SOIL SURVEY OF

Chattooga, Floyd, and Polk Counties, Georgia

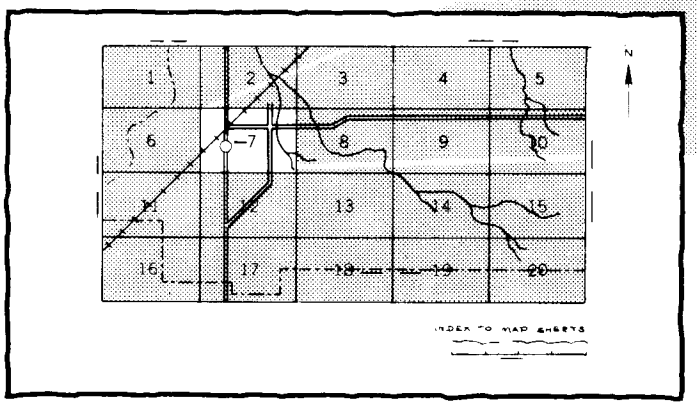
United States Department of Agriculture
Soil Conservation Service and Forest Service

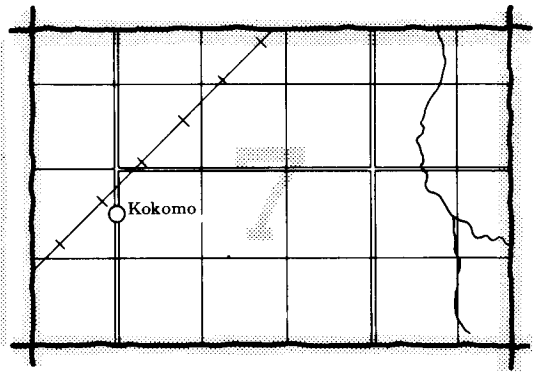
In cooperation with

University of Georgia, College of Agriculture
Agricultural Experiment Stations

HOW TO USE

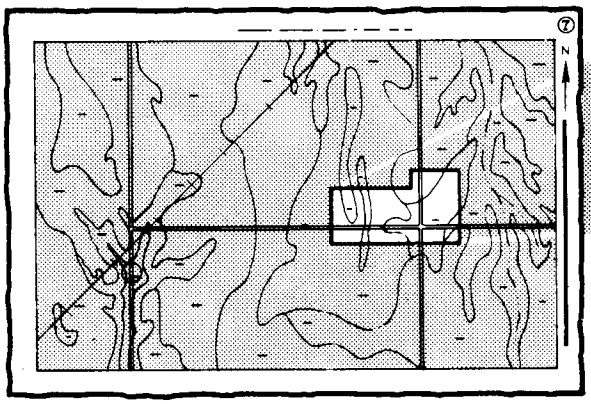
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

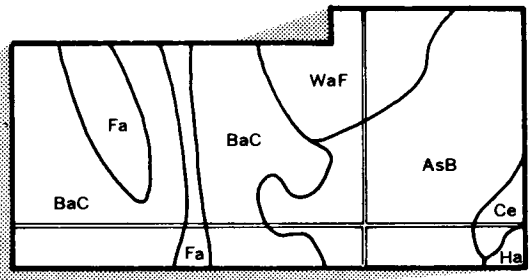




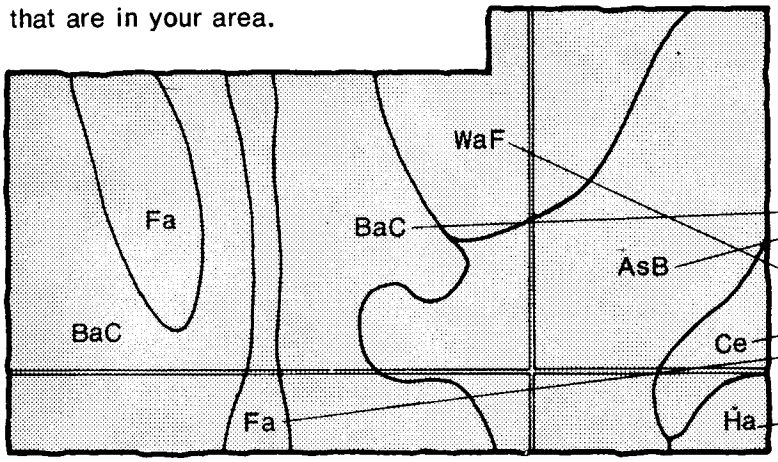
2. Note the number of the map sheet and turn to that sheet.

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





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



Symbols

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BaC
Ce
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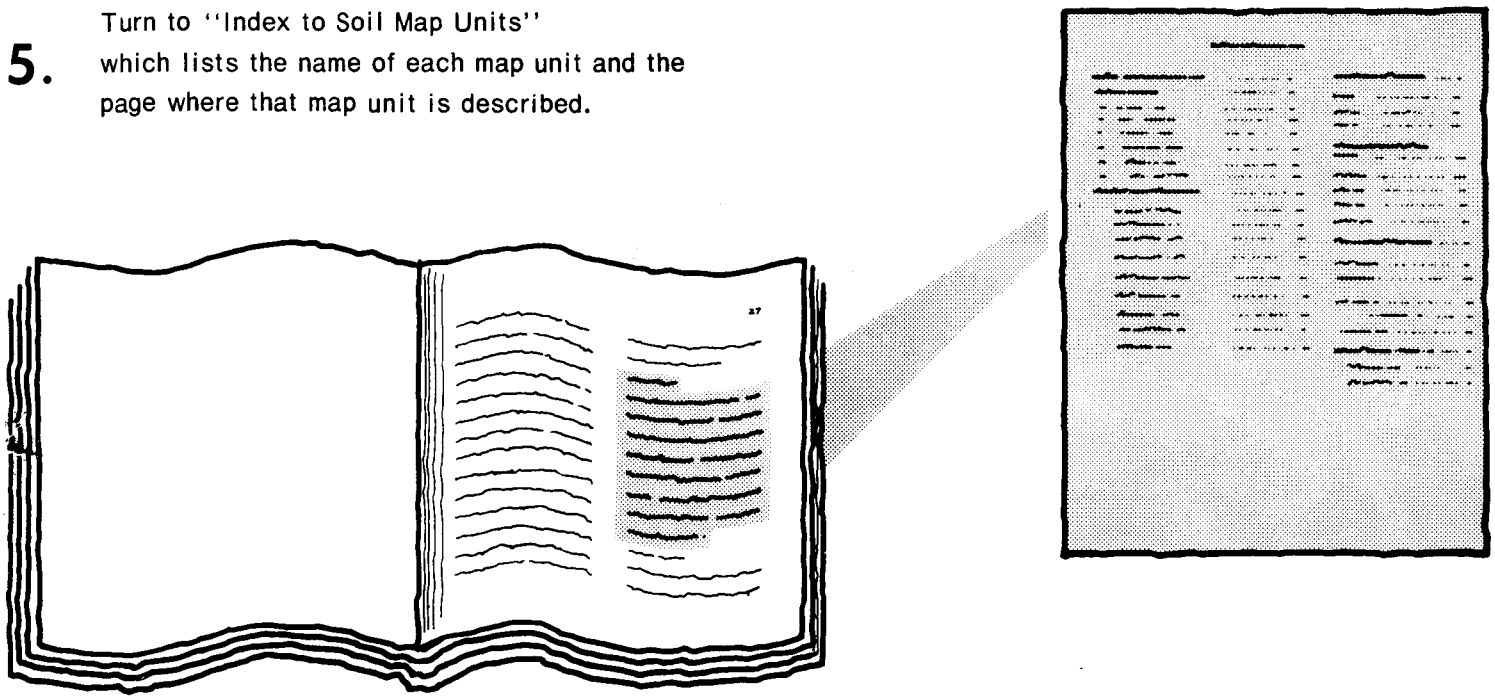
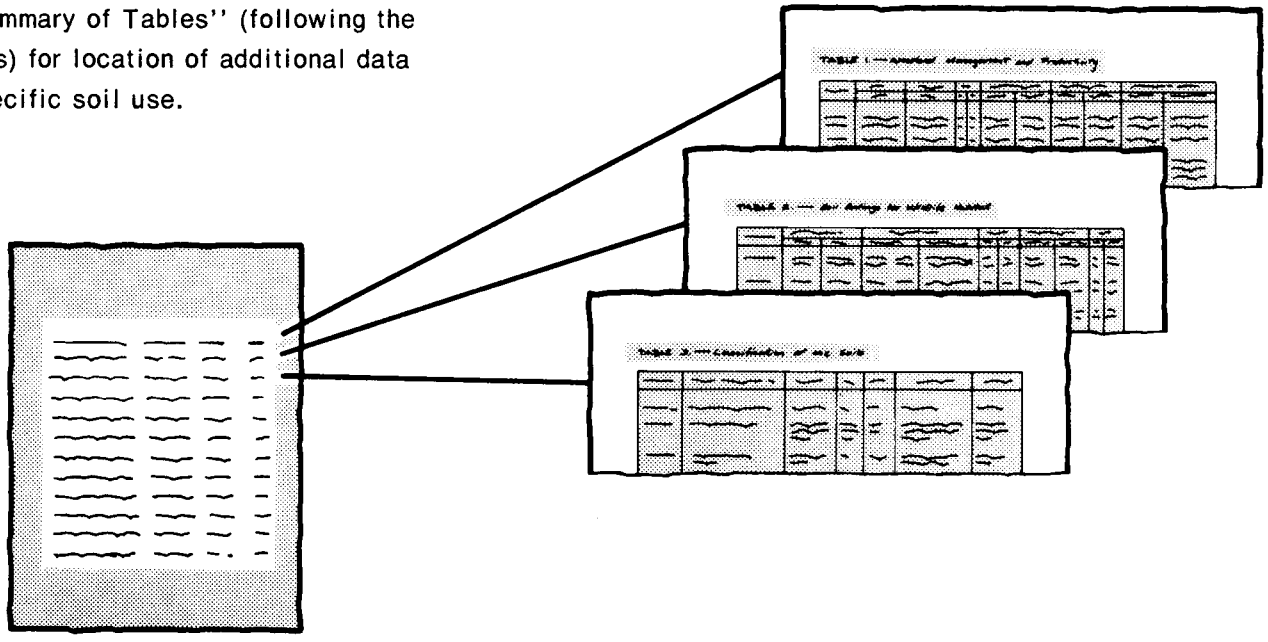
WaF

THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in the period 1968-73. Soil names and descriptions were approved in 1975. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1975. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, and the University of Georgia, College of Agriculture Agricultural Experiment Stations. It is part of the technical assistance furnished to the Coosa River Soil and Water Conservation District.

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

Cover: Well managed stand of planted lobolly pine on Fullerton cherty silt loam.

Contents

Contents—Continued

Issued November 8, 1978

Index to soil map units

Index to soil map units—Continued

Summary of Tables

Foreword

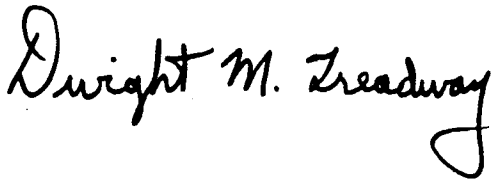
The Soil Survey of Chattooga, Floyd, and Polk Counties, Georgia, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

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

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.



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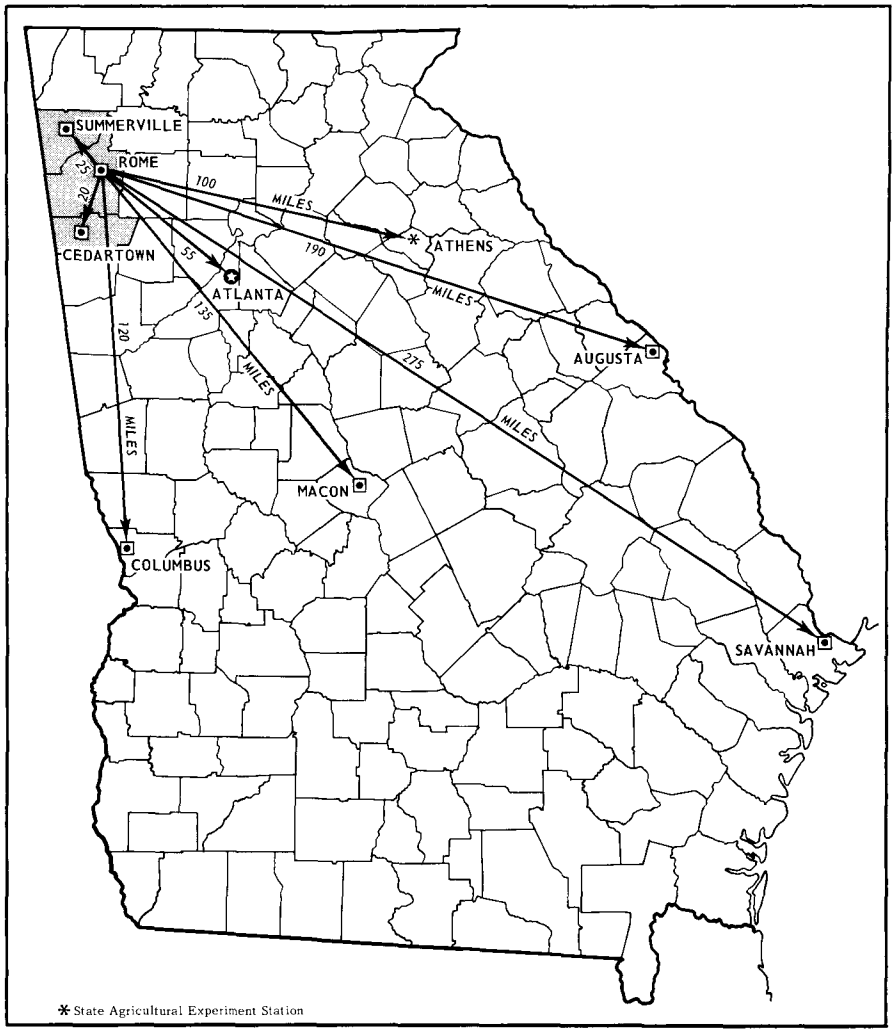
State Conservationist
Soil Conservation Service



Location of Chattooga, Floyd, and Polk Counties in Georgia.

SOIL SURVEY OF CHATTOOGA, FLOYD, AND POLK COUNTIES, GEORGIA

By Ray J. Tate, Soil Conservation Service

Fieldwork by Mickey M. Blevins, Glenn L. Bramlett, Gene A. Gaither and
Ray J. Tate, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service and Forest Service, in
cooperation with the University of Georgia, College of Agriculture
Agricultural Experiment Stations

CHATTOOGA, FLOYD, and POLK COUNTIES are in the northwestern part of Georgia (See facing page.) The three counties are within the Southern Appalachian Ridges and Valleys resource area except the northern part of Chattooga County which is within the Sand Mountain resource area. The southernmost part of Polk County is in the Southern Piedmont resource area.

These counties have a total land area of approximately 1,143 square miles, or 731,328 acres. The Chattahoochee National Forest accounts for approximatly 23,000 acres. It is in Chattooga and Floyd Counties. The area of Chattooga County is 317 square miles, or 202,880 acres; the area of Floyd County is 514 square miles, or 328,832 acres; and the area of Polk County is 312 square miles, or 199,616 acres. Summerville is the county seat of Chattooga County, Rome is the county seat of Floyd County, and Cedartown is the county seat of Polk County. These three towns are near the center of their respective counties. Long mountain ranges and long fertile valleys extend from the northeast to southwest from these counties into Alabama.

According to the U. S. Bureau of Census in 1970, the population of Chattooga County was 21,541; the population of Floyd County was 73,742; and the population of Polk County was 29,656.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; 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, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* (*7*) are the categories of soil classification most used in a local survey.

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

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

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map for broad land use planning

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

The general soil map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

The soil associations in this survey have been grouped into three general kinds of landscapes for broad interpretative purposes. Each of the broad groups and their included soil associations are described in the following pages.

Chattooga County

Nearly level or gently sloping soils on bottom lands or low stream terraces

Three associations in Chattooga County consist of nearly level or gently sloping soils on bottom lands or terraces near the Chattooga River and along the major streams. Slopes generally range from 0 to 6 percent. The soils are poorly drained to well drained.

1. Chewacla-Toccoa-Roanoke association

Somewhat poorly drained or well drained, nearly level soils on bottom lands; and poorly drained, nearly level soils on low stream terraces

This association consists of long, narrow areas of soils on bottom lands and irregularly shaped areas of soils on low stream terraces. Areas of this association are throughout Chattooga County with the exception of the northwestern section.

This association makes up about 7 percent of Chattooga County. Chewacla soils make up about 60 percent of this association; Toccoa soils, 20 percent; Roanoke soils, 10 percent; and minor soils, 10 percent.

Chewacla soils are somewhat poorly drained. They occupy long, narrow bottom lands. In a representative profile the surface layer is dark brown silt loam about 9 inches thick. The subsoil is about 41 inches thick. In sequence from the top, the upper 7 inches is dark yellowish brown silt loam that has yellowish brown mottles; the next 14 inches is yellowish brown silt loam that has greenish gray and dark grayish brown mottles; and the lower 20 inches is yellowish brown loam that has light olive gray mottles. The underlying material to a depth of 62 inches is light olive brown sandy loam.

Toccoa soils are well drained. They occupy long, narrow areas on bottom lands. In a representative profile the surface layer is brown fine sandy loam about 15 inches thick. The underlying material, to a depth of 60 inches, is stratified yellowish brown fine sandy loam that has many very fine flakes of mica.

Roanoke soils are poorly drained. They occupy irregularly shaped areas on low stream terraces. In a representative profile the surface layer is very dark gray silt loam 4 inches thick. The subsurface layer is gray loam that has yellowish brown mottles and is 7 inches thick. The subsoil is more than 49 inches thick. In sequence from the top, the upper 9 inches is gray clay loam that has brownish yellow mottles; the next 12 inches is gray silty clay that has brownish yellow mottles; the next 13 inches is gray silty clay that has yellowish brown and olive brown mottles; and the lower 15 inches is gray clay that has brownish yellow mottles.

Minor soils in this association are Rome, Whitwell and Wolftever. Rome soils are well drained and occupy low stream terraces. Whitwell soils are moderately well drained and occupy low stream terraces. Wolftever soils are moderately well drained and occupy broad low terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling flooding. Most streams in this association are free flowing, but some are clogged with debris.

Because of the flooding hazard, this association has severe limitations for most nonfarm uses.

2. Whitwell-Cedarbluff-Tupelo association

Moderately well drained or somewhat poorly drained, nearly level or gently sloping soils on terraces

This association consists of long and narrow areas of soils and broad and irregularly shaped areas of soils. Small areas of this association are throughout Chattooga County with the exception of the northwestern section.

This association makes up about 3 percent of Chattooga County. Whitwell soils make up about 40 percent of this association; Cedarbluff soils, 17 percent; Tupelo soils, about 16 percent; and minor soils, 27 percent.

