fullerton: FfC	Moderate: coarse fragments on surface.	Moderate: coarse fragments on surface.	Severe: coarse fragments on surface; slope.	Moderate: coarse fragments on surface.
Gaylesville: Ga	Moderate: flooding; wetness.	Moderate: flooding; wetness.	Severe: flooding; wetness.	Moderate: flooding; wetness.
Guthrie: Gb	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness.
Hartsells:				
HaB	Slight	Slight	Moderate: slope; bedrock is at a depth of 1½ to 3½ feet.	Slight.
HaC	Slight	Slight	Severe: slope	Slight.
HC	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
*Hector: HdC	Slight	Slight	Severe: rock is at a depth of ½ to 1½ feet.	Slight.
For Hartsells part of HdC, refer to Hartsells series.				
Herndon: HeC	Slight	Slight	Severe: slope	Slight.
Holston:				
HfA	Slight	Slight	Slight	Slight.
HgB	Slight	Slight	Moderate: slope	Slight.
*Leesburg:				
LaB	Moderate: coarse fragments on surface.	Moderate: coarse fragments on surface.	Severe: coarse fragments on surface.	Moderate: coarse fragments on surface.
LaC	Moderate: slope; coarse fragments on surface.	Moderate: slope; coarse fragments on surface.	Severe: slope; coarse fragments on surface.	Moderate: coarse fragments on surface.
LC	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
For Allen part of LC, refer to Allen series.				
Linker:				
LdB	Slight	Slight	Moderate: slope; bedrock is at a depth of 1½ to 3½ feet.	Slight.
LdC	Slight	Slight	Severe: slope	Slight.
Lobelville	Severe: flooding	Moderate: flooding; coarse fragments on surface.	Moderate: flooding; coarse fragments on surface.	Moderate: wetness; coarse fragments on surface.
Mapped only in complex with Ennis soils.				
McQueen:				
MaA	Moderate: flooding; slow permeability.	Moderate: flooding	Moderate: flooding; slow permeability.	Slight.
MaB	Moderate: slow permeability.	Slight	Moderate: slope; slow permeability.	Slight.
*Minvale:				
McB	Moderate: coarse fragments on surface.	Moderate: coarse fragments on surface.	Moderate: slope; coarse fragments on surface.	Moderate: coarse fragments on surface.
McC	Moderate: slope; coarse fragments on surface.	Moderate: slope; coarse fragments on surface.	Severe: slope	Moderate: coarse fragments on surface.
ME	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
For Bodine part of ME, refer to Bodine series.				

TABLE 11.—*Recreation*—Continued

Soil series and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
*Montevallo: MF	Severe: slope	Severe: slope	Severe: slope; bedrock is at a depth of 1 to 1½ feet.	Severe: slope.
For Herndon part of MF, refer to Herndon series.				
Nella:				
NaC	Moderate: slope; coarse fragments on surface.	Moderate: slope; coarse fragments on surface.	Severe: slope; coarse fragments on surface.	Moderate: coarse fragments on surface.
NbD	Moderate to severe: slope.	Moderate to severe: slope.	Severe: slope	Moderate: slope; coarse fragments on surface.
Stemley: SaB	Moderate: wetness; moderately slow to slow permeability; coarse fragments on surface.	Moderate: coarse fragments on surface.	Moderate: wetness; coarse fragments on surface; moderately slow to slow permeability.	Moderate: coarse fragments on surface.
Toccoa: Ta	Severe: flooding	Moderate to severe: flooding.	Severe: flooding	Moderate: flooding.
Townley: TbC	Moderate: slope; slow permeability.	Slight	Moderate to severe: slow permeability; slope; bedrock is at a depth of 2 to 2½ feet.	Slight.
Udorthents: UaE. Too variable to be rated.				
Wickham:				
WaA	Moderate: flooding	Moderate: flooding	Moderate: flooding	Slight.
WaB	Slight	Slight	Moderate: slope	Slight.

Cherokee County has a temperate, humid climate. Summers are long; hot, humid weather begins in May and continues until about mid-September. The winters are not severe; extended periods of severe cold are rare. The average length of the growing season is about 205 days, from about April 5 to October 27.