Whitwell soils are moderately well drained. In a representative profile the surface layer is brown and yellowish brown silt loam about 8 inches thick. The subsoil is 40 inches thick. In sequence from the top, the upper 5 inches is dark yellowish brown clay loam; the next 10 inches is yellowish brown silty clay loam; the next 13 inches is yellowish brown clay loam that has strong brown and light brownish gray mottles; and the lower 12 inches is strong brown clay loam that has light brownish gray and light olive brown mottles. The underlying material, to a depth of 60 inches, is light olive brown loam that has light brownish gray and olive mottles.

Cedarbluff soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 4 inches is light yellowish brown silty clay loam that has yellowish brown mottles; the next 13 inches is light yellowish brown clay loam that has yellowish brown and red mottles; the next 10 inches is yellowish brown clay loam that has light olive gray mottles; the 18 inches below is yellowish brown clay loam that has light gray mottles; and the lower 9 inches is yellowish brown clay that has gray, red, and strong brown mottles.

Tupelo soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown clay loam 7 inches thick. The subsurface layer is 5 inches thick and is mottled light yellowish brown, yellowish brown, and light brownish gray clay loam. The subsoil is more than 50 inches thick. In sequence from the top, the upper 26 inches is light yellowish brown silty clay that has yellowish brown and light brownish gray mottles, the next 18 inches is light yellowish brown silty clay that has gray and yellowish brown mottles, and the lower 6 inches is gray silty clay that has yellowish brown and light olive brown mottles.

Minor soils in this association are the Chewacla, Dowellton, and Roanoke. Chewacla soils are somewhat poorly drained and occupy bottom lands. Dowellton soils are poorly drained and occupy slight depressions. Roanoke soils are poorly drained and occupy low stream terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding and providing soil drainage. Most streams in this association are not free flowing. Because of flooding, this association has moderate or severe limitations for most nonfarm uses.

3. Wax-Rome-Wolftever association

Moderately well drained or well drained, nearly level or gently sloping soils on low stream terraces

This association consists of soils in long, narrow drainageways, and on broad, low stream terraces near streams and rivers. Areas of this association are throughout Chattooga County with the exception of the northwestern section.

This association makes up about 8 percent of Chattooga County. Wax soils make up about 41 percent of this association; Rome soils, about 21 percent; Wolftever soils, about 10 percent; and minor soils, about 28 percent.

Wax soils are moderately well drained. They occupy long, narrow drainageways and low stream terraces. In a representative profile the surface layer is 10 inches thick. The upper 4 inches is dark brown loam that is 10 percent chert fragments. The lower 6 inches is dark yellowish brown loam that is about 10 percent chert fragments. The subsoil is more than 50 inches thick. In sequence from the top, the upper 10 inches is yellowish brown clay loam that is 6 percent chert fragments; the next 10 inches is brownish yellow clay loam that is 6 percent chert fragments; and the next 18 inches is brownish yellow very cherty sandy clay loam that has brown and light brownish gray mottles. This last layer is very firm and brittle and is about 70 percent chert fragments. Beneath this is 12 inches of mottled strong brown, light brownish gray, brownish yellow, and reddish yellow very cherty clay loam. This layer is firm and brittle and is about 75 percent chert fragments.

Rome soils are well drained. They occupy broad low stream terraces. In a representative profile the surface layer is light olive brown fine sandy loam about 9 inches thick that has 2 percent black concretions. The subsoil is 57 inches thick. In sequence from the top, the upper 11 inches is strong brown loam that has 5 percent black concretions; the next 14 inches is strong brown clay loam that has brownish yellow and yellowish red mottles and 5 percent black concretions; the next 19 inches is yellowish brown sandy clay loam that has yellowish red and very pale brown mottles and 3 percent black concretions; and the lower 13 inches is brownish yellow sandy clay loam that has pale yellow and yellowish red mottles.

Wolftever soils are moderately well drained. They occupy low stream terraces. In a representative profile the surface layer and subsurface layer are silt loam about 6 inches thick. The surface layer is grayish brown and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is brownish yellow silty clay; the next 13 inches is yellowish brown silty clay that has light gray mottles; and the lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to a depth of 62 inches, is yellowish red and strong brown weathered shale.

Minor soils in this association are Cedarbluff, Chewacla and Whitwell. Cedarbluff soils are somewhat poorly drained and occupy low terraces. Chewacla soils are somewhat poorly drained and occupy bottom lands. Whitwell soils are moderately well drained and occupy low terraces.

The soils in this association are used for cultivated crops, pasture and woodland. Cotton, corn, and soybeans are the main cultivated crops. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding on Wax and Wolftever soils and controlling erosion on the gently sloping Rome soils. Because of flooding, Wax and Wolftever soils in this association have severe limitations for most nonfarm uses.

Nearly level, gently sloping or sloping soils on terraces, uplands or mountains

Four associations in Chattooga County consist of nearly level to sloping soils on stream terraces, uplands, or mountains. Slopes generally range from 0 to 10 percent. These are well drained or moderately well drained soils.

4. Holston-Etowah-Wolftever association

Well drained or moderately well drained, nearly level, gently sloping, or sloping soils on terraces and uplands

This association consists of broad, irregularly shaped areas of soils on terraces, and soils that lie as narrow foot slopes adjacent to uplands and as benches in the uplands. Areas of this association are throughout Chattooga County with the exception of the northwestern section.

This association makes up about 4 percent of Chattooga County. Holston soils make up about 32 percent of this association; Etowah soils, about 25 percent; Wolftever soils, about 18 percent; and minor soils, about 25 percent.

Holston soils are well drained. They occupy high stream terraces on foot slopes and on benches in the uplands adjacent to mountains. In a representative profile the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is more than 56 inches thick. In sequence from the top, the upper 15 inches is yellowish brown sandy clay loam; the next 14 inches is strong brown clay loam that has yellowish brown mottles and a few pebbles; and the layer below is 14 inches of yellowish brown clay loam that has strong brown and yellowish red mottles. The lower 13 inches of the subsoil is red clay that has yellowish brown and strong brown mottles and a few pebbles.

Etowah soils are well drained. They occupy low stream terraces. In a representative profile the surface layer is dark brown loam about 8 inches thick. The subsoil is about 66 inches thick. In sequence from the top, the upper 5 inches is reddish brown and yellowish red loam; the next 21 inches is yellowish red clay loam that has a few pebbles and concretions; the next 17 inches is yellowish red clay loam that has brownish yellow mottles; and the lower 23 inches is yellowish red clay that has brownish yellow mottles that increase in size and number with depth.

Wolftever soils are moderately well drained. They occupy low stream terraces. In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is grayish brown and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is brownish yellow silty clay; the next 13 inches is yellowish brown silty clay that has light gray mottles; and the lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to a depth of 62 inches, is yellowish red and strong brown weathered shale.

Minor soils in this association are Cedarbluff, Wax, and Whitwell. Cedarbluff soils are somewhat poorly drained and occupy nearly level terraces. Wax soils are moderately well drained and occupy drainageways. Whitwell soils are moderately well drained and occupy nearly level low stream terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are controlling erosion on the Holston and Etowah soils and controlling flooding on Wolftever soils. Most streams in this association are free flowing, but some are clogged with debris.

Most of this association has slight or moderate limitations for most nonfarm uses. Because of flooding, however, the Wolftever soils have severe limitations for nonfarm uses.

5. Townley-Cunningham-Conasauga association

Well drained or moderately well drained, gently sloping or sloping shaly soils on uplands

This association occupies broad gently sloping ridgetops and long sloping sides of ridges. Areas of this association are throughout Chattooga County.

This association makes up about 8 percent of Chattooga County. Townley soils make up about 26 percent of this association; Cunningham soils, about 25 percent; Conasauga soils, about 23 percent; and minor soils, about 26 percent.

Townley soils are well drained. In a representative profile the surface layer is yellowish brown silt loam about 5 inches thick. The subsoil is about 15 inches thick. In sequence from the top, the upper 8 inches is yellowish red silty clay that has strong brown mottles, and dark red and yellowish brown shale fragments; and the lower 7 inches is yellowish red, strong brown, and yellowish brown shaly clay that is about 25 percent red, light yellowish brown and yellowish brown shale fragments. The underlying material, to a depth of 60 inches, is weak red and black shale.

Cunningham soils are well drained. In a representative profile the surface layer is brown loam about 5 inches thick. The subsoil is 31 inches thick. In sequence from the top, the upper 12 inches is yellowish red clay; the next 13 inches is yellowish red clay loam that has dark red and strong brown mottles and a few shale fragments; and the lower 6 inches is mottled yellowish red, dark red, and

strong brown clay loam that has common shale fragments and gravel. The underlying material, to a depth of 60 inches, is olive brown weathered shale.

Conasauga soils are moderately well drained. In a representative profile the surface and subsurface layers are silt loam about 5 inches thick. They are dark gray in the upper 1 inch, and light yellowish brown in the lower 4 inches. The subsoil is 30 inches thick. In sequence from the top, the upper 5 inches is olive yellow silty clay loam that has pale yellow mottles; the next 5 inches is yellowish brown silty clay that has light yellowish brown mottles; the layer below is 13 inches of yellowish brown clay that has light yellowish brown mottles; and the lower 7 inches is yellowish brown and strong brown clay that has light greenish gray mottles and common shale fragments. The underlying material, to a depth of 46 inches, is olive, light gray, and black weathered shale that has pockets of olive brown clay.

Minor soils in this association are the Dewey, Lyerly, and Montevallo. Dewey soils are well drained and occupy ridgetops and side slopes. Lyerly soils are well drained and moderately well drained and occupy broad gently sloping ridgetops. Montevallo soils are well drained and occupy low hills and long sides of ridges.

The soils in this association are used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of slope, slow permeability, and shallowness to bedrock, this association has moderate or severe limitations for most nonfarm uses.

6. Shack-Fullerton-Decatur association

Moderately well drained or well drained, gently sloping or sloping cherty soils on uplands and mountains

This association consists of long, broad, gently sloping or sloping ridgetops and the sloping sides of uplands and mountains. Areas of this association are throughout Chattooga County.

This association makes up about 10 percent of Chattooga County. Shack soils make up about 32 percent of this association; Fullerton soils, about 31 percent; Decatur soils, about 18 percent; and minor soils, about 19 percent.

Shack soils are moderately well drained. They occupy mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; and the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown part. Beneath this is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown part; the next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; and the lower 12 inches is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches, and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Decatur soils are well drained. They occupy uplands. In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay and about 5 percent iron concretions; the next 13 inches is dusky red clay and 40 percent iron concretions; and the lower 33 inches is dusky red clay and 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam.

Minor soils in this association are the Aragon, Dewey, and Townley. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for cultivated crops, pasture, and woodland. Cotton, corn, and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. This association has moderate limitations for most nonfarm uses.

7. Hartsells-Linker association

Well drained, gently sloping or sloping soils on mountains and uplands

This association consists of irregularly shaped areas of soils on broad mountaintops and long side slopes, and long foot slopes at the base of mountains. Areas of this association are in the northwestern part of Chattooga County and in the vicinity of Little Sand Mountain.

This association makes up about 5 percent of Chattooga County. Hartsells soils make up about 67 percent of this association; Linker soils, about 16 percent; and minor soils, about 17 percent.

Hartsells soils occupy foot slopes adjacent to mountains. In a representative profile the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam 4 inches thick. The subsoil is 33 inches thick. In sequence from the top, the upper 29 inches is yellowish brown clay loam that has a few pebbles in the lower part; the lower 4 inches is brownish yellow clay loam that has light gray and yellowish red mottles. The underlying material is weathered sandstone bedrock.

Linker soils occupy mountaintops and long side slopes. In a representative profile the surface layer is 7 inches thick. It is brown fine sandy loam that has common cobbles and a few stones. The subsoil is 31 inches thick. In sequence from the top, the upper 8 inches is yellowish red sandy clay loam, and the next 19 inches is red clay loam, and the lower 4 inches is red clay loam that has yellowish red mottles and a few weak, red and strong brown sandstone fragments. The underlying material is weak red and strong brown slightly weathered sandstone rock.

Minor soils in this association are the Holston, Tidings, and Townley. Holston soils occupy long foot slopes at the base of mountains. Tidings and Townley soils are well drained. They occupy gently sloping or sloping uplands or mountains.

The soils in this association are used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of shallowness to bedrock, Hartsells and Linker soils have moderate or severe limitations for most nonfarm uses.

Moderately steep, steep, or very steep soils on high terraces, uplands, or mountains

Four associations in Chattooga County consist of moderately steep to very steep soils on high terraces, uplands, or mountains. Slopes range from 10 to 60 percent. These soils are moderately well drained to excessively drained.

8. Hector-Hartsells association

Well drained, moderately steep, to very steep soils that have bedrock at a depth of less than 40 inches; on mountains and upland ridges

This association consists of areas of soils on the long sides of mountains and upland hills and ridges adjacent to mountains. Areas of this association are in the eastern and extreme northwestern section of Chattooga County.

This association makes up about 10 percent of Chattooga County. Hector soils make up about 50 percent of this association; Hartsells soils, about 19 percent; and minor soils, about 31 percent.

Hector soils are on mountains. In a representative profile the surface and subsurface layers are stony fine sandy loam that has common stones and cobbles. They are dark grayish brown in the upper 1 inch and dark yellowish brown in the lower 4 inches. The subsoil is brown, stony sandy loam about 10 inches thick. The underlying hard sandstone is brownish yellow, white, brown, and dark brown.

Hartsells soils are on mountains and upland hills and ridges. In a representative profile the surface layer is dark grayish brown, fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam 4 inches thick. The subsoil is 33 inches thick. In sequence from the top, the upper 29 inches is yellowish brown clay loam that has a few pebbles in the lower part; the lower 4 inches is brownish yellow clay loam that has light gray and yellowish red mottles. The underlying material is weathered sandstone bedrock.

Minor soils in this association are the Nella, Tidings, and Townley. All these soils are well drained. Nella soils occupy the cobbly, steep, and very steep mountain sides. Tidings and Townley soils occupy moderately steep to steep uplands.

This association is used for the production of pulpwood and lumber. On some of the lower slopes, fescue and ladino clover are grown for permanent pasture. The main concerns of management are the boulders, stones, and cobbles on the surface of the soils. Because of boulders, stones, and cobbles and steepness of slopes and shallowness to bedrock, this association has severe limitations for most nonfarm uses.

9. Allen-Holston association

Well drained, moderately steep to steep soils on foot slopes and benches in the uplands

This association consists of areas of soils on narrow foot slopes and benches in the uplands and on short sides of high terraces. Areas of this association are throughout Chattooga County.

This association makes up about 5 percent of Chattooga County. Allen soils make up about 61 percent of this association; Holston soils, about 10 percent; and minor soils, about 29 percent.

In a representative profile Allen soils have a surface layer about 8 inches thick. It is dark yellowish brown fine sandy loam that is about 10 percent sandstone pebbles. The subsoil is more than 62 inches thick. In sequence from the top, the upper 10 inches is yellowish red sandy clay loam that is about 5 percent sandstone gravel; the next 34 inches is red sandy clay loam that has strong brown mottles and is about 5 percent sandstone gravel; the lower 18 inches is red clay loam that has strong brown and reddish yellow mottles and is about 5 percent sandstone gravel and about 10 percent stones.

In a representative profile Holston soils have a surface layer that is brown fine sandy loam about 8 inches thick. The subsoil is more than 56 inches thick. In sequence from the top, the upper 15 inches is yellowish brown sandy clay loam; the next 14 inches is strong brown clay loam that has yellowish brown mottles and a few pebbles; the layer below is 14 inches of yellowish brown clay loam that has strong brown and yellowish red mottles; and the lower 13 inches is red clay that has yellowish brown and strong brown mottles and a few pebbles.

Minor soils in this association are Hartsells, Hector, Linker, and Tidings. These soils are well drained. They occupy long upland and mountain side slopes.

This association is used for woodland and pasture. Tall fescue and ladino clover are grown for permanent

pasture. Beef cattle is the main livestock enterprise. Some of this association is used for the production of pulpwood and lumber. The main concern of management is controlling erosion. Because of steepness of the slopes, this association has severe limitations for most nonfarm uses.

10. Nella-Bodine-Montevallo association

Well drained or somewhat excessively drained, moderately steep to very steep soils on mountains and upland ridges

This association consists of long areas of soils on side slopes of the mountains and upland ridges. Areas of this association are throughout Chattooga County.

This association makes up about 20 percent of Chattooga County. Nella soils make up about 40 percent of this association; Bodine soils, about 30 percent; Montevallo soils, about 20 percent; and minor soils, about 10 percent.

Nella soils are well drained. In a representative profile the surface and subsurface layers are cobbly loam about 3 inches thick. They are dark grayish brown in the upper 1 inch and brown in the lower 2 inches. The subsoil is more than 59 inches thick. In sequence from the top, the upper 5 inches is reddish brown cobbly clay loam; the next 16 inches is yellowish red cobbly clay loam; the next 20 inches is red gravelly clay loam; and the lower 18 inches is yellowish red gravelly clay loam that has red and brown mottles.

Bodine soils are somewhat excessively drained. In a representative profile the surface and subsurface layers are about 6 inches thick. They are very dark grayish brown very stony silt loam in the upper 2 inches and pale olive stony silt loam in the lower 4 inches. The subsoil is more than 54 inches thick. In sequence from the top, the upper 12 inches is light yellowish brown stony silt loam; the next 8 inches is light yellowish brown stony clay loam; and the lower 34 inches is mottled yellowish red and brownish yellow stony silty clay loam.

Montevallo soils are well drained. In a representative profile the surface layer is very shaly silt loam 4 inches thick. The upper 1 inch is dark grayish brown and the lower 3 inches is dark brown. The subsoil is yellowish brown shaly silt loam about 10 inches thick. The underlying material, to a depth of 48 inches, is gray, brown, olive, and olive gray weathered shale.

Minor soils in this association are the Allen, Shack, and Townley. Allen soils are well drained and occupy the lower foot slopes of the upland ridges. Shack soils are moderately well drained and occupy mountainsides and sides of uplands. Townley soils are well drained and occupy low hills and ridges.

Most of this association is used for the production of pulpwood and lumber. Tall fescue and ladino clover are grown in a few areas for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are steepness of the slopes and the stones and cobbles on the surface of the soil. Because of the stones and cobbles and steepness of the slopes, this association has severe limitations for most nonfarm uses.

11. Shack-Fullerton association

Moderately well drained or well drained, moderately steep to very steep cherty soils on uplands and mountains

This association consists of areas of soils on upland and mountain side slopes and ridges. Areas of this association are throughout Chattooga County.

This association makes up about 20 percent of Chattooga County. Shack soils make up about 49 percent of this association; Fullerton soils, about 29 percent; and minor soils, about 22 percent.

Shack soils are moderately well drained. They occupy mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown parts. Beneath this layer is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown parts. The next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; and the 12 inches below is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Minor soils in this association are Aragon, Bodine, Decatur, and Dewey. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for pasture and woodland. Tall fescue and ladino clover are grown for permanent pasture on the lower slopes. Some of this association is used for the production of pulpwood and lumber. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of the steepness of slope, this association has moderate or severe limitation for most nonfarm uses.

Floyd County

Nearly level or gently sloping soils on bottom lands or low stream terraces

Three associations in Floyd County consist of nearly level or gently sloping soils on bottom lands or terraces near the Coosa and Oostanaula Rivers along the major streams. Slopes generally range from 0 to 6 percent. These soils are poorly drained to well drained.

1. Chewacla-Toccoa-Roanoke association

Somewhat poorly drained or well drained, nearly level, soils on bottom lands; and poorly drained, nearly level soils on low stream terraces

This association consists of long, narrow areas of soils on bottom lands, and irregularly shaped areas of soils on low stream terraces. Areas of this association are throughout Floyd County.

This association makes up about 9 percent of Floyd County. Chewacla soils make up about 50 percent of this association; Toccoa soils, 15 percent; Roanoke soils, 15 percent; and minor soils, 20 percent.

Chewacla soils are somewhat poorly drained. They occupy long, narrow bottom lands. In a representative profile the surface layer is dark brown silt loam about 9 inches thick. The subsoil is about 41 inches. In sequence from the top, the upper 7 inches is dark brown silt loam that has yellowish brown mottles; the next 14 inches is yellowish brown silt loam that has greenish gray and dark grayish brown mottles; the lower 20 inches is yellowish brown loam that has light olive gray mottles. The underlying material, to a depth of 62 inches, is light olive brown sandy loam.

Toccoa soils are well drained. They occupy long, narrow areas on bottom lands. In a representative profile the surface layer is brown fine sandy loam about 15 inches thick. The underlying material, to a depth of 60 inches, is stratified yellowish brown fine sandy loam that has many very fine mica flakes.

Roanoke soils are poorly drained. They occupy irregularly shaped areas on low stream terraces. In a representative profile the surface layer is very dark gray silt loam 4 inches thick. The subsurface layer is gray loam that has yellowish brown mottles and is 7 inches thick. The subsoil is more than 49 inches thick. In sequence from the top, the upper 9 inches is gray clay loam that has brownish yellow mottles; the next 12 inches is gray silty clay that has brownish yellow mottles; the next 13 inches is gray silty clay that has yellowish brown and olive brown mottles; and the lower 15 inches is gray clay that has brownish yellow mottles.

Minor soils in this association are Rome, Whitwell, and Wolftever. Rome soils are well drained and occupy low stream terraces. Whitwell soils are moderately well drained and occupy low stream terraces. Wolftever soils are moderately well drained and occupy broad low terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling flooding. Most streams in this association are free flowing, but some are clogged with debris.

Because of the flooding hazard, this association has severe limitations for most nonfarm uses.

2. Tupelo-Whitwell-Cedarbluff association

Somewhat poorly drained or moderately well drained, nearly level or gently sloping soils on terraces

This association consists of long and narrow areas of soils and broad and irregularly shaped areas. Small areas of this association are throughout Floyd County.

This association makes up about 7 percent of Floyd County. Tupelo soils make up about 39 percent of this association; Whitwell soils, 22 percent; Cedarbluff soils, 21 percent; and minor soils, 18 percent.

Tupelo soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown clay loam 7 inches thick. The subsurface layer is 5 inches thick and is mottled light yellowish brown, yellowish brown and light brownish gray clay loam. The subsoil is more than 50 inches thick. In sequence from the top, the upper 26 inches is light yellowish brown silty clay that has yellowish brown and light brownish gray mottles; the next 18 inches is light yellowish brown silty clay that has gray and yellowish brown mottles; and the lower 6 inches is gray silty clay that has yellowish brown and light olive brown mottles.

Whitwell soils are moderately well drained. In a representative profile the surface layer is brown and yellowish brown silt loam about 8 inches thick. The subsoil is 40 inches thick. In sequence from the top, the upper 5 inches is dark yellowish brown clay loam; the next 10 inches is yellowish brown silty clay loam; the next 13 inches is yellowish brown clay loam that has strong brown and light brownish gray and light olive brown mottles; and the lower 12 inches is strong brown clay loam that has light brownish gray mottles. The underlying material, to a depth of 60 inches, is light olive brown loam that has light brownish gray and olive mottles.

Cedarbluff soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 4 inches is light yellowish brown silty clay loam that has yellowish brown mottles; the next 13 inches is light yellowish brown clay loam that has yellowish brown and red mottles; the next 10 inches is yellowish brown clay loam that has light olive gray mottles; the next 18 inches is yellowish brown clay loam that has light gray mottles; and the lower 9 inches is yellowish brown clay that has gray, red, and strong brown mottles.

Minor soils in this association are Chewacla, Dowellton, and Roanoke. Chewacla soils are somewhat poorly drained and occupy bottom lands. Dowellton soils are poorly drained and occupy slight depressions. Roanoke soils are poorly drained and occupy low stream terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding and providing soil drainage. Most streams in this association are not free flowing. Because of the flooding, this association has moderate or severe limitations for most nonfarm uses.

3. Wax-Rome-Wolftever association

Moderately well drained or well drained, nearly level or gently sloping soils on low stream terraces

This association consists of soils in long, narrow drainageways and on broad, low stream terraces near streams and rivers. Areas of this association are throughout Floyd County.

This association makes up about 10 percent of Floyd County. Wax soils make up about 35 percent of this association; Rome soils, about 27 percent; Wolftever soils, about 6 percent; and minor soils, about 32 percent.

Wax soils are moderately well drained. They occupy long, narrow drainageways and low stream terraces. In a representative profile the surface layer is 10 inches thick. The upper 4 inches is dark brown loam that is 10 percent chert fragments. The lower 6 inches is dark yellowish brown loam that is about 10 percent chert fragments. The subsoil is more than 50 inches thick. In sequence from the top, the upper 10 inches is yellowish brown clay loam that is 6 percent chert fragments; the next 10 inches is brownish yellow clay loam that is 6 percent chert fragments; and the next 18 inches is brownish yellow very cherty sandy clay loam that has brown and light brownish gray mottles. This last layer is very firm and brittle and is about 70 percent chert fragments. Beneath this is 12 inches of mottled strong brown, light brownish gray, brownish yellow, and reddish yellow very cherty clay loam. This layer is firm and brittle and is about 75 percent chert fragments.

Rome soils are well drained. They occupy broad, low stream terraces. In a representative profile the surface layer is light olive brown fine sandy loam about 9 inches thick and is 2 percent black concretions. The subsoil is 57 inches thick. In sequence from the top, the upper 11 inches is strong brown loam and is 5 percent black concretions; the next 14 inches is strong brown clay loam that has brownish yellow and yellowish red mottles and is 5 percent black concretions; the next 19 inches is yellowish brown sandy clay loam that has yellowish red and very pale brown mottles and is 3 percent black concretions; and the lower 13 inches is brownish yellow sandy clay loam that has pale yellow and yellowish red mottles.

Wolftever soils are moderately well drained. They occupy low stream terraces. In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is grayish brown, and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is brownish yellow silty clay; below this is 13 inches of yellowish brown silty clay that has light gray mottles; and the lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to a depth of 62 inches, is yellowish red and strong brown weathered shale.

Minor soils in this association are Cedarbluff, Chewacla, and Whitwell. Cedarbluff soils are somewhat poorly drained and occupy low terraces. Chewacla soils are somewhat poorly drained and occupy bottom lands. Whitwell soils are moderately well drained and occupy low terraces.

The soils in this association are used for cultivated crops, pasture, and woodland. Cotton, corn, and soybeans are the main cultivated crops. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding on Wax and Wolftever soils and controlling erosion on the gently sloping Rome soils. Because of flooding, Wax and Wolftever soils in this association have severe limitations for most nonfarm uses.

Nearly level, gently sloping or sloping soils on terraces, uplands, or mountains

Three associations in Floyd County consist of nearly level to sloping soils on stream terraces, uplands, or mountains. Slopes generally range from 0 to 10 percent. These are well drained or moderately well drained soils.

4. Etowah-Holston-Wolftever association

Well drained or moderately well drained, nearly level, gently sloping or sloping soils on terraces and uplands

This association consists of broad, irregularly shaped areas of soils on terraces, and soils that occupy narrow foot slopes adjacent to uplands and benches in the uplands. Areas of this association are throughout Floyd County.

This association makes up about 9 percent of Floyd County. Etowah soils make up about 38 percent of this association; Holston soils, 20 percent; Wolftever soils, 14 percent; and minor soils, 28 percent.

Etowah soils are well drained. They occupy low stream terraces. In a representative profile the surface layer is dark brown loam about 8 inches thick. The subsoil is about 66 inches thick. In sequence from the top, the upper 5 inches is reddish brown and yellowish red loam; the next 21 inches is yellowish red clay loam that has a few pebbles and concretions; the next 17 inches is yellowish red clay loam that has brownish yellow mottles; and the lower 23 inches is yellowish red clay that has

brownish yellow mottles that increase in size and number with depth.

Holston soils are well drained. They occupy high stream terraces on foot slopes and on benches in the uplands adjacent to mountains. In a representative profile the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is more than 56 inches thick. In sequence from the top, the upper 15 inches is yellowish brown sandy clay loam; the next 14 inches is strong brown clay loam that has yellowish brown mottles and a few pebbles; the layer below is 14 inches of yellowsh brown clay loam that has strong brown and yellowish red mottles; and the lower 13 inches is red clay that has yellowish brown and strong brown mottles and a few pebbles.

Wolftever soils are moderately well drained. They occupy low stream terraces. In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is grayish brown, and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is brownish yellow silty clay; the next 13 inches is yellowish lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to the depth of 62 inches is yellowish red and strong brown weathered shale.

Minor soils in this association are the Cedarbluff, Wax, and Whitwell. Cedarbluff soils are somewhat poorly drained and occupy nearly level terraces. Wax soils are moderately well drained and occupy drainageways. Whitwell soils are moderately well drained and occupy nearly level low stream terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are controlling erosion on the Holston and Etowah soils and controlling flooding on Wolftever soils. Most streams in this association are free flowing, but some are clogged with debris.

Most of this association has slight or moderate limitations for most nonfarm uses. Because of flooding, however, the Wolftever soils have severe limitations for nonfarm uses.

5. Conasauga-Townley-Cunningham association

Moderately well drained or well drained, gently sloping or sloping shaly soils on uplands

This association occupies broad, gently sloping ridgetops and long sloping sides of ridges. Areas of this association are throughout northern and southern Floyd County.

This association makes up about 15 percent of Floyd County. Conasauga soils make up about 36 percent of this association; Townley soils, about 32 percent; Cunningham soils, about 15 percent; and minor soils, about 17 percent.

Conasauga soils are moderately well drained. In a representative profile the surface and subsurface layers are silt loam about 5 inches thick. They are dark gray in the upper 1 inch, and light yellowish brown in the lower 4 inches. The subsoil is 30 inches thick. In sequence from the top, the upper 5 inches is olive yellow silty clay loam that has pale yellow mottles; the next 5 inches is yellowish brown silty clay that has light yellowish brown mottles; the next 13 inches is yellowish brown clay that has light yellowish brown mottles; and the lower 7 inches is yellowish brown and strong brown clay that has light greenish gray mottles and common shale fragments. The underlying material, to a depth of 46 inches, is olive, light gray, and black weathered shale that has pockets of olive brown clay.

Townley soils are well drained. In a representative profile the surface layer is yellowish brown silt loam about 5 inches thick. The subsoil is about 15 inches thick. In sequence from the top, the upper 8 inches is yellowish red silty clay that has strong brown mottles, and dark red and yellowish brown shale fragments; and the lower 7 inches is yellowish red, strong brown, and yellowish brown shaly clay with about 25 percent red, light yellowish brown and yellowish brown shale fragments. The underlying material, to a depth of 60 inches, is weak red and black shale.

Cunningham soils are well drained. In a representative profile the surface layer is brown loam about 5 inches thick. The subsoil is 31 inches thick. In sequence from the top, the upper 12 inches is yellowish red clay; the next 13 inches is yellowish red clay loam that has dark red and strong brown mottles and a few shale fragments; and the lower 6 inches is mottled yellowish red, dark red and strong brown clay loam with common shale fragments and gravel. The underlying material, to a depth of 60 inches, is olive brown weathered shale.

Minor soils in this association are the Dewey, Lyerly, and Montevallo. Dewey soils are well drained and occupy ridgetops and side slopes. Lyerly soils are well drained and moderately well drained and occupy broad gently sloping ridgetops. Montevallo soils are well drained and occupy low hills and long sides of ridges.

The soils in this association are used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of slope, slow permeability, and shallowness to bedrock, this association has moderate to severe limitations for most nonfarm uses.

6. Fullerton-Decatur-Shack association

Well drained or moderately well drained, gently sloping or sloping cherty soils on uplands and mountains

This association consists of long, broad, gently sloping or sloping ridgetops and the sloping sides of uplands and mountains. Areas of this association are throughout Floyd County.

This association makes up about 10 percent of Floyd County. Fullerton soils make up about 38 percent of the association; Decatur soils, about 27 percent; Shack soils, about 19 percent; and minor soils, 16 percent.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches, and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Decatur soils are well drained. They occupy uplands. In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay that has about 5 percent iron concretions; the next 13 inches is dusky red clay that has 40 percent iron concretions; and the lower 33 inches is dusky red clay that has 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam.

Shack soils are moderately well drained. They are on mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown parts. Beneath this is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown parts. The next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; the 12 inches below is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Minor soils in this association are the Aragon, Dewey, and Townley. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for cultivated crops, pasture, and woodland. Cotton, corn, and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. This association has moderate limitations for most nonfarm uses.

Moderately steep, steep, or very steep soils on high terraces, uplands, or mountains

Four associations in Floyd County consist of moderately steep to very steep soils on high terraces, uplands, or mountains. Slopes range from 10 to 60 percent. These soils are moderately well drained to excessively drained.

7. Fullerton-Shack-Decatur association

Well drained or moderately well drained, moderately steep to very steep cherty soils on uplands and mountains

This association consists of long side slopes and ridgetops on uplands. Areas of this association are throughout Floyd County.

This association makes up about 19 percent of Floyd County. Fullerton soils make up about 46 percent of this association; Shack soils, about 21 percent; Decatur soils, about 14 percent; and minor soils, about 19 percent.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Shack soils are moderately well drained. They are on mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown; yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown parts. Beneath this is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown part. The next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; the 12 inches below is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Decatur soils are well drained. They occupy uplands. In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay and about 5 percent iron concretions; the next 13 inches is dusky red clay and 40 percent iron concretions; and the lower 33 inches is dusky red clay and 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam.

Minor soils in this association are Aragon, Bodine, and Dewey. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for pasture and woodland. Tall fescue and ladino clover are grown for permanent pasture on the lower slopes. Some of this as-

sociation is used for the production of pulpwood and lumber. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of the steepness of slope, this association has moderate to severe limitations for most nonfarm uses.

8. Hector-Hartsells association

Well drained, moderately steep to very steep soils that have bedrock at depths less than 40 inches; on mountains and upland ridges

This association consists of the long sides of mountains and upland hills and ridges adjacent to mountains. Areas of this association are in the northern part of Floyd County.

This association makes up about 4 percent of Floyd County. Hector soils make up about 62 percent of this association; Hartsells soils, about 10 percent; and minor soils, about 28 percent.

Hector soils occupy mountains. In a representative profile the surface and subsurface layers are stony fine sandy loam that has common stones and cobbles and are about 5 inches thick. They are dark grayish brown in the upper 1 inch and dark yellowish brown in the lower 4 inches. The subsoil is brown, stony sandy loam about 10 inches thick. The underlying hard sandstone is brownish yellow, white, brown, and dark brown.

Hartsells soils are on mountains and upland hills and ridges. In a representative profile the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam 4 inches thick. The subsoil is 33 inches thick. In sequence from the top, the upper 29 inches is yellowish brown clay loam that has a few pebbles in the lower part and the lower 4 inches is brownish yellow clay loam that has light gray and yellowish red mottles. The underlying material is weathered sandstone bedrock.

Minor soils in this association are the Nella, Tidings, and Townley. All these soils are well drained. Nella soils occupy the cobbly, steep, and very steep mountainsides. Tidings and Townley soils occupy moderately steep to steep uplands.

This association is used for the production of pulpwood and lumber. On some of the lower slopes, fescue and ladino clover are grown for permanent pasture. The main concern of management is the boulders, stones, and cobbles on the surface of the soils. Because of boulders, stones, and cobbles and steepness of the slopes and shallowness to bedrock, this association has a severe limitation for most nonfarm uses.

9. Allen-Holston association

Well drained, moderately steep to steep soils on foot slopes and benches in the upland

This association consists of narrow foot slopes and benches in the uplands and on short sides of high terraces. Areas of this association are in the northern and southern parts of Floyd County.

This association makes up about 5 percent of Floyd County. Allen soils make up about 57 percent of this association; Holston soils, about 11 percent; and minor soils, about 32 percent.

In a representative profile Allen soils have a surface layer about 8 inches thick. The surface layer is dark yellowish brown fine sandy loam and about 10 percent sandstone gravel. The subsoil is more than 62 inches thick. In sequence from the top, the upper 10 inches is yellowish red sandy clay loam that is about 5 percent sandstone gravel; the next 34 inches is red sandy clay loam that has strong brown mottles and is about 5 percent sandstone gravel; and the lower 18 inches is red clay loam that has strong brown and reddish yellow mottles and is about 5 percent sandstone gravel and about 10 percent stones.

In a representative profile Holston soils have a surface layer that is brown fine sandy loam about 8 inches thick. The subsoil is more than 56 inches thick. In sequence from the top, the upper 15 inches is yellowish brown sandy clay loam; the next 14 inches is strong brown clay loam that has yellowish brown mottles and a few pebbles; the layer below is 14 inches of yellowish brown clay loam that has strong brown and yellowish red mottles; and the lower 13 inches is red clay that has yellowish brown and strong brown mottles and a few pebbles.

Minor soils in this association are Hartsells, Hector, Linker, and Tidings. These soils are well drained. They occupy long, upland and mountain side slopes.

This association is used for woodland and pasture. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. Some of the association is used for the production of pulpwood and lumber. The main concern of management is controlling erosion. Because of steepness of the slopes, this association has moderate or severe limitations for most nonfarm uses.

10. Montevallo-Nella-Bodine association

Well drained or somewhat excessively drained, moderately steep to very steep soils on mountains and upland ridges

This association consists of long sides of the mountains and upland ridges. Areas of this association are in the northern and southwestern part of Floyd County.

This association makes up about 12 percent of Floyd County. Montevallo soils make up about 35 percent of this association; Nella soils, about 29 percent; Bodine soils, about 18 percent; and minor soils, about 18 percent.

Montevallo soils are well drained. In a representative profile the surface layer is very shaly silt loam 4 inches thick. The upper 1 inch is dark grayish brown, and the lower 3 inches is dark brown. The subsoil is yellowish brown shaly silt loam about 10 inches thick. The underlying material, to a depth of 48 inches, is gray, brown, olive, and olive gray weathered shale.