Plant and animal life

Trees, grass, earthworms, micro-organisms, and other forms of plant and animal life on and in the soils are active agents in the soil-forming processes. The kinds of plants and animals that live in and on the soil are determined largely by the climate and also, to a varying degree, by the kind of parent material, the relief, and the length of time the soil material has been in place.

The native vegetation in the county was a forest of hardwoods and pines. The dominant hardwoods on well drained uplands were oak and hickory; in the drainageways were yellow-poplar, sweetgum, white oak, and red maple. On the better drained bottom land, the dominant trees were white oak, birch, ash, maple, yellow-poplar, and loblolly pine. Sweetgum, water oak, willow, and willow oak were dominant on the poorly drained bottom land. Loblolly and shortleaf pines were the dominant pines.

Animals continuously mix the soil material. Organisms are active in the decay of organic matter, the fixing of nitrogen, and the weathering of rock. Earthworms and other small invertebrates also carry on a slow but continuous cycle of soil mixing.

Relief

Relief influences soil formation through its effect on runoff and erosion, movement of water within the soil, plant cover, and to some extent, soil temperature. The relief, or topography of the county, is determined largely by the underlying bedrock and the effect of dissection by streams. The topography ranges from nearly level to steep. Runoff is more rapid in steep areas than in nearly level areas. Consequently, less water enters and moves through the soil. The hazard of erosion increases as the slope increases. The influence of relief is modified by the other four soil-forming factors.

In Cherokee County soils such as Decatur, Holston, and Dewey soils have slopes of less than 15 percent and have a deep, well developed profile. In the steeper areas soil material is removed about as fast as it accumulates. Montevallo soils, for example, have a steep slope and a thin, weakly expressed profile.

Relief has also affected the soils on the low stream terraces through its influence on drainage. Wickham and Cedarbluff soils formed in similar parent material on low terraces. Wickham soils on the crests of low ridges are well drained and have a yellowish red subsoil. In contrast, Cedarbluff soils in low swags or depressional areas are somewhat poorly drained, have a seasonal high water table, and have gray mottles in the subsoil.

Time

Time is required for the formation of soils that have distinct horizons. The length of time needed for the development of a soil profile depends mainly on the other factors of soil formation. Generally, less time is needed for a soil to develop in a humid, warm region than in a dry or a cold region. Fine-textured parent material develops into soil more slowly than coarse-textured parent material.

The soils of Cherokee County range from very young to very old. A young soil lacks well-developed, genetically re-

lated horizons but often has some characteristics of its parent material. Young soils in Cherokee County are on first bottoms and steep hillsides. Toccoa soils are examples of young soils that formed on first bottoms. These soils have been in place only a short time. They have not been changed enough by the soil-forming process to have developed well-defined, genetically related horizons. Material is still being deposited on these soils in most places.

Montevallo soils are examples of young soils that formed on steep hillsides. They have thin, weakly developed horizons because the soil material is removed by geologic erosion about as fast as it accumulates.

An old soil is one that has been in place for a long time and is considered to have reached equilibrium with its environment. It has a well-developed profile of genetically related horizons. The soil material bears little resemblance to the material from which, or in which, the soils formed. Allen, Dewey, and Decatur soils are examples of old soils in Cherokee County.

Classification of Soils

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

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

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965 (*10*). Because this system is under continual study, readers interested in developments of the current system should search the latest literature available.

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils of similar genesis, or mode of origin, are grouped. In table 12, the soil series of Cherokee County are placed in four categories of the current system. Classes of the current system are briefly defined in the following paragraphs.