Nella soils are well drained. In a representative profile the surface and subsurface layers are cobbly loam about 3

inches thick. The surface layer is dark grayish brown 1 inch thick and the subsurface layer is brown and 2 inches thick. The subsoil is more than 59 inches thick. In sequence from the top, the upper 5 inches is reddish brown cobbly clay loam; the next 16 inches is yellowish red cobbly clay loam; the next 20 inches is red gravelly clay loam; and the lower 18 inches is yellowish red gravelly clay loam that has red and brown mottles.

Bodine soils are somewhat excessively drained. In a representative profile the surface and subsurface layers are about 6 inches thick. The surface layer is very dark grayish brown very stony silt loam about 2 inches thick, and the subsurface layer is pale olive stony silt loam and is 4 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 12 inches is light yellowish brown stony silt loam; the next 8 inches is light yellowish brown stony clay loam; and the lower 34 inches is mottled yellowish red and brownish yellow stony silty clay loam.

Minor soils in this association are the Cunningham, Shack, and Townley. Cunningham soils are well drained and occupy uplands. Shack soils are moderately well drained and occupy mountainsides and sides of uplands. Townley soils are well drained and occupy low hills and ridges.

Most of this association is used for the production of pulpwood and lumber. Tall fescue and ladino clover are grown in a few areas for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are steepness of the slopes and the stones and cobbles on the surface of the soil. Because of the stones and cobbles and steepness of the slopes, this association has severe limitations for most nonfarm uses.

Polk County

Nearly level or gently sloping soils on bottom lands or low stream terraces

Three associations in Polk County consist of nearly level or gently sloping soils on bottom lands or terraces near the Big Cedar and Euharlee Rivers and along the major streams. Slopes generally range from 0 to 6 percent. These soils are poorly drained to well drained.

1. Chewacla-Toccoa-Roanoke association

Somewhat poorly drained or well drained, nearly level soils on bottom lands; and poorly drained, nearly level soils on low stream terraces

This association consists of long, narrow areas of soils on bottom lands and irregularly shaped areas of soils on low stream terraces. Areas of this association are throughout Polk County.

This association makes up about 7 percent of Polk County. Chewacla soils make up about 70 percent of this assocation; Toccoa soils, 10 percent; Roanoke soils, 10 percent; and minor soils, 10 percent.

Chewacla soils are somewhat poorly drained. They occupy long, narrow bottom lands. In a representative profile the surface layer is dark brown silt loam about 9 inches thick. The subsoil is about 41 inches thick. In sequence from the top, the upper 7 inches is dark yellowish brown silt loam that has yellowish brown mottles; the next 14 inches is yellowish brown silt loam that has greenish gray and dark grayish brown mottles; and the lower 20 inches is yellowish brown loam that has light olive gray mottles. The underlying material, to a depth of 62 inches, is light olive brown sandy loam.

Toccoa soils are well drained. They occupy long, narrow areas on bottom lands. In a representative profile the surface layer is brown fine sandy loam about 15 inches thick. The underlying material, to a depth of 60 inches, is stratified yellowish brown fine sandy loam that has many very fine flakes of mica.

Roanoke soils are poorly drained. They occupy irregularly shaped low stream terraces. In a representative profile the surface layer is very dark gray silt loam 4 inches thick. The subsurface layer is gray loam that has yellowish brown mottles and is 7 inches thick. The subsoil is more than 49 inches thick. In sequence from the top, the upper 9 inches is gray clay loam that has brownish yellow mottles; the next 12 inches is gray silty clay that has brownish yellow mottles; the next 13 inches is gray silty clay that has yellowish brown and olive brown mottles; and the lower 15 inches is gray clay that has brownish yellow mottles.

Minor soils in this association are Rome, Whitwell, and Wolftever. Rome soils are well drained and occupy low stream terraces. Whitwell soils are moderately well drained and occupy low stream terraces. Wolftever soils are moderately well drained and occupy broad low terraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling flooding. Most streams in this association are free flowing, but some are clogged with debris.

Because of flooding, this association has severe limitations for most nonfarm uses.

2. Whitwell-Cedarbluff-Tupelo association

Moderately well drained or somewhat poorly drained, nearly level or gently sloping soils on terraces

This association, in places, is long and narrow, but in other places is broad and irregularly shaped. Small areas of this association are throughout Polk County.

This association makes up about 3 percent of Polk County. Whitwell soils make up about 50 percent of this association; Cedarbluff soils, 14 percent; Tupelo soils, about 12 percent; and minor soils, 24 percent.

Whitwell soils are moderately well drained. In a representative profile the surface layer is brown and yel-

lowish brown silt loam about 8 inches thick. The subsoil is 40 inches thick. In sequence from the top, the upper 5 inches is dark yellowish brown clay loam; the next 10 inches is yellowish brown silty clay loam; the next 13 inches is yellowish brown clay loam that has strong brown and light brownish gray mottles; and the lower 12 inches is strong brown clay loam that has light brownish gray and light olive brown mottles. The underlying material, to a depth of 60 inches, is light olive brown loam that has light brownish gray and olive mottles.

Cedarbluff soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 4 inches is light yellowish brown silty clay loam that has yellowish brown mottles; below this is 13 inches of light yellowish brown clay loam that has yellowish brown and red mottles; the next 10 inches is yellowish brown clay loam that has light olive gray mottles; beneath this is 18 inches of yellowish brown clay loam that has light gray mottles; and the lower 9 inches is yellowish brown clay that has gray, red, and strong brown mottles.

Tupelo soils are somewhat poorly drained. In a representative profile the surface layer is grayish brown clay loam 7 inches thick. The subsurface layer is 5 inches thick and is mottled light yellowish brown, yellowish brown, and light brownish gray clay loam. The subsoil is more than 50 inches thick. In sequence from the top, the upper 26 inches is light yellowish brown silty clay that has yellowish brown, and light brownish gray mottles; the next 18 inches is light yellowish brown silty clay that has gray and yellowish brown mottles; and the lower 6 inches is gray silty clay that has yellowish brown and light olive brown mottles.

Minor soils in this association are Chewacla, Dowellton, and Roanoke. Chewacla soils are somewhat poorly drained and occupy bottom lands. Dowellton soils are poorly drained an occupy slight depressions. Roanoke soils are poorly drained and occupy low stream terrraces.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding and providing soil drainage. Most streams in this association are not free flowing. Because of the flooding, this association has moderate or severe limitations for most nonfarm uses.

3. Wax-Rome association

Moderately well drained or well drained, nearly level or gently sloping soils on low stream terraces

This association consists of soils in long, narrow drainageways and on broad, low stream terraces near streams and rivers. Areas of this association are throughout Polk County.

This association makes up about 8 percent of Polk County. Wax soils make up about 37 percent of this association; Rome soils, about 33 percent; and minor soils, about 30 percent.

Wax soils are moderately well drained. They occupy long, narrow drainageways and low stream terraces. In a representative profile the surface layer is 10 inches thick. The upper 4 inches is dark brown loam that is 10 percent chert fragments. The lower 6 inches is dark yellowish brown loam that is about 10 percent chert fragments. The subsoil is more than 50 inches thick. In sequence from the top, the upper 10 inches is yellowish brown clay loam that is 6 percent chert fragments; the next 10 inches is brownish yellow clay loam that is 6 percent chert fragments, and the next 18 inches is brownish yellow very cherty sandy clay loam that has brown and light brownish gray mottles. This last layer is very firm and brittle and is about 70 percent chert fragments. The layer below is 12 inches of mottled strong brown, light brownish gray, brownish yellow, and reddish yellow very cherty clay loam. This layer is firm and brittle and is about 75 percent chert fragments.

Rome soils are well drained. They occupy broad low stream terraces. In a representative profile the surface layer is light olive brown fine sandy loam about 9 inches thick and 2 percent black concretions. The subsoil is 57 inches thick. In sequence from the top, the upper 11 inches is strong brown loam and 5 percent black concretions; the next 14 inches is strong brown clay loam that has brownish yellow and yellowish red mottles and 5 percent black concretions; below this is 19 inches of yellowish brown sandy clay loam that has yellowish red and very pale brown mottles and 3 percent black concretions. The lower 13 inches is brownish yellow sandy clay loam that has pale yellow and yellowish red mottles.

Minor soils in this association are Chewacla, Whitwell, and Wolftever. Chewacla soils are somewhat poorly drained and occupy bottom lands. Whitwell and Wolftever soils are moderately well drained and occupy low terraces.

The soils in this association are used for cultivated crops, pasture, and woodland. Cotton, corn, and soybeans are the main cultivated crops. Beef cattle is the main livestock enterprise. The main concerns of management are controlling flooding on Wax soils and controlling erosion on the gently sloping Rome soils. Because of flooding, Wax soils in this association have severe limitations for most nonfarm uses.

Nearly level, gently sloping or sloping soils on terraces, uplands, or mountains

Four associations in Polk County consist of nearly level to sloping soils on stream terraces, uplands, or mountains. Slopes generally range from 0 to 10 percent. These soils are well drained or moderately well drained.

4. Etowah-Wolftever association

Well drained or moderately well drained, nearly level, gently sloping or sloping soils on terraces and uplands

This association consists of broad, irregularly shaped areas of soils on terraces. Areas of this association are throughout Polk County.

This association makes up about 4 percent of Polk County. Etowah soils make up about 59 percent of this association; Wolftever soils, about 10 percent; and minor soils, about 31 percent.

Etowah soils are well drained. They occupy low stream terraces. In a representative profile the surface layer is dark brown loam about 8 inches thick. The subsoil is about 66 inches thick. In sequence from the top, the upper 5 inches is reddish brown and yellowish red loam; the next 21 inches is yellowish red clay loam that has a few pebbles and concretions; the next 17 inches is yellowish red clay loam that has brownish yellow mottles; and the lower 23 inches is yellowish red clay that has brownish yellow mottles that increase in size and number with depth.

Wolftever soils are moderately well drained. They occupy low stream terraces. In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is grayish brown, and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is brownish yellow silty clay; the next 13 inches is yellowish brown silty clay that has light gray mottles; and the lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to a depth of 62 inches, is yellowish red and strong brown weathered shale.

Minor soils in this association are the Holston and Wax. Holston soils are well drained and occupy high stream terraces. Wax soils are moderately well drained and occupy drainageways.

This association is used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops, and tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion on Etowah soils, and controlling flooding on Wolftever soils. Most streams in this association are free flowing, but some are clogged with debris. Most of this association has slight limitations for most nonfarm uses, but because of flooding, the Wolftever soils have severe limitations.

5. Madison-Grover association

Well drained, gently sloping and sloping soils on uplands of the Piedmont Plateau

This association consists of gently sloping ridgetops and the sloping sides of ridges. Areas of this association are in the southern part of Polk County.

This association makes up about 3 percent of Polk County. Madison soils make up about 54 percent of this association; Grover soils, about 23 percent; and minor soils, about 23 percent.

In a representative profile Madison soils have a yellowish red gravelly clay loam surface layer about 6 inches thick. The subsoil is about 24 inches thick. It is red clay in the upper 18 inches, and red clay loam in the lower 6 inches. The underlying material, to a depth of 60 inches, is partially weathered multi-colored schist, but it is predominantly pale red.

In a representative profile Grover soils have surface and subsurface layers that are gravelly fine sandy loam The surface layer is 4 inches thick and is grayish brown and the subsurface layer is yellowish brown and is also 4 inches thick. The subsoil is 24 inches thick. In sequence from the top, the upper 5 inches is strong brown clay loam that has a few very fine flakes of mica; the next 16 inches is yellowish red clay loam that has a few flakes of mica and a few brownish yellow and red mottles; and the lower 3 inches is strong brown clay loam that has a few brownish yellow mottles and a few flakes of mica. The underlying material, to a depth of 60 inches, is highly weathered yellowish red and brownish yellow micaceous schist.

Minor soils in this association are the Conasauga and Townley. These soils occupy uplands. Conasauga soils are moderately well drained, and Townley soils are well drained.

The soils in this association are used for woodland, pasture, and cultivated crops. Some of this association is used for the production of pulpwood and lumber. Tall fescue and ladino clover are grown for permanent pasture. Corn and soybeans are the main cultivated crops. Beef cattle is the main livestock enterprise. The main concern of management is controlling of erosion. The major soils in this association have slight or moderate limitations for most nonfarm uses.

6. Fullerton-Shack-Decatur association

Well drained or moderately well drained, gently sloping or sloping cherty soils on uplands and mountains

This association consists of long, broad, gently sloping or sloping ridgetops and the sloping sides of uplands and mountains. Areas of this association are throughout Polk County.

This association makes up about 20 percent of Polk County. Fullerton soils make up about 35 percent of this association; Shack soils, about 20 percent; Decatur soils, about 17 percent; and minor soils, about 28 percent.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty

silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Shack soils are moderately well drained. They are on mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown part. Beneath this is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown part. The next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; the 12 inches below is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Decatur soils are well drained. They occupy uplands. In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay and about 5 percent iron concretions; the next 13 inches is dusky red clay that is 40 percent iron concretions; and the lower 33 inches is dusky red clay that is 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam.

Minor soils in this association are the Aragon, Dewey, and Townley. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for cultivated crops, pasture, and woodland. Cotton, corn, and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. This association has moderate limitations for most nonfarm uses.

7. Cunningham-Townley-Conasauga association

Well drained or moderately well drained, gently sloping or sloping shaly soils on uplands

This association occupies broad, gently sloping ridgetops and long sloping sides. Areas of this association are throughout Polk County.

This association makes up about 4 percent of Polk County. Cunningham soils make up about 34 percent of this association; Townley soils, 32 percent; Conasauga soils, about 13 percent; and minor soils, about 21 percent.

Cunningham soils are well drained. In a representative profile the surface layer is brown loam about 5 inches thick. The subsoil is 31 inches thick. In sequence from the top, the upper 12 inches is yellowish red clay; the next 13 inches is yellowish red clay loam that has dark red and strong brown mottles and a few shale fragments; and the lower 6 inches is mottled yellowish red, dark red, and strong brown clay loam that has common shale fragments and gravel. The underlying material, to a depth of 60 inches, is olive brown weathered shale.

Townley soils are well drained. In a representative profile the surface layer is yellowish brown silt loam about 5 inches thick. The subsoil is about 15 inches thick. In sequence from the top, the upper 8 inches is yellowish red silty clay that has strong brown mottles, and dark red and yellowish brown shale fragments; and the lower 7 inches is yellowish red, strong brown, and yellowish brown shaly clay that has about 25 percent red, light yellowish brown, and yellowish brown shale fragments. The underlying material, to a depth of 60 inches, is weak red and black shale.

Conasauga soils are moderately well drained. In a representative profile the surface and subsurface layers are silt loam about 5 inches thick. They are dark gray in the upper 1 inch, and light yellowish brown in the lower 4 inches. The subsoil is 30 inches thick. In sequence from the top, the upper 5 inches is olive yellow silty clay loam that has pale yellow mottles; the next 5 inches is yellowish brown silty clay that has light yellowish brown mottles; the next 13 inches is yellowish brown clay that has light yellowish brown mottles; and the lower 7 inches is yellowish brown and strong brown clay that has light greenish gray mottles and common shale fragments. The underlying material, to a depth of 46 inches, is olive, light gray, and black weathered shale with pockets of olive brown clay.

Minor soils in this association are the Dewey, Lyerly, and Montevallo. Dewey soils are well drained and occupy ridgetops and side slopes. Lyerly soils are well drained and moderately well drained and occupy broad, gently sloping ridgetops. Montevallo soils are well drained and occupy low hills and long sides of ridges.

The soils in this association are used for cultivated crops, pasture, and woodland. Corn and soybeans are the main cultivated crops. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of slope, slow permeability, and shallowness to bedrock, this association has moderate or severe limitations for most nonfarm uses.

Moderately steep, steep or very steep soils on uplands or mountains

Three associations in Polk County consist of moderately steep to very steep soils on uplands, or mountains. Slopes range from 10 to 60 percent. These soils are moderately well drained to excessively drained.

8. Tallapoosa-Madison association

Well drained, moderately steep to very steep soils of the Piedmont Plateau

This association consists of short side slopes on uplands. Areas of this association are in the southern and eastern parts of Polk County.

This association makes up about 17 percent of Polk County. Tallapoosa soils make up about 69 percent of this association; Madison soils, about 16 percent; and minor soils, about 15 percent.

In a representative profile Tallapoosa soils have 2 inches of decomposing pine needles and hardwood leaves over the mineral surface layer. The mineral surface layer is brown gravelly fine sandy loam about 4 inches thick. The subsoil is strong brown silty clay loam about 6 inches thick. The underlying material, to a depth of 40 inches, is strong brown channery silty clay loam between fragments of schist.

In a representative profile Madison soils have a yellowish red gravelly clay loam surface layer about 6 inches thick. The subsoil is about 24 inches thick. It is red clay in the upper 18 inches, and red clay loam in the lower 6 inches. The underlying material, to a depth of 60 inches, is partially weathered multi-colored schist, but it is predominantly pale red.

Minor soils in this association are Grover, Montevallo, and Townley. They are well drained. They occupy uplands.

The soils in this association are used for pasture and woodland. Tall fescue and ladino clover are grown for permanent pasture. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of the steepness of the slopes, the soils in this association have severe limitations for most nonfarm uses.

9. Fullerton-Shack-Decatur association

Well drained or moderately well drained, moderately steep to very steep cherty soils on uplands and mountains

This association consists of upland and mountain side slopes and ridges. Areas of this association are throughout Polk County.

This association makes up about 23 percent of Polk County. Fullerton soils make up about 44 percent of this association; Shack soils, about 30 percent; Decatur soils, about 9 percent; and minor soils, about 17 percent.

Fullerton soils are well drained. They occupy uplands. In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches and strong brown cherty silt loam in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish cherty silty clay loam; the next 40 inches is red cherty silt clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles.

Shack soils are moderately well drained. They are on mountains and uplands. In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown part. Beneath this is 8 inches of mottled strong brown, red, and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown part. The next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; and the 12 inches below is strong brown cherty clay that has red, light gray, and light yellowish brown mottles.

Decatur soils are well drained. They occupy uplands. In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay that is about 5 percent iron concretions; the next 13 inches is dusky red clay that is 40 percent iron concretions; and the lower 33 inches is dusky red clay that is 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam.

Minor soils in this association are Aragon, Bodine, and Dewey. These soils are well drained. They occupy upland ridgetops and side slopes.

The soils in this association are used for pasture and woodland. Tall fescue and ladino clover are grown for permanent pasture on the lower slopes. Some of this association is used for the production of pulpwood and lumber. Beef cattle is the main livestock enterprise. The main concern of management is controlling erosion. Because of the steepness of slope, this association has moderate or severe limitations for most nonfarm uses.

10. Montevallo-Bodine-Nella association

Well drained or somewhat excessively drained, moderately steep to very steep soils on mountains and upland ridges

This association consists of long side slopes of the mountain and upland ridges. Areas of this association are throughout Polk County.

This association makes up about 11 percent of Polk County. Montevallo soils make up about 60 percent of this association; Bodine soils, about 15 percent; Nella soils, about 9 percent; and minor soils, about 16 percent.

Montevallo soils are well drained. In a representative profile the surface layer is very shaly silt loam 4 inches thick. The upper 1 inch is dark grayish brown, and the lower 3 inches is dark brown. The subsoil is yellowish brown shaly silt loam about 10 inches thick. The underlying material, to a depth of 48 inches, is gray, brown, olive, and olive gray weathered shale.

Bodine soils are somewhat excessively drained. In a representative profile the surface and subsurface layers

are about 6 inches thick. They are very dark grayish brown very stony silt loam in the upper 2 inches and pale olive stony silt loam in the lower 4 inches. The subsoil is more than 54 inches thick. In sequence from the top, the upper 12 inches is light yellowish brown stony silt loam; the next 8 inches is light yellowish brown stony clay loam; and the lower 34 inches is mottled yellowish red and brownish yellow stony silty clay loam.

Nella soils are well drained. In a representative profile the surface and subsurface layers are cobbly loam about 3 inches thick. They are dark grayish brown in the upper 1 inch and brown in the lower 2 inches. The subsoil is more than 59 inches thick. In sequence from the top, the upper 5 inches is reddish brown cobbly clay loam; the next 16 inches is yellowish red cobbly clay loam; the next 20 inches is red gravelly clay loam; and the lower 18 inches is yellowish red gravelly clay loam that has red and brown mottles.

Minor soils in this association are Allen, Shack, and Townley. Allen soils are well drained and occupy the lower foot slopes of the upland ridges. Shack soils are moderately well drained and occupy mountainsides and sides of uplands. Townley soils are well drained and occupy low hills and ridges.

Most of this association is used for the production of pulpwood and lumber. Tall fescue and ladino clover are grown in a few areas for permanent pasture. Beef cattle is the main livestock enterprise. The main concerns of management are steepness of slopes and stones and cobbles on the surface of the soils. Because of stones and cobbles and steepness of slopes, this association has severe limitations for most nonfarm uses.

Soil maps for detailed planning

This section describes the soil series and mapping units in Chattooga, Floyd, and Polk Counties. Each soil series is described in detail, and then, briefly, each mapping unit in that series. 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 decription 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 describing the mapping unit, or they are differences that are apparent in the name of the mapping unit.

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil. In each description, the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have a similar profile make up a *soil series.* Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Decatur loam, 2 to 6 percent slopes, is one of several phases within the Decatur series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes, soil associations, and undifferentiated groups.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Etowah-Urban land complex is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Nella-Townley association, steep, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because there is little value in separating them.

The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. Guthrie Variant soils are an undifferentiated group in this survey area.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Mine pits is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

The acreage and proportionate extent of each map unit are given in table 1, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary. More detailed information about terminology and methods of soil mapping can be obtained from the "Soil Survey Manual" (*7*).

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those of the soil maps in nearby counties published at different dates. Differences result because of a better knowledge of soils, modifications in the series concepts, intensity of mapping, and the extent of soils in the survey area.

Allen series

The Allen series consists of deep, well drained, gently sloping to steep soils. These soils occupy foot slopes, low hills and ridges adjacent to mountains. They formed in colluvial material weathered from sandstone, shale, and in places from cherty limestone. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is about 8 inches thick. It is dark yellowish brown fine sandy loam that is about 10 percent sandstone gravel. The subsoil is more than 62 inches thick. In sequence from the top, the upper 10 inches is yellowish red sandy clay loam that is about 5 percent sandstone gravel; the next 34 inches is red sandy clay loam that has strong brown mottles and is about 5 percent sandstone gravel; the lower 18 inches is red clay loam that has strong brown and reddish yellow mottles, and is about 5 percent sandstone gravel and about 10 percent stones. The depth to shale and sandstone bedrock is more than 70 inches.

The Allen soils have moderate natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderate. Tilth is good, and the effective rooting zone is thick. These soils are strongly acid or very strongly acid throughout.

These soils are suited to the commonly cultivated crops if they are protected from erosion. Most slopes that are less than 10 percent have been cleared and are cultivated. Some slopes have reverted to pine trees. Allen soils are suited to permanent pasture and woodland production.

Representative profile of Allen fine sandy loam, 6 to 10 percent slopes, in Chattooga County, 2 miles west of Crystal Springs and .25 mile north of dirt road intersection, east side of dirt road:

Ap—0 to 8 inches, dark yellowish brown (10YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; few fine roots; few wormholes, pores, and wormcasts; 10 percent sandstone gravel; strongly acid; abrupt, smooth boundary.

B1—8 to 18 inches, yellowish red (5YR 5/6) sandy clay loam; weak, fine, subangular blocky structure; friable; few fine roots and pores; 5 percent sandstone gravel; very strongly acid; gradual, wavy boundary.

B21t—18 to 52 inches, red (2.5YR 4/6) sandy clay loam; common, fine, distinct, strong brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; few fine roots and pores; 5 percent sandstone gravel; very strongly acid; gradual, wavy boundary.

B22t—52 to 70 inches, red (2.5YR 4/6) clay loam; many, medium, distinct, strong brown (7.5YR 5/8) and reddish yellow (7.5YR 6/8) mottles; moderate, medium, subangular blocky structure; friable; 5 percent sandstone gravel, about 10 percent stones; very strongly acid.

The A horizon ranges from 6 to 12 inches in thickness. The Ap horizon is yellowish brown, dark yellowish brown, or brown. The A1 horizon, if present, is very dark grayish brown, dark grayish brown, or dark brown. The B horizon ranges from 54 to 80 inches in thickness. The Bt horizon is red or yellowish red clay loam or sandy clay loam. The solum ranges from 60 to 80 inches or more in thickness.

Allen soils are associated in the landscape with Hartsells, Hector, and Holston soils. They have a thicker solum than Hartsells and Hector soils, and they have fewer stones and contain less gravel than the Heetor soils. Allen soils have a redder subsoil than the Hartsells and Holston soils.

AaB—Allen fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies narrow foot slopes parallel to mountains, low hills, and ridges. Mapped areas range from 10 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is 2 to 4 inches thicker. The plow layer is within the original surface layer throughout most of the mapped areas.

Included with this soil in mapping are a few small areas where the soil has more than 15 percent gravel throughout and a few small areas where the surface layer is sandy clay loam. Also included are a few small areas where the combined surface layer and subsoil are less than 60 inches thick.

This Allen soil has a slight or moderate hazard of erosion if it is cultivated or left bare and is not protected. It is better suited to most locally grown, cultivated crops. This soil responds well to proper management practices if fertilizer is applied according to results of soil tests. The

most commonly grown crops are corn, cotton, and soybeans. This soil has slight limitations for most nonfarm uses. Capability unit IIe-3.

AaC—Allen fine sandy loam, 6 to 10 percent slopes. This sloping soil occupies small to large areas on narrow foot slopes and broad ridgetops. Mapped areas range from 10 to 50 acres in size. This soil has the profile described as representative for the Allen series.

Included with this soil in mapping are a few small areas where the soil is more than 15 percent gravel throughout and a few small eroded areas where the surface layer is sandy clay loam. Also included are small areas of Fullerton, Holston, and Tidings soils that are similar to Allen soils in use and management.

This sloping Allen soil has a slight or moderate hazard of erosion if it is cultivated and is not protected. It is easy to work throughout a wide range of moisture conditions. This soil is suited to most locally grown crops and pasture plants. It responds to proper management practices if fertilizer is applied according to results of soil tests. The most commonly grown crops are cotton, corn, and soybeans. This soil has moderate limitations for most nonfarm uses. Capability unit IIIe-3.

AaD—Allen fine sandy loam, 10 to 15 percent slopes. This moderately steep soil occupies narrow foot slopes parallel to mountains. Mapped areas range from 10 to 40 acres in size. The profile of this soil is similar to that described as representative for the series, but it is moderately steep and has a brown surface layer.

Included with this soil in mapping are few small areas where the soil is more than 10 percent gravel or stone and has a combined surface layer and subsoil less than 60 inches thick. Also included are small areas of Fullerton, Holston, and Tidings soils that are similar to Allen soils in use and management. Rills and gullies are in a few places and are included.

This Allen soil has a moderate erosion hazard if it is cultivated and is not protected. It has good tilth that can be maintained with proper management practices. This soil is poorly suited to frequent cultivation, but it responds to proper management and is suited to some locally grown crops. It is better suited to pasture than to cultivated crops. Limitations for most nonfarm uses are moderate. Capability unit IVe-1.

AaE—Allen fine sandy loam, 15 to 25 percent slopes. This steep soil occupies short side slopes or narrow foot slopes at the base of mountains, hills, and ridges. Mapped areas range from 20 to 50 acres in size. The profile of this soil is similar to that described as representative for the series, but it has a thinner surface layer.

Included with this soil in mapping are few small areas where the soil is more than 15 percent gravel or stone fragments. Also included are small areas of Fullerton, Holston, and Tidings soils that are similar to Allen soils in use and management. Rills and gullies are in a few places and are included.

This Allen soil has a severe erosion hazard if it is unprotected. It is suited to woodland and can be used for pasture if proper management is practiced. This soil has severe limitations for most nonfarm uses. Capability unit VIe-1.

Aragon series

The Aragon series consists of well drained, gently sloping to steep soils. These soils occupy the tops and sides of ridges and are on hillsides. They formed in material weathered from cherty limestone, interbedded sandstone, siltstone, and shale. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is dark grayish brown fine sandy loam that is about 13 percent gravel and is 6 inches thick. The subsoil is 46 inches thick. In sequence from the top, the upper 9 inches is brownish yellow loam that is about 8 percent gravel; the next 17 inches is yellowish red clay that has yellowish brown and strong brown mottles, and is about 3 percent gravel; the next 10 inches is mottled red, yellowish red, strong brown, and yellowish brown clay, and is about 3 percent fragments of chert; and the lower 10 inches is mottled red, yellowish brown, and strong brown clay, and is about 2 percent fragments of chert. The underlying layer is 13 inches thick and is mottled red, yellowish red, gray, and strong brown weathered sandstone, siltstone, and cherty limestone. The depth to hard rock is more than 5 feet, but in places boulders are at a depth of less than 5 feet.

The Aragon soils have low natural fertility and organic matter content. The available water capacity is medium, and the permeability is slow. Tilth is good in most places, and the effective rooting zone is thick. These soils are strongly acid to extremely acid throughout.

Most areas were cleared for cultivated crops or pasture, but a majority of these soils have reverted to pine trees. The gently sloping and sloping soils are well suited to most locally grown cultivated crops. Aragon soils are suited to permanent pasture and woodland production.

Representative profile of Aragon fine sandy loam, 2 to 6 percent slopes, in Polk County, about 2.9 miles west of Rockmart, Georgia, 1/4 mile south of U. S. Highway 278, and 50 feet west of dirt road:

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; 13 percent gravel; strongly acid; abrupt, wavy boundary.

B1—6 to 15 inches, brownish yellow (10YR 6/6) loam; moderate, medium, angular and subangular blocky structure; friable; common fine roots; 8 percent gravel; common, medium pores; splotches of strong brown and yellowish red; strongly acid; clear, wavy boundary.

B21t—15 to 32 inches, yellowish red (5YR 5/6) clay; many, medium, distinct, yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate, medium, angular and subangular blocky structure; firm; 3 percent gravel; continuous clay films on ped surfaces; few fine pores; few fine roots; very strongly acid; gradual, wavy boundary.

B22t—32 to 42 inches, mottled red (2.5YR 4/6), yellowish red (5YR 5/6), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/6) clay; moderate, medium, subangular and angular blocky structure; firm; 3 percent fragments of chert; thin continuous clay films on faces of peds; very strongly acid; clear, wavy boundary.

B3—42 to 52 inches, mottled red (2.5YR 4/6), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) clay; weak, medium, angular and subangular blocky structure; firm; white sandy clay loam, weathered sandstone, and chert; 2 percent fragments of chert; thin continuous clay films on faces of peds; very strongly acid; gradual, wavy boundary.

C—52 to 65 inches, mottled red (2.5YR 4/6), yellowish red (5YR 5/6), gray (N 5/), and strong brown (7.5YR 5/6) weathered sandstone, siltstone, and cherty limestone; sandy clay loam when crushed; massive; firm in place; yellowish red clay coatings along cleavage planes; very strongly acid.

The A horizon ranges from 5 to 8 inches in thickness. The A1 horizon, if present, is dark grayish brown, brown, grayish brown, yellowish brown, light olive brown, or light yellowish brown. The B horizon ranges from 20 to 55 inches in thickness. The Bt horizon is red, yellowish red, strong brown, and in places yellowish brown and has common to many brownish, yellowish, or reddish mottles. Depth to weathered sandstone, siltstone, shale, and cherty limestone is 40 inches or more. The solum ranges from 40 to more than 60 inches in thickness.

Aragon soils are associated in the landscape with Bodine, Fullerton, and Shack soils. They have a thinner solum and fewer coarse fragments than these associated soils. Aragon soils have a redder subsoil and contain more clay than Bodine and Shack soils.

ArB—Aragon fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies broad ridgetops. The mapped areas range from 5 to 60 acres in size. This soil has the profile described as representative for the Aragon series.

Included with this soil in mapping are small areas of soils that contain more chert than Aragon soils and are more difficult to till. Included in a few places are soils that are less than 40 inches to sandstone, siltstone, and cherty limestone and soils that have a surface layer 6 to 12 inches thick. Also included are small areas of Bodine, Fullerton, and Shack soils.

The hazard of erosion is moderate if this Aragon soil is cultivated and is unprotected. This soil is suited to a wide range of locally grown crops. It responds to proper management practices if fertilizer is applied according to results of soil tests. Most of this soil is used for woodland; the rest is idle, cultivated, in pasture, or used for nonfarm purposes. Limitations are moderate for most nonfarm uses. Capability unit IIe-6.

ArC—Aragon fine sandy loam, 6 to 10 percent slopes. This sloping soil occupies broad ridgetops and long, sloping hillsides. Mapped areas range from 5 to 50 acres in size. The profile of this soil is similar to that described as representative for the Aragon series, but it has a grayish brown surface layer.

Included with this soil in mapping are several small areas of soil that contain more chert than Aragon soils and are more difficult to till. Included in a few places are soils that are less than 40 inches to sandstone, siltstone, and cherty limestone. In places, soils that have a surface layer 6 to 12 inches thick are included; in other places, the surface layer is eroded and the plow layer extends into the subsoil. Also included are small areas of Fullerton, Bodine, and Shack soils.

This Aragon soil has a moderate hazard of erosion if it is cultivated and is not protected. It is suited to a wide range of locally grown crops, and it responds to proper management practices if fertilizer is applied according to results of soil tests. This soil is used mainly for woodland. The rest is idle, cultivated, in pasture, or used for nonfarm purposes. Limitations are moderate or severe for most nonfarm uses. Capability unit IIIe-4.

ArD—Aragon fine sandy loam, 10 to 15 percent slopes. This moderately steep soil occupies short sides of ridges. Mapped areas range from 5 to 40 acres in size. The profile of this soil is similar to that described as representative for the Aragon series, but the surface layer is brown to yellowish brown and is about 5 inches thick.

Included with this soil in mapping are a few small areas where the soils contain more chert than Aragon soils and are more difficult to till. Also included are a few, small eroded areas where the surface layer is silty clay loam; a few areas where the surface layer is sandy loam; and a few, small galled spots that have poor tilth. Small areas of Dewey, Fullerton, and Shack soils are also included.

This Aragon soil has a severe hazard of erosion if it is cultivated and is unprotected. It is poorly suited to frequent cultivation, but it can be cropped occasionally if properly managed. Most of this soil is used for woodland, but some is used for pasture, cultivated crops, or nonfarm purposes. Limitations are moderate to severe for most nonfarm uses. Capability unit IVe-5.

ArE—Aragon fine sandy loam, 15 to 25 percent slopes. This steep soil occupies short sides of ridges. Mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the Aragon series, but the surface layer is dark brown or yellowish brown.

Included with this soil in mapping are a few small areas where soils are more than 15 percent chert throughout, and some eroded spots where the surface layer is yellowish red silty clay loam. Also included are small areas of Dewey, Fullerton, and Shack soils that are similar to Aragon soil in use and management.

The Aragon soil has a severe hazard of erosion if improperly managed. Because of the severe erosion hazard and steep slopes, this soil is suited mostly to woodland and pasture. Limitations are severe for most nonfarm uses. Capability unit VIe-3.

Bodine series

The Bodine series consists of deep, well drained to excessively drained, moderately steep to steep soils. These soils occupy ridges and mountain side slopes. They formed in residuum weathered from cherty limestone. Slopes range from 10 to 60 percent.

In a representative profile the surface and subsurface layers are about 6 inches thick. The surface layer is very dark grayish brown very stony silt loam about 2 inches thick, and the subsurface layer is pale olive very stony silt loam and is 4 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 12 inches is light yellowish brown stony silt loam, the next 8

inches is light yellowish brown stony clay loam, and the lower 34 inches is mottled yellowish red and brownish yellow stony silty clay loam. The depth to hard rock is 5 to 30 feet or more.

The Bodine soils are low in natural fertility and content of organic matter. The available water capacity is low and permeability is rapid. Tilth is poor, and the effective rooting zone is deep. These soils are strongly acid or very strongly acid throughout.

Because most Bodine soils are steep and their surface layer is very stony, they are better suited to woodland or pasture than to cultivated crops. Some of these soils have been cleared and are used for pasture. Most areas are wooded in pine trees or mixed hardwood and pine trees.

Representative profile of Bodine very stony silt loam, 10 to 25 percent slopes, in Floyd County, 1.15 miles south of intersection of Central of Georgia Railroad and Reeceburg Road, then 0.15 mile east of Central of Georgia Railroad on new road bank:

A1—0 to 2 inches, very dark grayish brown (10YR 3/2) very stony silt loam; weak, very fine, granular structure; very friable; many fine roots; 68 percent by volume gravel, 10 percent cobbles, 20 percent stones; strongly acid; clear, wavy boundary.

A2—2 to 6 inches, pale olive (5Y 6/3) very stony silt loam; weak, fine, granular structure; very friable; many, medium roots; some mixing with above layer; 27 percent by volume gravel, 10 percent cobbles, 10 percent stones; strongly acid; gradual, wavy boundary.

B1—6 to 18 inches, light yellowish brown (10YR 6/4) stony silt loam; weak, medium, subangular blocky structure; friable; root holes filled with soil material from A horizon; 45 percent by volume chert, 20 percent cobbles, 15 percent stones; very strongly acid; gradual, irregular boundary.

B21t—18 to 26 inches, light yellowish brown (10YR 6/4) stony clay loam; moderate, medium, subangular blocky structure; friable; 40 percent by volume gravel, 25 percent cobbles, 20 percent stones; strongly acid; gradual, wavy boundary.

B22t—26 to 60 inches, mottled yellowish red (5YR 5/8) and brownish yellow (10YR 6/6) stony silty clay loam; moderate, medium, subangular blocky structure; friable; 56 percent by volume gravel, 10 percent cobbles, 20 percent stones; strongly acid.