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

SUBORDER. Each order is subdivided into suborders that are based primarily on those soil characteristics that seem

TABLE 12.—*Soil series classified according to the current classification of soils*

Series	Family	Subgroup	Order
Allen	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Bodine	Loamy-skeletal, siliceous, thermic	Typic Paleudults	Ultisols.
Bomar	Clayey, mixed, thermic	Typic Fragiudults	Ultisols.
Cedarbluff	Fine-loamy, siliceous, thermic	Fragiaquic Paleudults	Ultisols.
Chewacla	Fine-loamy, mixed, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
Cloudland	Coarse-loamy, siliceous, thermic	Glossic Fragiudults	Ultisols.
Conasauga	Fine, mixed, thermic	Typic Hapludalfs	Alfisols.
Decatur	Clayey, kaolinitic, thermic	Rhodic Paleudults	Ultisols.
Dewey	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Ellisville	Fine-silty, mixed, thermic	Dystric Fluventic Eutrochrepts	Inceptisols.
Emory [1]	Fine-silty, siliceous, thermic	Fluventic Umbric Dystrochrepts	Inceptisols.
Ennis	Fine-loamy, siliceous, thermic	Fluventic Dystrochrepts	Inceptisols.
Firestone	Very-fine, mixed, thermic	Typic Hapludalfs	Alfisols.
Fullerton	Clayey, kaolinitic, thermic	Typic Paleudults	Ultisols.
Gaylesville	Fine, mixed, thermic	Aeric Ochraqualfs	Alfisols.
Guthrie	Fine-silty, siliceous, thermic	Typic Fragiaquults	Ultisols.
Hartsells	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Hector	Loamy, siliceous, thermic	Lithic Dystrochrepts	Inceptisols.
Herndon	Clayey, kaolinitic, thermic	Typic Hapludults	Ultisols.
Holston	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Leesburg	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Linker	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Lobelville	Fine-loamy, siliceous, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
McQueen	Clayey, mixed, thermic	Typic Hapludults	Ultisols.
Minvale	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Montevallo	Loamy-skeletal, mixed, thermic, shallow	Typic Dystrochrepts	Inceptisols.
Nella	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Stemley	Coarse-loamy, siliceous, thermic	Glossic Fragiudults	Ultisols.
Toccoa	Coarse-loamy, mixed, nonacid, thermic	Typic Udifluvents	Entisols.
Townley	Clayey, mixed, thermic	Typic Hapludults	Ultisols.
Udorthents			Entisols.
Wickham	Fine-loamy, mixed, thermic	Typic Hapludults	Ultisols.

[1] The Emory soils in Cherokee County are taxadjuncts to the Emory series. They have a slightly thicker umbric epipedon than is appropriate to the classification shown.

to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of waterlogging, or soil differences resulting from the climate or vegetation. The names of suborders have two syllables. The last syllable indicates the order. An example is *Udults* (*Ud*, meaning humid climate, and *ults*, from Ultisol).

GREAT GROUP. Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated; those that have pans that interfere with growth of roots, movement of water, or both; and thick, dark-colored surface horizons. The features used are the self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), dark red and dark brown colors associated with basic rocks, and the like. The names of great groups have three or four syllables and are made by adding a prefix to the name of the suborder. An example is Hapludults (*Hapl*, meaning simple horizons, *ud* for humid climate, and *ult* for Ultisols).

SUBGROUP. Great groups are subdivided into subgroups, one representing the central (typic) segment of the group, and others called intergrades that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside of the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group. An example is Typic Hapludults (a typical Hapludult).

FAMILY. Soil families are separated within a subgroup primarily on the basis of properties important to the growth of plants or on the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence. A family name consists of a series of adjectives preceding the subgroup name. The adjectives are the class names for texture, mineralogy, and so on, that are used as family differentiae (see table 12). An example is the fine-loamy, siliceous, thermic family of Typic Hapludults.

Environmental Factors Affecting Soil Use

This section contains information about the relief, drainage, water supply, farming, and climate of Cherokee County.

Relief, Drainage, and Water Supply

The general slope of Cherokee County is southwestern. Slopes range from 0 to more than 45 percent.

The Coosa, Chattooga, and Little Rivers are the major streams in the county. The Coosa River flows southwesterly through the central section of the county. The Little River and the Chattooga River empty into the Coosa in the central part of the county. A dam on the Coosa River near the Etowah County line impounds Weiss Lake, which extends into Georgia. Terrapin, Mills, Wolf, Yellow, Ballplay, Spring, Cowan, and Frog Creeks are some of the larger creeks in the county.

The water supply is adequate for domestic use in all parts of the county. Most rural domestic water is obtained from drilled wells. A city water system is in operation from Terrapin Creek, and another is being constructed from a large spring at Bristow, near Leesburg. Ponds have been dug on many farms to furnish water for livestock.