The A horizon ranges from 5 to 17 inches in thickness. The A1 horizon is very dark grayish brown or grayish brown. The A2 horizon is pale olive, grayish brown, or light yellowish brown. The B horizon ranges from 54 to 80 inches in thickness. The Bt horizon is light yellowish brown, yellowish red, or brownish yellow stony clay loam or stony silty clay loam. The solum ranges from 60 to 80 inches or more in thickness.

The Bodine soils are associated in the landscape with Aragon, Fullerton, and Shack soils. They contain more coarse fragments than the Aragon, Fullerton, and Shack soils, and have a thicker solum than Aragon soils. Bodine soils contain less clay and are less red in the subsoil than Fullerton soils.

BsE—Bodine very stony silt loam, 10 to 25 percent slopes. This moderately steep to steep, very stony soil occupies narrow ridgetops and the upper sides of ridges. Mapped areas range from 10 to 150 acres in size. This soil has the profile described as representative for the Bodine series.

Included with this soil in mapping are small areas where the soil is less than 15 percent chert and stones on the surface and throughout. Also included are small areas of Fullerton and Shack soils that have less chert on the surface and throughout the soil than the Bodine soils. A few small areas that have large boulders on the surface and in the soil are included (fig. 1).

This Bodine soil has only a slight erosion hazard if left in woodland. Because this soil is moderately steep to steep and is very stony, it is not suited to cultivated crops. A few small areas are in pasture. It has severe limitations for most nonfarm uses. Capability unit VIIs-1.

BsF—Bodine very stony silt loam, 25 to 60 percent slopes. In most places this very steep and very stony soil occupies cherty limestone ridges and mountainside slopes. Mapped areas range from 20 to 200 acres in size. The profile of this soil is similar to that described as representative for the series, but it is steeper and the surface layer is thinner and has more stones.

Included with this soil in mapping are a few small areas where the soil is less than 35 percent chert and stones on the surface and throughout. Also included are small areas of Fullerton and Shack soils.

This Bodine soil has only a slight erosion hazard because of the high content of chert and stones on the surface and the rapid permeability. It is better suited to woodland; but, because of the stony surface layer and very steep slopes, the use of planting equipment is difficult. Because of the very steep slopes and the very stony surface layer, this soil is not suited to cultivated crops. It has severe limitation for most nonfarm uses. Capability unit VIIs-1.

Cedarbluff series

The Cedarbluff series consists of somewhat poorly drained, nearly level soils. These soils occupy low stream terraces and upland depressions. They formed in thick beds of old alluvium. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is more than 54 inches thick. In sequence from the top, the upper 4 inches is light yellowish brown silty clay loam that has yellowish brown mottles; the next 13 inches is light yellowish brown clay loam that has yellowish brown mottles; the next 10 inches is yellowish brown clay loam that has light olive gray mottles; the 18 inches below is yellowish brown clay loam that has light gray and strong brown mottles; and the lower 9 inches is yellowish brown clay that has gray and strong brown mottles. Depth to hard rock is more than 6 feet.

The Cedarbluff soils are low in natural fertility and moderate in organic matter content. Available water capacity is medium, and permeability is moderate in the upper part of the soil and slow in the lower part. Tilth is fair, and the rooting zone is moderately thick. These soils are medium acid or strongly acid in the A horizon unless lime has been applied.

These soils are suited to pasture and woodland. Soybeans and corn are grown in a few places. Most of the large areas are in hardwood forest.

Representative profile of Cedarbluff silt loam, in Floyd County, 1.1 miles north of Berry College main entrance

on U. S. Highway 27, 0.6 mile northeast on the old road to Dalton, 2.0 miles east on Jones Bend Road:

Ap—0 to 8 inches, grayish brown (2.5Y 5/2) silt loam; moderate, medium, granular structure; very friable; many fine roots; slightly acid; clear, smooth boundary.

B1—8 to 12 inches, light yellowish brown (2.5Y 6/4) silty clay loam; few, fine, distinct, yellowish brown (10YR 5/4) mottles; weak, medium, subangular blocky structure; many fine pores; few, fine, flakes of mica; many fine roots; strongly acid; gradual, wavy boundary.

B21t—12 to 25 inches, light yellowish brown (2.5Y 6/4) clay loam; many, medium, distinct, yellowish brown (10YR 5/4) mottles; weak, medium, subangular blocky structure; friable; few patchy clay films on surfaces of peds; many fine pores; few, fine, flakes of mica, common fine roots; strongly acid; gradual, wavy boundary.

B22t—25 to 35 inches, yellowish brown (10YR 5/4) clay loam; common, medium, prominent, light olive gray (5Y 6/2) mottles; moderate, medium, subangular and angular blocky structure; friable; firm; few patchy clay films on surface of peds; many fine pores, few, fine, flakes of mica; brittle polygons 1 to 4 inches across make up about 45 percent of horizontal area, friable gray seams are common; common, fine, gray (5Y 6/1) mottles in brittle polygons; few fine roots; strongly acid; gradual, wavy boundary.

B23t—35 to 53 inches, yellowish brown (10YR 5/4) clay loam; common, medium, prominent, light gray (5Y 7/1) and few, common, distinct, strong brown (7.5YR 5/4) mottles; moderate, coarse, angular blocky structure; firm; few thin patchy clay films on surfaces of peds; few fine pores; few, fine, flakes of mica; strongly acid; gradual, smooth boundary.

B24t—53 to 62 inches, yellowish brown (10YR 5/6) clay; common, coarse and medium, prominent gray (N 6/), and common, medium, faint, strong brown mottles; moderate, medium, angular blocky structure; firm; thick patchy grayish brown (2.5Y 5/2) clay films in voids and on surfaces of peds; common fine pores; common flakes of mica; strongly acid.

The A horizon ranges from 4 to 12 inches in thickness. The Ap horizon is grayish brown, brown, or dark yellowish brown. The A1 horizon, if present, is brown or dark grayish brown. The B horizon ranges from 53 to more than 60 inches in thickness. The Bt horizon is light yellowish brown or yellowish brown. Concretions make up from 0 to 5 percent of the subsoil. The solum ranges from 60 to 80 inches or more in thickness.

Cedarbluff soils are associated in the landscape with Etowah, Roanoke, and Wax soils. They are not so red or well drained as the Etowah soils, and they are not so gray or clayey as the Roanoke soils. The Cedarbluff soils are more poorly drained than the Wax soils.

Cb—Cedarbluff silt loam. This nearly level soil occupies narrow, irregularly shaped low stream terraces and upland depressions. The mapped areas range from 5 to 40 acres in size.

Included with this soil in mapping are a few small areas of soil that are better drained than Cedarbluff soils. These soils are less than 60 inches thick and have slopes of more than 2 percent. Also included are soils that are less acid in the lower part of the subsoil than is common for the Cedarbluff soils.

Because of frequent flooding, Cedarbluff soils are not well suited to most cultivated crops. Most of the soils are used for pasture and woodland. They have severe limitation for most nonfarm uses. Capability unit IIIw-2.

Chewacla series

The Chewacla series consists of deep, nearly level, somewhat poorly drained soils on flood plains. These soils formed in alluvium from limestone, cherty limestone, sandstone, shale, or siltstone. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark brown silt loam about 9 inches thick. The subsoil is about 41 inches thick. In sequence from the top, the upper 7 inches is dark yellowish brown silt loam that has yellowish brown mottles. The next 14 inches is yellowish brown silt loam that has greenish gray and dark grayish brown mottles. The lower 20 inches is yellowish brown loam that has light olive gray mottles. The underlying material, to a depth of 62 inches, is light olive brown sandy loam. The depth to bedrock ranges from 5 to 6 feet or more.

The Chewacla soils are moderate in natural fertility and content of organic matter. The available water capacity is high and permeability is moderate. The effective rooting zone is thick and the tilth is good in most places. The soil is medium acid or slightly acid throughout except that part where lime has been applied.

Chewacla soils are suited to most commonly grown pasture and hay crops. Most of the soil is used for woodland or is idle, and the rest is cultivated or is used for pasture.

Representative profile of Chewacla silt loam, in Polk County, 0.4 mile north of Rockmart Hospital, 0.4 mile west of by-pass intersection with Georgia Highway 101, 100 yards south of paved road:

Ap—0 to 9 inches, dark brown (10YR 3/3) silt loam; weak, fine, granular structure; friable; few fine grass roots; few small wormholes; many very fine flakes of mica; few pores; medium acid; clear, smooth boundary.

B1—9 to 16 inches, dark yellowish brown (10YR 4/4) silt loam; few, fine, faint, yellowish brown mottles; weak, fine, subangular blocky structure; friable; few fine pores; few, fine grass roots; few small voids; few small wormholes; many fine flakes of mica; medium acid; gradual, smooth boundary.

B2—16 to 30 inches, yellowish brown (10YR 5/4) silt loam; common, medium, prominent, greenish gray (5G 6/1) and dark grayish brown mottles; weak, fine, subangular blocky structure; many fine flakes of mica; many fine pores; medium acid; gradual, wavy boundary.

B3—30 to 50 inches, yellowish brown (10YR 5/4) loam; few, medium, prominent, light olive gray (5Y 6/2) mottles; weak, fine, granular structure; very friable; thin bedding planes of sand and silt; many fine flakes of mica; slightly acid; gradual, wavy boundary.

C—50 to 62 inches, light olive brown (2.5Y 5/4) sandy loam; massive; loose; many fine flakes of mica; slightly acid.

The A horizon ranges from 2 to 17 inches in thickness. The Ap horizon is dark grayish brown or dark brown. The B horizon ranges from 30 to 65 inches in thickness. The B2 horizon is yellowish brown or light yellowish brown silt loam or loam. Grayish mottles are commonly at about 16 inches, but range from 12 to 20 inches. The underlying material is sandy loam or loam. In a few places, gravel layers are at depths of 3 to 5 feet. The solum thickness ranges from 36 to 72 inches in thickness.

Chewacla soils are associated in the landscape with Roanoke and Toccoa soils. They are better drained than Roanoke soils and have a less clayey subsoil. Chewacla soils are not so well drained as Toccoa soils and have less stratification.

Ck—Chewacla silt loam. This nearly level soil occupies long, narrow, bottom lands along the major streams. The mapped areas range from 5 to 75 acres in size.

Included with this soil in mapping are a few small areas where the surface layer has more clay and more sand than is representative for Chewacla soils. In some small areas, soils that have a seasonal water table below a depth of 24 inches are included. Also included are soils that have a seasonal water table near the surface of the soil.

This Chewacla soil is subject to flooding once or twice each year except for areas near the Etowah River in Floyd County. Chewacla soils near the Etowah River are protected from flooding by the Allatoona Dam in Bartow County, but these soils do occasionally flood.

This soil is used mostly for mixed hardwood forest, but it is well suited to pasture. Cultivated crops are suited to those areas protected from flooding. Because of flooding, limitations are severe for most nonfarm uses. Capability unit IIIw-1.

Conasauga series

The Conasauga series consists of moderately well drained soils. These soils occupy nearly level to sloping shaly upland ridges. They formed in residuum from shale and some interbedded limestone. Slopes range from 1 to 10 percent.

In a representative profile the surface and subsurface layers are silt loam about 5 inches thick. They are dark grayish brown in the upper 1 inch and light yellowish brown in the lower 4 inches. The subsoil is 30 inches thick. In sequence from the top, the upper 5 inches is olive yellow silty clay loam that has pale yellow mottles; the next 5 inches is yellowish brown silty clay that has light yellowish brown mottles; below this is 13 inches of yellowish brown clay that has light yellowish brown mottles; and the lower 7 inches is yellowish brown and strong brown clay that has light greenish gray mottles and common shale fragments. The underlying material, to a depth of 46 inches, is olive, light gray, and black weathered shale with pockets of olive brown clay. Depth to weathered shale rock ranges from 20 to 40 inches.

Conasauga soils have moderate natural fertility and low content of organic matter. Tilth is fair. The available water capacity is medium, and permeability is slow. These soils are strongly acid to extremely acid throughout.

Because of a clayey subsoil, Conasauga soils are unsuited to a wide range of cultivated crops and pasture grasses. A large part of this soil has reverted to pine trees.

Conasauga soils and Urban land, in some areas, lie in a regular intricate pattern and cannot be separated by boundaries at the scale used. They are mapped together as a complex. (See Conasauga-Urban land complex.)

Representative profile of Conasauga silt loam, 1 to 6 percent slopes, in Floyd County, 1.4 miles due north of Garden Lakes Baptist Church, 1.0 mile north-northeast of the center of Lake Conasauga:

A1—0 to 1 inch, dark grayish brown (2.5Y 4/2) silt loam; weak, very fine, granular structure; very friable; many fine roots; strongly acid; abrupt, wavy boundary.

A2—1 to 5 inches, light yellowish brown (10YR 6/4) silt loam; weak, very fine, granular to subangular blocky structure; very friable; many fine roots; few, fine, faint, yellowish brown mottles; few, black concretions; many very fine pores and concretions; very strongly acid; abrupt, wavy boundary.

B1—5 to 10 inches, olive yellow (2.5Y 6/6) silty clay loam; common, fine, distinct, pale yellow (2.5Y 7/4) mottles; weak, fine, subangular blocky structure; friable; many fine roots; very strongly acid; abrupt, irregular boundary.

B21t—10 to 15 inches, yellowish brown (10YR 5/6) silty clay; few, fine, distinct, light yellowish brown mottles; moderate, fine, subangular blocky structure; firm; clay films in old root channels and on some ped surfaces; many fine roots; very strongly acid; clear, wavy boundary.

B22t—15 to 28 inches, yellowish brown (10YR 5/6) clay; few, fine, distinct, light yellowish brown mottles; strong, medium, angular and subangular blocky structure; very firm; very strongly acid; clear, wavy boundary.

B23t—28 to 35 inches, yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) clay; few, medium, prominent, light greenish gray (5GY 7/1) mottles; weak, fine, subangular blocky structure; very firm; 12 percent shale fragments; very strongly acid; abrupt, wavy boundary.

C—35 to 46 inches, olive (5Y 5/6) light gray (5Y 7/1) and black (5Y 2/1) shale; massive; friable; pockets of olive brown (2.5Y 4/6) clay; many, black, small concretions; very strongly acid.

The A horizon ranges from 3 to 10 inches in thickness. The A1 horizon is very dark grayish brown or dark grayish brown. The Ap horizon, if present, is light yellowish brown or yellowish brown. The B horizon ranges from 18 to 36 inches in thickness. The Bt horizon is yellowish brown or strong brown silty clay or clay that has red, yellow, or brown mottles. The solum ranges from 20 to 40 inches in thickness.

Conasauga soils are associated in the landscape with Cunningham, Lyerly, and Townley soils. They are not so well drained and have a less red subsoil than Cunningham and Townley soils. Conasauga soils have a subsoil that has lower shrink-swell potential and is less plastic than Lyerly soils.

CnB—Conasauga silt loam, 1 to 6 percent slopes. This nearly level or gently sloping soil occupies broad ridgetops. The mapped areas range from 10 to 150 acres in size. This soil has the profile described as representative for the Conasauga series.

Included with this soil in mapping are a few small areas of eroded soils, and small areas of Cunningham, Montevallo, and Townley soils that are better drained than the Conasauga soils. The Montevallo soils are shallower to the underlying shale than the Conasauga soils.

This Conasauga soil has a moderate erosion hazard if it is cultivated and is not protected. It is not suited to a wide range of cultivated crops and pasture grasses. Limitations are moderate or severe for most nonfarm uses. Capability unit IIIe-4.

CnC—Conasauga silt loam, 6 to 10 percent slopes. This sloping soil occupies long side slopes. The mapped areas range from 10 to 100 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is light olive brown and 2 to 3 inches thinner.

Included with this soil in mapping are a few small areas of eroded soils. Also included are small areas of Cunningham, Montevallo, and Townley soils. These included soils are better drained than the Conasauga soils. The Montevallo soils are shallower to the underlying shale than the Conasauga soils.

This Conasauga soil has a severe hazard of erosion if it is cultivated and is not protected. It is not suited to a wide range of cultivated crops and pasture grasses. Most of this soil was cleared and cultivated, but has reverted to pine forest. Limitations are moderate or severe for most nonfarm uses. Capability unit VIe-3.

CrC—Conasauga-Urban land complex, 2 to 10 percent slopes. This complex is gently sloping and sloping and occupies relatively smooth ridgetops and side slopes. About 55 percent is Conasauga soils and about 45 percent is Urban land. Mapped areas are small to large. The profile of the Conasauga soil is similar to that described as representative for the series, but some areas are more sloping and the surface layer is light olive brown and 2 to 3 inches thinner. Most areas of Conasauga soils are covered with sod.

Included in mapping with the Conasauga soils are a few areas where soils are eroded and have shallow gullies and small rills. Also included are small areas of Cunningham, Etowah, Fullerton, Lyerly, and Townley soils.

The soils in the Urban land areas have been altered by grading, cutting, shaping, and smoothing for community development. Most Urban land is used for private dwellings, industrial sites, parking lots, streets, schools, and churches.

Included with this complex in mapping, in a few places, are Conasauga soils that are essentially unaltered. Limitations are moderate or severe for most nonfarm uses. Capability unit VIe-3.

Cunningham series

The Cunningham series consists of moderately deep, well drained, gently sloping to steep soils on uplands. These soils occupy ridges and low hills. They formed in material weathered from shale and limestone. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is brown loam about 5 inches thick. The subsoil is 31 inches thick. In sequence from the top, the upper 12 inches is yellowish red clay; the next 13 inches is yellowish red clay loam that has dark red and strong brown mottles and a few shale fragments; and the lower 6 inches is mottled yellowish red, dark red, and strong brown clay loam that has common shale fragments and gravel. The underlying material, to a depth of 60 inches, is olive brown weathered shale. The depth to consolidated shale ranges from 40 to 60 inches.

The Cunningham soils are low in natural fertility and content of organic matter. The available water capacity is medium, and permeability is slow. Tilth is fair, and the effective rooting zone is moderately thick. The soils are very strongly acid to extremely acid throughout, except that part where lime has been applied.

These soils are suited to most of the commonly cultivated crops if they are protected from erosion. About 60 percent of this soil is cultivated or pastured. Some is idle, and the remainder has reverted to pine trees.

Representative profile of Cunningham loam, 2 to 6 percent slopes, in Floyd County, 25 yards southwest of Cunningham Road and 0.1 mile north of Southern Railroad crossing on Cunningham Road in Vans Valley:

Ap—0 to 5 inches, brown (7.5YR 5/4) loam; weak, fine, granular structure; friable; common fine roots; few fine wormholes; very strongly acid; abrupt, smooth boundary.

B21t—5 to 17 inches, yellowish red (5YR 5/8) clay; moderate, medium, angular blocky structure; firm; few fine roots and wormholes; thin clay films on faces of some peds; very strongly acid; clear, wavy boundary.