Farming

According to the 1969 Census of Agriculture, there were 1,062 farms in the county. Of these, 720 were operated full time by their owners; 224, part time by their owners; and 118, by tenants.

Cotton, corn, and soybeans are the main crops grown in this county. Cotton is the chief cash crop. In recent years the acreage of cotton and corn has decreased, but the yields per acre have increased because of better management practices, increased use of fertilizer, and improved varieties. About 64 percent of the farm income in the county comes from the sale of livestock and livestock products.

About 48 percent of the county, or 170,171 acres, was classified as farmland. Crops were harvested from about 26 percent of the farmland, and about 9 percent of the farmland was pasture.

Climate [6]

Cherokee County has a temperate climate. It receives more than 50 inches of precipitation per year. The precipitation is generally well distributed throughout the year.

Summers are long and have hot, humid weather beginning in May and continuing, with few breaks, until about mid-September. Extreme heat is rare, but temperatures in the nineties are quite common throughout the summer; about 64 days per year have temperatures of 90° F or higher. The temperature reaches 100° only about one or two days per year, and occasionally there is a period of two or three consecutive years in which temperature does not reach 100°. See table 13 for temperature and precipitation data.

Summer rainfall in Cherokee County falls mostly during thundershowers, especially in midsummer; July has more thunderstorms than any other month. Thunderstorms occur on about 60 days per year.

The stormiest season is spring, when the chances of a tornado or damaging winds are greater than at any other time of the year. March and April normally have the most violent weather, although severe weather can occur in any month. Even in the stormiest season, however, the chances of a tornado striking a particular farm or home are extremely low.

Autumn is by far the most pleasant season. The first cool snaps usually arrive during the last half of September and are a welcome change from the long siege of heat and humidity. Precipitation drops off considerably, humidity is much lower, and there are extended periods of sunny weather. The pleasant weather continues through October into November, when temperatures become colder and rainfall increases.

Winters in Cherokee County are not severe, and extended periods of severe cold are rare. The temperature drops to freezing or lower about 70 times in an average winter. It

[6] By R. M. FERRY, climatologist for Alabama, National Weather Service, U.S. Department of Commerce.

TABLE 13.—*Temperature and precipitation data*

Month	Temperature [1]					Precipitation			
	Average daily maximum	Average daily minimum	Mean	Average number of days with—		Mean total [2]	Mean number of days with—		Average snowfall [3]
				Maximum of 90° F or above	Minimum of 32° F or below		0.10 inch or more [2]	0.50 inch or more [2]	
	°F	°F	°F	°F	°F	*Inches*	*Inches*	*Inches*	*Inches*
January	52.0	31.0	41.5	0	21	5.76	9	4	0.9
February	54.7	32.0	43.4	0	14	6.01	12	4	.2
March	62.5	38.3	50.4	0	14	6.60	9	4	.3
April	71.9	46.1	59.0	0	4	4.85	8	4	.1
May	80.6	54.3	67.5	3	(4)	3.48	6	3	0
June	87.4	62.6	75.0	13	0	3.83	6	3	0
July	89.3	65.8	77.6	18	0	5.00	7	2	0
August	89.0	65.0	77.0	21	0	3.53	6	2	0
September	84.7	59.7	72.2	8	0	3.48	5	2	0
October	74.6	47.4	61.0	1	4	2.37	5	2	(5)
November	62.4	36.4	49.4	0	16	4.30	7	3	.1
December	53.3	31.2	42.3	0	19	5.02	6	4	.2
Year	71.9	47.5	59.7	64	92	54.23	86	37	1.8

[1] Data from Valley Head, De Kalb County.
[2] Data from Leesburg, Cherokee County.
[3] Data from Anniston, Calhoun County.
[4] Less than one day.
[5] Trace.

TABLE 14.—*Probabilities of last low temperature in spring and first low temperature in fall*

[Based on data for Gadsden, Etowah County]

Probability	Dates for given probability and temperature						
	16° F or less	20° F or less	24° F or less	28° F or less	32° F or less	36° F or less	40° F or less
Average date of last occurrence in spring	January 26	February 8	March 4	March 17	April 6	April 17	April 28
Average date of first occurrence in fall	December 19	December 6	November 26	November 10	October 31	October 25	October 16

drops to 20° or lower about seven or eight times. See table 14 for more information on the probability of freezes of various intensities in spring and fall.

The topography of Cherokee County is such that on some winter nights minimum temperatures can be quite variable. This variation in temperature normally occurs on still, clear nights when cold air, being heavier, flows into low-lying areas, or "frost-pockets." In extreme cases, a well protected low-lying area may be as much as 10° to 20° colder than a steep area only a short distance away.

The lowest temperature in Cherokee County was probably about −15° to −18° on February 13, 1899. No official temperature records were kept in the county at that time, but the temperature at nearby Valley Head, in DeKalb County, was 18 degrees below zero. Much of the central and northeastern parts of Cherokee County has topography similar to the Valley Head area.

There may be snow flurries several days each winter, but heavy snows are rare, and when they do occur, the snow usually melts quickly. Extended periods in which snow accumulates to a depth of several inches are extremely rare. Some of the heavier snowfalls on record in Cherokee County include 11 inches at Maple Grove in January 1936, and 13.1 inches at Leesburg in January 1940.

In an average year, any one location in Cherokee County will receive measurable rain on about 115 days. About 86 days will have one-tenth inch or more, and about 37 days will have one-half inch or more.

The disastrous drought of 1954 was one of the worst on record in Alabama. In Cherokee County, Leesburg received only 2.98 inches of rain in the three-month period from August to October, a deficiency of 7.28 inches and only about 29 percent of normal. Another very dry period was in October 1963, when only 0.15 inch fell at Leesburg. Much of northeastern Alabama received only about 2 percent of normal rainfall that month. In 1924, Maple Grove went 72 consecutive days without measurable rain (September 31 to December 9), except for .01 inch on November 21.

By definition, a drought occurs when no water in the soil is available to plants. The frequency or severity of drought depends on the capacity of the soil to hold available moisture, on precipitation, and on the amount of water used or trans-

spired by plants. Even in a normal year, there are periods when rainfall does not meet the needs of most crops. Thus, in most years, supplementary irrigation is needed for maximum crop production in most parts of the State. During a severe drought, however, the supply of water for irrigation is likely to be limited or nonexistent.

Wind and humidity records are not available for Cherokee County, but records at other stations show that the prevailing wind is from the south and southwest and that the average hourly speed is about 8 miles per hour. Wind directions are variable, however, and winds blow from the northwest and northeast almost as much as they blow from the prevailing directions. March is normally the windiest month. Strong winds usually last only a brief time, and dangerous winds are rare.

The average year-round relative humidity is about 80 percent at midnight, 84 percent at 6 a.m., 57 percent at noon, and 63 percent at 6 p.m. The lowest values are generally at midafternoon, and the highest, around 6 a.m.

For the year as a whole, the sun shines about 64 percent of the daylight hours. The percentage of possible sunshine varies from only 41 percent in January to 67 percent in May and October.

Literature Cited

(1) Adams, George I., Charles Butts, L. W. Stephenson, and Wythe Cooke. 1926. Geology of Alabama. Geol. Surv. Ala., Spec. Rep. no 14, 312 pp., illus.

(2) American Association of State Highway [and Transportation] Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(3) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(4) Dutrow, G. F., McKnight, J. S., and Guttenberg, S. 1970. Investment guide for cottonwood planters. Res. Pap. SO-59, South. Forest Exp. Stn., 15 pp.

(5) Hedlund, Arnold and Earlos, J. M. 1973. Forest statistics for Alabama counties. U.S. Dep. Agric. Forest Serv. Bull. SO-39, 65 pp.

(6) Maisonholder, Louis C. 1960. Cottonwood plantations for Southern bottomlands. Occas. Pap. 179, South. Forest Exp. Stn., 24 pp.

(7) Schnur, G. Luther. 1937. Yield, stand, and volume tables for even-aged upland oak forest. U.S. Dep. Agric. Tech. Bull. 560, 88 pp., illus. [Reprinted in 1961].