B22t—17 to 30 inches, yellowish red (5YR 4/8) clay loam; many medium, distinct, dark red (2.5YR 3/6) and strong brown (7.5YR 5/6) mottles; moderate, medium, subangular and angular blocky structure; firm; few fine roots and wormholes; thin clay films on faces of peds; few shale fragments; very strongly acid; clear, wavy boundary.

B3—30 to 36 inches, mottled yellowish red (5YR 4/8), dark red (2.5YR 3/6), and strong brown (7.5YR 5/6) clay loam; weak, medium, subangular blocky structure; firm; common shale fragments and gravel; extremely acid; abrupt, irregular boundary.

C—36 to 60 inches, olive brown (2.5Y 4/4) weathered shale, crushed to loam; very strongly acid.

The Ap horizon ranges from 4 to 9 inches in thickness. It is loam or silty clay loam. The Ap horizon is brown, dark brown, and yellowish brown. The B horizon ranges from 20 to 32 inches in thickness. The B horizon is yellowish red or red with or without mottles in the upper part and yellowish red or red, brown, yellow, or olive mottles in the lower part. The B2t and B3 horizons are silty clay, clay, or clay loam and have fragments of shale. The solum ranges from 30 to 40 inches in thickness.

Cunningham soils are associated in the landscape with Montevallo, Conasauga, and Townley soils. They are better drained than the Conasauga soils, and have a higher clay content in the subsoil than the Montevallo soils. Cunningham soils have a thicker solum than the Townley and Conasauga soils.

CuB—Cunningham loam, 2 to 6 percent slopes. This gently sloping soil occupies broad, smooth, ridgetops and short side slopes. The mapped areas range from 10 to 30 acres in size. This soil has the profile described as representative for the Cunningham series.

Included with this soil in mapping are a few small areas of soils that are shallow to the underlying weathered shale. Also included are a few small areas where the soil has chert on the surface, a few small areas where the soil is more than 15 percent fragments of shale throughout, and small areas where the surface layer is fine sandy loam or silt loam.

This Cunningham soil has a hazard of erosion if it is cultivated and not protected. It responds to proper management practices if fertilizer is applied according to results of soil tests. This soil is suited to most locally grown crops, pasture grasses, and pine trees. Limitations for most nonfarm uses are moderate. Capability unit IIe-6.

CuC—Cunningham loam, 6 to 10 percent slopes. This sloping soil occupies broad ridgetops and side slopes. Mapped areas range from 10 to 50 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is dark brown and is about 6 inches thick.

Included with this soil in mapping are a few small areas of soil that are shallow to the underlying weathered shale.

A few small areas where the soil is more than 15 percent fragments of shale throughout are included. Also included are a few small areas where the surface layer is fine sandy loam and silty clay, and small areas of Dewey and Montevallo soils.

This Cunningham soil has a moderate hazard of erosion if it is cultivated and is not protected. It responds to proper management practices if fertilizer is applied according to results of soil tests. This soil is suited to most locally grown crops, pasture plants, and pine trees. Limitations for most nonfarm uses are moderate. Capability unit IIIe-4.

CuD—Cunningham loam, 10 to 15 percent slopes. This moderately steep soil occupies narrow ridges and short to moderately long side slopes. Mapped areas range from 10 to 40 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is yellowish brown.

Included with this soil in mapping are a few small eroded areas where the soil has shallow gullies. A few small areas are included where the soil is shallow to the underlying shale and where slopes are steeper. Also included are small areas of Dewey and Montevallo soils.

This Cunningham soil has a moderate erosion hazard. It is suited to a wide range of locally grown, cultivated crops and pasture plants. Limitations for nonfarm uses are moderate. Capability unit IVe-5.

CuE—Cunningham loam, 15 to 25 percent slopes. This steep soil occupies long, narrow ridgetops and short side slopes. The mapped areas range from 20 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but this soil has a surface layer about 7 inches thick.

Included with this soil in mapping are a few small areas where soils are severely eroded and have shallow gullies. Also included are small areas of Montevallo and Townley soils.

This steep soil has a severe hazard of erosion if left unprotected. It is well suited to pasture grasses and loblolly pines. Limitations for nonfarm uses are severe. Capability unit VIe-3.

CvB2—Cunningham silty clay loam, 2 to 6 percent slopes, eroded. This gently sloping soil occupies broad ridgetops and short side slopes. Mapped areas range from 5 to 10 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is silty clay loam about 6 inches thick.

Included with this soil in mapping are a few small areas of soil that are shallow to the underlying shale and a few small soil areas where the surface layer is silt loam. Also included are a few small areas of Montevallo and Townley soils. A few shallow gullies and rills are included in places.

The Cunningham soil has a severe hazard of erosion if it is cultivated and is not protected. With proper management, it is suited to most locally grown, cultivated crops, pasture plants, and pine trees. Limitations for most nonfarm uses are moderate. Capability unit IIIe-4.

CvD2—Cunningham silty clay loam, 6 to 15 percent slopes, eroded. This sloping to moderately steep soil occupies broad ridges and long side slopes. Mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the series, but it is more sloping and has a silty clay loam surface layer about 5 inches thick.

Included with this soil in mapping are a few small areas of soil that are shallow to the underlying shale and areas where the soil has chert on the surface and throughout. Also included are a few areas where the surface layer is fine sandy loam and loam, and a few small areas of Montevallo and Townley soils.

This Cunningham soil has a severe hazard of erosion if it is cultivated and is not protected. It is better suited to permanent pasture grasses, legumes, and pine forest than to cultivated crops. Limitations for most nonfarm uses are moderate. Capability unit VIe-3.

Decatur series

The Decatur series consists of well drained, gently sloping to steep soils. These soils occupy upland ridgetops and side slopes. They formed in residuum weathered from non-cherty dolomitic limestone and from old valley fill material. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is dark reddish brown loam about 9 inches thick. The subsoil is 69 inches thick. In sequence from the top, the upper 8 inches is dark reddish brown silty clay loam; the next 15 inches is dusky red clay that is about 5 percent iron concretions; the next 13 inches is dusky red clay that is 40 percent iron concretions; and the lower 33 inches is dusky red clay that is 20 percent iron concretions. The underlying material, to a depth of 92 inches, is red gravelly sandy clay loam. The depth to non-cherty limestone bedrock is more than 10 feet.

Decatur soils have moderately high natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderate. Tilth is generally good, but it is fair on the eroded soils. These soils are strongly acid or very strongly acid throughout.

The Decatur soils are well suited to the locally grown, cultivated crops, grasses, and pine trees. The natural vegetation was mixed hardwood and scattered pine, but most of the soils have been cleared and are cultivated.

Representative profile of Decatur loam, 6 to 10 percent slopes, in Floyd County, 200 yards northwest of the Federal Aviation Administration Airway Directional Tower:

Ap—0 to 9 inches, dark reddish brown (5YR 3/2) loam; moderate, fine and medium granular structure; friable; many fine roots; strongly acid; abrupt, wavy boundary.

B1—9 to 17 inches, dark reddish brown (5YR 3/2) silty clay loam; moderate, medium, granular and subangular blocky structure; friable; few fine and medium roots; very strongly acid; gradual, wavy boundary.

B21t—17 to 32 inches, dusky red (10YR 3/3) clay; moderate, medium, subangular blocky structure; friable; few fine and medium roots; 5

percent, black and yellow iron concretions ranging in size from 1 to 14 millimeters; few, thin patchy clay films on ped surfaces; strongly acid; diffuse, wavy boundary.

B22t—32 to 45 inches, dusky red (10YR 3/4) clay; moderate, medium, subangular blocky structure; friable; 40 percent iron concretions; few, thick continuous clay films on ped surfaces; sticky when wet; very strongly acid; gradual, wavy boundary.

B23t—45 to 78 inches, dusky red (10YR 3/4) clay; strong, medium, subangular and angular blocky structure; firm; sticky when wet, very hard when dry; 20 percent iron concretions; very strongly acid; abrupt, wavy boundary.

C—78 to 92 inches, red (2.5Y 4/6) gravelly sandy clay loam; structureless; 35 percent gravel; extremely acid.

The A horizon ranges from 3 to 10 inches in thickness. It is loam or clay. The Ap or A1 horizons are dark reddish brown or dusky red. The B horizon ranges from 65 to 80 inches or more in thickness. The Bt horizon is dark red or dusky red silty clay or clay. The B3 horizon, if present, is mottled in shades of red and brown. In those areas where soil formed from valley fill material, gravel is to a depth of more than 6 feet in some places. Solum ranges from 72 to 80 inches or more in thickness.

Decatur soils are associated in the landscape with Dewey, Fullerton, and Shack soils. They have less fragments throughout the soil than the associated soils, and are redder throughout than the Fullerton and Shack soils. Decatur soils contain more clay than the Shack soils.

DcB—Decatur loam, 2 to 6 percent slopes. This gently sloping soil occupies broad, smooth ridgetops. The mapped areas range from 10 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is 2 to 4 inches thick in most places.

Included with this soil in mapping are a few small areas of soil that have more chert on the surface and throughout than is common for the Decatur soils. The underlying cherty limestone is at a depth of less than 60 inches in some places. Also included are areas where some slopes of more than 6 percent are severely eroded, and small areas of Dewey, Fullerton, and Shack soils. These soils are difficult to cultivate because of the high percentage of fragments.

This Decatur soil has a moderate erosion hazard. The plow layer has good tilth in most places. This soil is well suited to most locally grown, cultivated crops, pasture plants, and pine trees. Most of the soil has been cleared for producing cotton, corn, and soybeans. About 60 percent has reverted to pine forest; some is idle or is used for nonfarm purposes, and the rest is cultivated. Limitations are moderate for most nonfarm uses. Capability unit IIe-1.

DcC—Decatur loam, 6 to 10 percent slopes. This sloping soil occupies broad ridgetops and side slopes. Mapped areas range from 10 to 50 acres in size. This soil has the profile described as representative for the Decatur series.

Included with this soil in mapping are a few small areas of soil that have chert on the surface and throughout. Cherty limestone is at a depth of less than 60 inches in some places. Also included are small areas of Dewey, Fullerton, and Shack soils. These soils, in most places, are more difficult to cultivate because of the content of chert fragments.

This Decatur soil has a severe hazard of erosion if it is cultivated and is not protected. It is well suited to most locally grown, cultivated crops, pasture plants, and pine trees. Most of the soil has been cleared for producing cotton, corn, and soybeans. About 60 percent has reverted to pine forest; some is pastured, idle, or is used for nonfarm purposes, and the rest is cultivated. Limitations are slight to moderate for most nonfarm uses (fig. 2). Capability unit IIIe-1.

DeD2—Decatur clay, 10 to 15 percent slopes, eroded. In most places, this moderately steep soil occupies ridgetops and moderately long side slopes. The mapped areas range from about 20 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer has subsoil material mixed in it.

Included with this soil in mapping are a few small areas of uneroded soil and galled spots that have a few shallow gullies and an occasional deep gully. Also included are a few small areas of Dewey and Fullerton soils.

This Decatur soil has a hazard of continued erosion on unprotected slopes. It is poorly suited to cultivated crops, but under proper management it can be used for row crops in a cropping sequence that includes grasses and legumes. Most of the soil is wooded, but some is used for pasture grasses, cultivated crops and for nonfarm purposes. Limitations are moderate for most nonfarm uses. Capability unit IVe-1.

DeE2—Decatur clay, 15 to 25 percent slopes, eroded. This steep soil occupies short side slopes of the ridges. Mapped areas range from 15 to 50 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer has some of the subsoil mixed with it.

Included with this soil in mapping are a few small areas of uneroded soils, and in places areas of soil where cherty limestone is at a depth of less than 60 inches. Also included are a few galled spots that have shallow gullies and an occasional deep gully and small areas of Dewey, Fullerton, and Shack soils.

This Decatur soil has a hazard of continued erosion on unprotected slopes. This steep soil is poorly suited to cultivated crops. It is well suited to pasture and woodland. Limitations are severe for most nonfarm uses. Capability unit VIe-1.

Dewey series

The Dewey series consists of deep, well drained, gently sloping to moderately steep soils. These soils occupy broad upland ridgetops and side slopes. They formed in material weathered from cherty and non-cherty dolomitic limestone. Slopes range from 2 to 15 percent.

In a representaive profile the surface layer is dark reddish brown silt loam about 6 inches thick. The subsoil is more than 65 inches thick. In sequence from the top, the upper 10 inches is dark red silty clay loam; the next 25 inches is red silty clay; the next 20 inches is red silty clay

that has strong brown mottles; and the next 10 inches is red clay that has strong brown mottles. The number and size of strong brown mottles increase with depth. Limestone bedrock is at a depth of more than 6 feet.

Dewey soils have moderate natural fertility and low content of organic matter. Available water capacity is medium, and permeability is moderate. Tilth is good. These soils are strongly acid to very strongly acid throughout.

These soils are suited to the commonly cultivated crops if protected from erosion. Most of the soils have been cultivated, but loblolly pines are planted in many areas that were previously cultivated. These soils are suited to most locally grown, cultivated crops, grasses, and pine trees.

Representative profile of Dewey silt loam, 2 to 6 percent slopes, in Floyd County, 20 feet north of Mango Road, .5 mile east from intersection of U.S. Highway 53 and Mango Road:

Ap—0 to 6 inches, dark reddish brown (5YR 3/4) silt loam; weak, fine, subangular blocky structure; very friable; many fine and few medium roots; strongly acid; abrupt, smooth boundary.

B1—6 to 16 inches, dark red (2.5YR 3/6) silty clay loam; moderate, medium, subangular blocky structure; friable; many fine and medium roots; many, fine, black concretions; strongly acid; gradual, wavy boundary.

B21t—16 to 41 inches, red (2.5YR 4/6) silty clay; moderate, medium, angular blocky structure; friable; few fine roots; many thin continuous clay films on most ped surfaces; few fine pores; few small chert fragments; strongly acid; gradual, wavy boundary.

B22t—41 to 61 inches, red (2.5YR 4/6) silty clay; few, fine, prominent, strong brown (7.5YR 5/6) mottles; moderate, medium, angular blocky structure; firm; few medium wormholes and root channels; few small cherty fragments; many thin continuous clay films around ped surfaces; very strongly acid; gradual, wavy boundary.

B23t—61 to 71 inches, red (2.5YR 4/6) clay; common, medium, prominent, strong brown (7.5YR 5/6) mottles; moderate, medium, angular blocky structure; friable; common small chert fragments; very strongly acid.

The A horizon ranges from 4 to 14 inches in thickness. The Ap horizon is brown or dark reddish brown. The B horizon ranges from 52 to 80 inches in thickness. The Bt horizon is red or dark red silty clay or clay. Red and brown mottles in most pedons increase in number and size as depth increases. The solum ranges from 60 to 80 inches or more in thickness.

Dewey soils are associated in the landscape with Decatur, Fullerton, and Shack soils. They have a subsoil that is less dark red than that of the Decatur soils, and they have less chert fragments throughout than the Fullerton soils. Dewey soils have a redder subsoil that contains more clay and less chert than the Shack soils.

DhB—Dewey silt loam, 2 to 6 percent slopes. This gently sloping soil is on smooth ridgetops and side slopes. The mapped areas range from 5 to 20 acres in size. This soil has the profile described as representative for the Dewey series.

Included with this soil in mapping are a few small areas of soil that have chert on the surface and throughout, and areas of soil that have a few eroded spots. Also included are a few small areas of Decatur and Fullerton soils.

This Dewey soil has a slight to moderate erosion hazard. It responds to proper management practices if fertilizer is applied according to results of soil tests.

This soil is well suited to most locally grown, cultivated crops, pasture plants, and pine trees. Limitations are slight or moderate for most nonfarm uses. Capability unit IIe-1.

DhC—Dewey silt loam, 6 to 10 percent slopes. This sloping soil occupies ridgetops and the upper part of moderately long side slopes. Mapped areas range from 10 to 40 acres in size. The profile of this soil is similar to the one described as representative for the series, but the surface layer is thinner.

Included with this soil in mapping are a few small areas of soil that have chert on the surface and throughout, and areas of soil that have a few severely eroded spots. Also included are a few small areas of Decatur and Fullerton soils.

This Dewey soil has a severe hazard of erosion if it is cultivated and is not protected. It responds to proper management practices if fertilizer is applied according to the results of soil tests. This soil is well suited to most locally grown, cultivated crops, pasture plants, and pine trees. Limitations are moderate for most nonfarm uses. Capability unit IIIe-1.

DhD—Dewey silt loam, 10 to 15 percent slopes. This moderately steep soil occupies hillsides and short side slopes adjacent to upland drainageways. Mapped areas range from 10 to 35 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is brown and 2 to 4 inches thinner.

Included with this soil in mapping are a few small areas where the soil contains more chert than is common in the Dewey soils. Areas of soil that have a few severely eroded spots are included. Also included are a few small areas of Decatur and Fullerton soils.

This Dewey soil has a severe erosion hazard if it is cultivated and is not protected. It is poorly suited to cultivated crops, but under proper management it can be used for row crops in a cropping sequence that includes grasses and legumes. This soil is well suited to most locally grown pasture plants and pine trees. Limitations are moderate for most nonfarm uses. Capability unit IVe-1.

Dowellton series

The Dowellton series consists of poorly drained, nearly level soils. These soils occupy low stream terraces and upland depressions. They formed in old alluvium or material weathered from limestone. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is grayish brown silty clay loam about 4 inches thick. The subsoil is 44 inches thick. In sequence from the top, the upper 6 inches is gray silty clay loam that has brown mottles; the next 9 inches is olive gray clay; and the lower 29 inches is light gray clay that has light olive brown, yellowish brown, and brownish yellow mottles and common concretions. Depth to hard rock is 48 inches.

Dowellton soils have moderate natural fertility and organic matter content. The available water capacity is low, and permeability is slow. Tilth is poor, and the effective rooting zone is shallow. These soils are neutral to strongly acid in the surface layer and upper subsoil and slightly acid to mildly alkaline in the lower subsoil.

The Dowellton soils are poorly suited to cultivated crops. Most of the soil is used for hardwood forest. Some soil is in pasture or is idle, and the rest is cultivated.

Representative profile of Dowellton silty clay loam, in Floyd County, 1 3/4 miles south of intersection at Russell Field Road and U. S. Highway 27, 150 feet east on U. S. Highway 27:

A1—0 to 4 inches, grayish brown (2.5Y 5/2) silty clay loam; weak, fine, granular structure; friable; many fine roots and few medium roots; strongly acid; clear, smooth boundary.

B1—4 to 10 inches, gray (2.5Y N 5/0) silty clay loam; few, medium, distinct, brown (10YR 5/3) mottles; moderate, medium, angular and subangular blocky structure; friable; many fine and few, medium roots; strongly acid; clear, smooth boundary.

B21t—10 to 19 inches, olive gray (5Y 4/2) clay; few, medium, distinct, yellowish brown (10YR 5/4) mottles; moderate, medium, subangular blocky structure; firm, plastic; few, fine and medium roots; few, fine, black concretions; neutral; clear, wavy boundary.