(8) United States Department of Agriculture. 1929. Volume, yield and stand tables for second-growth Southern pines. Misc. Publ. 50, 202 pp.

(9) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplements replacing pp. 173–188 issued in May 1962].

(10) United States Department of Agriculture. 1975. Soil taxonomy. U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(11) United States Department of Agriculture. 1970. Alabama conservation needs inventory. 119 pp., illus.

(12) United States Department of Agriculture. 1960. Management and Inventory of Southern Hardwoods. Agric. Handb. 181, 102 pp.

Glossary

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

Association, soil. A group of soils geographically associated in a characteristic repeating pattern.

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

Base saturation. The degree to which material that has base-exchange properties is saturated with exchangeable cations other than hydrogen, expressed as a percentage of the cation-exchange capacity.

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 clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

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

Complex, soil. A mapping unit consisting of different kinds of soils that occur in such small individual areas or in such an intricate pattern that they cannot be shown separately on a publishable soil map.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

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

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

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

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

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

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

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

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

Cemented.—Hard and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, 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 different classes of natural soil drainage are recognized.

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

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

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

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

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

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

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

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

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

Field moisture capacity. The moisture content of a soil, expressed

as a percentage of the oven-dry weight, after the gravitational, or free, water has been allowed to drain away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Genesis, soil. The manner in which a soil originates. Refers especially to the processes initiated by climate and organisms that are responsible for the development of the solum, or true soil, from the unconsolidated parent material, as conditioned by relief and age of landform.

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

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

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

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state. In engineering, a high liquid limit indicates that the soil has a high content of clay and a low capacity for supporting loads.

Mottling, soil. Irregularly marked with spots of different colors thay vary in number and size. Mottling in soils usually indicates poor aeration and lack of 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 these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Parent material. Disintegrated and partly weathered rock from which soil has formed.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

pH value. A numerical means for designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

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

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

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly shows as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas, ironstone cannot be cut, but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

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

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Series, soil. A group of soils developed from a particular type of parent material and having genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the profile.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Site index. A numerical means of expressing the quality of a forest site that is based on the height of the dominant stand at an arbitrarily chosen age; for example, the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that 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.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles) adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing

proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which plants (specifically sunflower) wilt so much that they do not recover when placed in a dark, humid atmosphere.

GUIDE TO MAPPING UNITS

For complete information about a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. For complete information about a capability unit, read the introduction to "Use of the Soils for Crops and Pasture" and the discussion of the capability unit in this section. In referring to a woodland suitability group, read the introduction to the "Use of the Soils for Woodland" and the discussion of the woodland suitability groups in table 3.

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group
			Symbol	Symbol
AaB	Allen fine sandy loam, 2 to 6 percent slopes	10	IIe-2	3o7
AbC	Allen gravelly fine sandy loam, 6 to 10 percent slopes	10	IIIe-2	3o7
AcC2	Allen sandy clay loam, 2 to 10 percent slopes, eroded	11	IIIe-2	3o7
BaC	Bodine cherty loam, 5 to 15 percent slopes	11	IVs-2	3f8
Bb	Bomar silt loam	12	IIw-9	3o7
Ca	Cedarbluff fine sandy loam	13	IIIw-9	2w8
Cb	Chewacla soils	13	IIIw-2	1w8
Cc	Cloudland loam	14	IIw-9	3o7
CdB	Conasauga silt loam, 1 to 5 percent slopes	14	IIIe-5	3c2
CdC	Conasauga silt loam, 5 to 15 percent slopes	15	VIe-5	3c2
CfB	Conasauga-Firestone-Rock outcrop complex, 2 to 6 percent slopes	15	VIe-5	5x3
CgE	Conasauga-Leesburg complex, 15 to 45 percent slopes	15	VIIe-5	3r8
DcB	Decatur loam, 2 to 6 percent slopes	15	IIe-1	3o7
DcC	Decatur loam, 6 to 10 percent slopes	15	IIIe-1	3o7
DdC	Decatur silty clay loam, 6 to 15 percent slopes	15	VIe-1	4c3
DeB	Dewey loam, 2 to 6 percent slopes	16	IIe-1	3o7
DeC	Dewey loam, 6 to 10 percent slopes	16	IIIe-1	3o7
DfC	Dewey silty clay loam, 6 to 15 percent slopes	16	VIe-1	4c3
Ea	Ellisville silty clay loam	17	IIw-2	1o7
Eb	Emory loam	17	IIw-2	2o7
Ec	Ennis-Lobelville complex	18	IIIw-2	2w8
FaB	Firestone gravelly silt loam, 2 to 6 percent slopes	19	IIIe-5	4o1
FaC	Firestone gravelly silt loam, 6 to 15 percent slopes	19	IVe-5	4o1
FcD	Firestone-Conasauga-Rock outcrop complex, 6 to 25 percent slopes	19	VIe-5	5x3
FD	Firestone-Montevallo association, steep	19	VIIe-5	---
	Firestone part	--	------	4o1
	Montevallo part	--	------	5d3
FE	Firestone-Montevallo-Leesburg association, steep	19	VIIe-5	---
	Firestone part	--	------	4o1
	Montevallo part	--	------	5d3
	Leesburg part	--	------	3o7
FfC	Fullerton cherty silt loam, 6 to 15 percent slopes	20	IVe-1	3o7
Ga	Gaylesville silty clay loam	20	IVw-5	3w9
Gb	Guthrie silt loam	21	IVw-5	2w9
HaB	Hartsells fine sandy loam, 2 to 6 percent slopes	21	IIe-2	4o1
HaC	Hartsells fine sandy loam, 6 to 10 percent slopes	22	IIIe-2	4o1
HC	Hartsells-Rock outcrop association, steep	22	VIIe-6	---
	Hartsells part	--	------	4o1
	Rock outcrop part	--	------	---
HdC	Hector-Hartsells-Rock outcrop complex, 2 to 10 percent slopes	22	VIe-7	4x3
HeC	Herndon gravelly loam, 2 to 10 percent slopes	23	IIIe-5	3o7
HfA	Holston fine sandy loam, 0 to 2 percent slopes	23	I-2	3o7
HgB	Holston loam, 2 to 6 percent slopes	23	IIe-2	3o7
LaB	Leesburg gravelly fine sandy loam, 2 to 6 percent slopes	24	IIIs-2	3o7
LaC	Leesburg gravelly fine sandy loam, 6 to 15 percent slopes	24	IVs-2	3o7
LC	Leesburg-Allen association, steep	25	VIIs-2	3o7
LdB	Linker fine sandy loam, 2 to 6 percent slopes	25	IIe-2	4o1
LdC	Linker fine sandy loam, 6 to 10 percent slopes	25	IIIe-2	4o1
MaA	McQueen loam, 0 to 2 percent slopes	26	I-1	3o7
MaB	McQueen loam, 2 to 6 percent slopes	26	IIe-1	3o7
McB	Minvale cherty loam, 2 to 6 percent slopes	27	IIe-2	3o7
McC	Minvale cherty loam, 6 to 10 percent slopes	27	IIIe-2	3o7

GUIDE TO MAPPING UNITS--Continued

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group
			Symbol	Symbol
ME	Minvale-Bodine association, steep	27	VIIs-2	---
	Minvale part	--	------	3o7
	Bodine part	--	------	4f3
MF	Montevallo-Herndon association, steep	28	VIIe-5	---
	Montevallo part	--	------	5d3
	Herndon part	--	------	3o7
NaC	Nella cobbly fine sandy loam, 2 to 10 percent slopes	29	IVs-2	3o7
NbD	Nella gravelly fine sandy loam, 10 to 25 percent slopes	29	VIs-2	3o7
SaB	Stemley cherty loam, 0 to 3 percent slopes	30	IIw-9	3o7
Ta	Toccoa soils	30	IIw-2	1o7
TbC	Townley sandy loam, 2 to 10 percent slopes	31	IVe-5	4o1
UaE	Udorthents, 0 to 40 percent slopes	31	------	---
WaA	Wickham fine sandy loam, 0 to 2 percent slopes	32	I-2	2o7
WaB	Wickham fine sandy loam, 2 to 6 percent slopes	32	IIe-2	2o7

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