B22t—19 to 29 inches, light gray (5Y 6/1) clay; common, fine, distinct, light olive brown (2.5Y 5/4) and common, fine, prominent, yellowish brown (10YR 5/6) mottles; moderate, medium subangular blocky structure; firm, plastic; 15 percent concretions; neutral; clear, wavy boundary.

B23t—29 to 48 inches, light gray (5Y 6/1) clay; many medium, distinct, brownish yellow (10YR 6/6) mottles; moderate, medium, angular blocky structure; 20 percent concretions; very firm; plastic; neutral; abrupt, smooth boundary.

R—48 inches, limestone rock.

The A horizon ranges from 3 to 12 inches in thickness. The Ap horizon is dark grayish brown or grayish brown. The B horizon ranges from 26 to 48 inches in thickness. The Bt horizon is light gray or olive gray clay or silty clay. The solum and depth to cherty limestone bedrock ranges from 40 to 60 inches in thickness.

Dowellton soils are associated in the landscape with Conasauga, Lyerly, and Tupelo soils. They are not so well drained and have a grayer subsoil than the associated soils.

Do—Dowellton silty clay loam. This soil is on low stream terraces and upland depressions. Mapped areas range from 5 to 20 acres in size.

Included with this soil in mapping are a few small areas where the soil is better drained than Dowellton soils and areas where the surface layer is silt loam. Also included are small areas of limestone outcrop, and a few areas of soil that are shallow to the underlying limestone bedrock.

Because of wetness, this soil is poorly suited to cultivated crops. It is well suited to pasture under proper management. Most of this soil is used for hardwood forest. It has severe limitations for most nonfarm uses. Capability unit IVw-3.

Emory series

The Emory series consists of well drained, nearly level or gently sloping soils. These soils occupy areas near intermittent streams, small irregularly shaped areas at the heads of intermittent drainageways, and the bottom of depressions on uplands. They formed in local alluvium that originated from material overlying limestone. Slopes range from 0 to 4 percent.

In a representative profile the surface layer is about 8 inches thick. It is dark reddish brown silt loam that is 5 percent iron concretions. The subsoil is about 14 inches thick. It is dark reddish brown silty clay loam that is about 5 percent iron concretions. The underlying buried soil is more than 43 inches thick. The upper 23 inches is dark reddish brown silt loam and the lower 20 inches is yellowish red silty clay loam in the upper part and clay loam in the lower part. The depth to limestone bedrock is more than 5 feet.

The Emory soils have high natural fertility and moderate organic matter content. The available water capacity is medium, and permeability is moderate. Tilth is good, and the effective rooting zone is thick. These soils are strongly acid to medium acid throughout.

Emory soils are well suited to most locally grown, cultivated crops. They are well suited to truck crops.

Representative profile of Emory silt loam, in Polk County, 1 mile east of Collard Valley Baptist Church, 40 yards west of paved crossroad and 50 feet south of paved road:

Ap—0 to 8 inches, dark reddish brown (2.5YR 3/4) silt loam; weak, fine, granular structure; very friable; many fine fibrous roots; 5 percent iron concretions; strongly acid; abrupt, smooth boundary.

B2—8 to 22 inches, dark reddish brown (2.5YR 3/4) silty clay loam; weak, fine, granular structure; friable; few fine roots; 5 percent iron concretions; strongly acid; clear, smooth boundary.

A1b—22 to 33 inches, dark reddish brown (5YR 3/3) silt loam; weak, fine, granular structure; friable; 10 percent iron concretions; strongly acid; clear, smooth boundary.

B1b—33 to 45 inches, dark reddish brown (5YR 3/4) silt loam, weak, fine, granular structure; friable; 25 percent iron concretions; strongly acid; gradual, smooth boundary.

B2tb—45 to 55 inches, yellowish red (5YR 4/6) silty clay loam; weak, fine, granular structure; friable; 35 percent iron concretions; strongly acid; gradual, smooth boundary.

B3b—55 to 65 inches, yellowish red (5YR 4/6) clay loam; weak, fine, granular structure; friable; 5 percent iron concretions; strongly acid.

The A horizon ranges from 4 to 10 inches in thickness. The Ap or A1 horizons are dark reddish brown or dark brown. The B2 horizon is dark reddish brown or reddish brown silt loam or silty clay loam. The buried soil is dark reddish brown, reddish brown, or yellowish red silty clay loam or clay loam. Thickness of the local alluvium over the buried soil ranges from 20 to 36 inches.

Emory soils are associated in the landscape with Decatur, Dewey, and Fullerton soils. They contain more silt and less clay than the associated soils, and contain less coarse fragments than the Dewey and Fullerton soils.

Em—Emory silt loam. This nearly level and gently sloping soil occupies long, narrow areas near the intermittent streams, and irregularly shaped upland depressions. The mapped areas range from 5 to 25 acres in size.

Included with this soil in mapping are small areas where the soil is 5 to 35 percent concretions. Also included are a few small areas of Decatur, Dewey, and Ennis soils.

This Emory soil is well suited to intensive use for most locally grown, cultivated crops. If fertilized, it is well suited to grasses and legumes. This soil, in some depressions, is subject to ponding for short periods. Limitations for nonfarm uses are slight or moderate. Capability unit I-1.

Ennis series

The Ennis series consists of well drained, nearly level or gently sloping soils. These soils occupy areas near intermittent streams, and small irregularly shaped depressions. They formed in alluvium that originated from material overlying cherty limestone. Slopes range from 0 to 4 percent.

In a representative profile the surface layer is about 6 inches thick. It is yellowish brown cherty silt loam that has dark grayish brown mottles. The subsoil is 23 inches thick. In sequence from the top, the upper 8 inches is light olive brown cherty loam; the lower 15 inches is yellowish brown cherty clay loam. The underlying material, to a depth of 62 inches, is yellowish brown and light olive brown very cherty silt loam that is 65 percent chert fragments. The depth to hard rock is more than 60 inches.

The Ennis soils have moderate natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderately rapid. Tilth is good. These soils are strongly acid or very strongly acid throughout.

These soils are suited to most locally grown, cultivated crops and pasture grasses. About 50 percent of the soils is used for pasture, 25 percent is used for cultivated crops, and 25 percent is used for woodland and nonfarm purposes.

Representative profile of Ennis cherty silt loam, in Polk County, .25 mile east of New Bethel Baptist Church:

Ap—0 to 6 inches, dark yellowish brown (10YR 5/4) cherty silt loam; few, fine, distinct, dark grayish brown (2.5Y 4/2) mottles; weak, fine, granular structure; very friable; many fine roots; few fine pores; few charcoal fragments; 20 percent by volume chert and sandstone fragments; few wormholes, few worm castings; strongly acid; abrupt, smooth boundary.

B21—6 to 14 inches, light olive brown (2.5Y 5/4) cherty loam; weak, fine, subangular blocky structure; friable; many fine roots; few fine pores; few wormholes, few worm castings; few charcoal fragments; material from Ap horizon moved down into pores and wormholes; 25 percent by volume chert and sandstone fragments; strongly acid; clear, wavy boundary.

B22—14 to 29 inches, yellowish brown (10YR 5/6) cherty clay loam; weak, medium, subangular blocky structure; friable; few fine roots; few fine wormholes; many fine and medium pores; few charcoal fragments; 15 percent by volume chert and sandstone fragments; very strongly acid; gradual, wavy boundary.

C—29 to 62 inches, yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/4) very cherty silt loam; massive; very friable; dark brown concretions forming; few charcoal fragments; few medium voids; 45 percent by volume chert fragments; very strongly acid.

The A horizon ranges from 4 to 12 inches in thickness. The Ap horizon is grayish brown or dark yellowish brown. The B horizon ranges from 20 to 52 inches in thickness. The B horizon is light olive brown or yellowish brown cherty loam or cherty clay loam. The solum ranges from 25 to 60 inches or more in thickness. The depth to cherty limestone bedrock is more than 60 inches.

Ennis soils are associated in the landscape with Aragon, Fullerton, and Shack soils. They contain more coarse fragments and less clay than the Aragon soils, and they have a subsoil that is not so red as, and contains less clay than, those of the Fullerton soils. Ennis soils are better drained and lack a subsoil horizon that is compact and brittle as in the Shack soils.

En—Ennis cherty silt loam. This nearly level and gently sloping soil occupies long, narrow areas near intermittent streams, and irregularly shaped upland depressions. Mapped areas range from 5 to 15 acres in size.

Included with this soil in mapping are a few small areas where the soil is not so well drained as Ennis soils and areas where the surface layer is silt loam. Also included are small areas of soil that contain less fragments throughout the soil than Ennis soils.

This Ennis soil is suited to most locally grown, cultivated crops if it is protected from flooding. If fertilized, it is suited to locally grown hay and pasture plants. Because of the flood hazard, limitations are severe for most nonfarm uses. Capability unit IIs-2.

Etowah series

The Etowah series consists of well drained, nearly level to sloping soils. These soils occupy low stream terraces. They formed in alluvium that originated from material weathered from shale or limestone. Slopes range from 0 to 10 percent.

In a representative profile the surface layer is dark brown loam about 8 inches thick. The subsoil is about 66 inches thick. In sequence from the top, the upper 5 inches is reddish brown and yellowish red loam; the next 21 inches is yellowish red clay loam that has a few pebbles and concretions; the next 17 inches is yellowish red clay loam that has brownish yellow mottles; and the lower 23 inches is yellowish red clay that has brownish yellow mottles that increase in size and number with depth. Depth to hard rock is 6 to 10 feet.

The Etowah soils have moderately high natural fertility and low organic matter content. Available water capacity is high, and permeability is moderate. The effective rooting zone is thick, and tilth is good. These soils are strongly acid or very strongly acid throughout.

These soils are well suited to most locally grown, cultivated crops. Most areas have been cleared and cultivated or are used for pasture. Some areas have reverted to loblolly pine and shortleaf pines.

Etowah soils and Urban land, in some areas, lie in a regular intricate pattern and cannot be separated by boundaries at the scale used. They are mapped together as a complex. (See Etowah-Urban Land complex.)

Representative profile of Etowah loam, 0 to 2 percent slopes, in Floyd County, 1,000 feet southeast of bridge at Big Cedar Creek on U. S. Highway 411, 300 feet west of paved road:

Ap—0 to 8 inches, dark brown (7.5YR 3/2) loam; moderate, medium, granular structure; friable; common fine roots; few fine wormholes; strongly acid; abrupt, wavy boundary.

B1—8 to 13 inches, reddish brown (5YR 4/4) and yellowish red (5YR 4/6) loam; moderate, fine and medium, granular structure; friable; common fine roots; few wormholes, few fine pores; few fine concretions; strongly acid; clear, wavy boundary.

B21t—13 to 23 inches, yellowish red (5YR 4/6) clay loam; weak, medium, subangular blocky structure; friable; common, fine roots; few wormholes; many fine pores; few concretions; few bodies coated and mixed with black material; about 3 percent gravel; strongly acid; clear, wavy boundary.

B22t—23 to 34 inches, yellowish red (5YR 4/6) clay loam; moderate, medium, subangular blocky structure; friable; common fine roots; common fine pores; few firm bodies coated and mixed with black color; common patchy clay films; 3 percent gravel; very strongly acid; gradual, wavy boundary.

B23t—34 to 51 inches, yellowish red (5YR 4/8) clay loam, common, medium, distinct, brownish yellow (10YR 6/6) mottles; moderate, medium, angular blocky structure; friable; few fine roots; few fine wormholes and pores; thin red (2.5YR 4/6) coating on ped surfaces; very strongly acid; gradual, irregular boundary.

B24t—51 to 74 inches, yellowish red (5YR 5/6) clay; many, medium, prominent, brownish yellow (10YR 6/6) mottles; strong, medium, angular and subangular blocky structure; firm; continuous clay film on ped surfaces; the lower 2 inches of this horizon has many pebbles; very strongly acid.

The A horizon ranges from 4 to 13 inches in thickness. The Ap horizon is dark brown or dark yellowish brown. The A3 horizon, if present, is dark reddish brown. The B horizon ranges from 48 to 60 inches or more in thickness. The Bt horizon is yellowish red or strong brown clay loam, silty clay loam, or clay. The solum ranges from 60 to 80 inches or more in thickness.

Etowah soils are associated in the landscape with Fullerton, Rome, and Wolftever soils. They contain fewer coarse fragments throughout the soil and have less clay in the subsoil than is common for the Fullerton soils, and have redder subsoils than is common for Rome soils. Etowah soils have redder subsoils, contain less clay, and are better drained than is common for the Wolftever soils.

EtA—Etowah loam, 0 to 2 percent slopes. This nearly level soil occupies smooth terraces near larger streams. The mapped areas range from 5 to 15 acres in size. This soil has the profile described as representative for the Etowah series.

Included with this soil in mapping are a few small areas where the surface layer is brown and the subsoil is clay. In a few places, Whitwell soils and Cedarbluff soils are included.

This Etowah soil is well suited to intensive use for most locally grown, cultivated crops. If fertilized, it is well suited to grasses and legumes. Corn, cotton, and soybeans are the most commonly grown crops. This soil has slight limitation for most nonfarm uses. Capability unit I-2.

EtB—Etowah loam, 2 to 6 percent slopes. This gently sloping soil is on broad stream terraces. The mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is 2 to 4 inches thinner.

Included with this soil in mapping are a few small areas where the surface layer is brown and is more sloping. Also included are a few small areas of soil that have a dense, brittle layer at depths of about 20 to 30 inches.

This Etowah soil has a hazard of erosion if it is cultivated and is not protected. It is well suited to most locally grown, cultivated crops (fig. 3). This soil responds to proper management if fertilizer is applied according to results of soil tests. This soil has slight limitation for most nonfarm uses. Capability unit IIe-3.

EtC—Etowah loam, 6 to 10 percent slopes. This sloping soil occupies broad irregularly shaped areas on sides of stream terraces. Mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is 2 to 6 inches thinner.

Included with this soil in mapping are a few areas where the subsoil is silty clay and a few areas where the surface layer is silty clay loam. Also included are a few small areas of soil where a dense brittle layer is at depths of about 20 to 30 inches.

This Etowah soil has a hazard of continued erosion if it is cultivated and is not protected. It is well suited to most locally grown, cultivated crops. This soil responds well to proper management if fertilizer is applied according to results of soil tests. Cotton, corn, and soybeans are the most commonly grown crops. Limitations for most nonfarm uses are moderate. Capability unit IIIe-3.

EuC—Etowah-Urban land complex, 2 to 10 percent slopes. This complex occupies gently sloping, smooth terrace ridgetops, and sloping, irregularly shaped areas on sides of stream terraces. About 60 percent is Etowah soils and about 40 percent is Urban land. Mapped areas are small to large.

The profile of the Etowah soil is similar to that described as representative for the series, but the surface layers are thinner. Most areas of Etowah soils are covered with sod.

Included with the Etowah soils in mapping are a few areas of eroded soils that have shallow gullies and small rills. Also included are small areas of Townley, Toccoa, Wax, and Cunningham soils.

The soils in the Urban land areas have been altered by grading, cutting, filling, shaping, and smoothing for community development. Most Urban land is used for private dwellings, industrial sites, shopping centers, parking lots, streets, schools, and churches.

Included with Urban land in mapping, in a few places, are Etowah soils that are essentially unaltered. Limitations are moderate for most nonfarm uses. Capability unit IIIe-3.

Euharlee series

The Euharlee series consists of well drained, gently sloping and sloping soils. These soils occupy broad upland ridgetops and side slopes. They formed in material weathered from interbedded cherty limestone and sandstone. Slopes range from 2 to 10 percent.

In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is 4 inches thick, very dark gray, and 14 percent gravel; the subsurface layer is 2 inches thick, grayish brown, and about 13 percent gravel. The subsoil is 51 inches thick. In sequence from the top, the upper 10

inches is brownish yellow silt loam that is about 10 percent gravel. The next 14 inches is brownish yellow loam that is about 10 percent gravel; the next 13 inches is yellowish brown clay loam that has yellowish red and light yellowish brown mottles and about 12 percent gravel; and the lower 14 inches is mottled strong brown, yellowish brown, reddish brown, and light gray cherty silty clay. The underlying layer is reddish brown, white, and strong brown soft weathered siltstone, sandstone, and cherty limestone. The depth to hard rock is more than 5 feet.

Euharlee soils have moderately low natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderately slow. Tilth is good, and the effective rooting zone is thick. These soils are strongly acid to very strongly acid throughout.

Most of the areas were cleared for cultivated crops or pasture, but a few areas have reverted to pine trees. These soils are suited to most locally grown, cultivated crops and pasture grasses.

Representative profile of Euharlee silt loam, 2 to 6 percent slopes, in Polk County, 1/4 mile west of Bellview Methodist Church, 1/4 mile north along county paved road, 20 feet west of center of road:

A1—0 to 4 inches, very dark gray (10YR 3/1) silt loam; weak, fine, granular structure; friable; many fine and medium roots; 14 percent gravel; strongly acid; clear, smooth boundary.

A2—4 to 6 inches, grayish brown (2.5Y 5/2) silt loam; weak, fine, granular structure; friable; many fine and medium roots; 13 percent gravel; very strongly acid; clear, smooth boundary.

B1—6 to 16 inches, brownish yellow (10YR 6/6) silt loam; weak, fine, angular blocky structure; friable; common fine roots; 10 percent gravel; pockets of grayish brown (2.5Y 5/2) and common old root channels filled with material from A horizon; very strongly acid; clear, wavy boundary.

B21t—16 to 30 inches, brownish yellow (10YR 6/6) loam; weak, medium, angular blocky structure; friable; few fine roots; patchy clay film on faces of peds; common fine pores; 10 percent gravel; very strongly acid; gradual, irregular boundary.

B22t—30 to 43 inches, yellowish brown (10YR 5/6) clay loam few, fine, distinct, yellowish red (5YR 5/6, 5/8) and light yellowish brown (2.5Y 6/4) mottles; moderate, medium, angular blocky structure; friable; few fine roots; continuous thin clay film on faces of peds; common fine pores; 12 percent gravel; very strongly acid; clear, wavy boundary.

B3—43 to 57 inches, mottled strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), reddish brown (2.5YR 4/4) and light gray (2.5Y 7/2) cherty silty clay; weak, medium, subangular blocky structure; about 25 percent massive rock controlled structure; firm; 25 percent gravel and chert; few fine pores; thin patchy clay films on faces of some peds; very strongly acid; diffuse, irregular boundary.

C—57 to 67 inches, reddish brown (2.5YR 4/4), white (10YR 8/2) and strong brown (7.5YR 5/6) soft weathered siltstone, sandstone, and cherty limestone; pockets of cherty and gravelly silty clay; very strongly acid.

The A horizon ranges from 5 to 14 inches in thickness. The A1 horizon is very dark gray or dark grayish brown. The Ap, if present, is dark grayish brown or light olive brown. The B horizon ranges from 35 to 62 inches in thickness. The Bt horizon is brownish yellow or yellowish brown clay loam, loam, or silty clay loam. The solum ranges from 40 to 60 inches or more in thickness.

Euharlee soils are associated in the landscape with Aragon, Bodine, and Shack soils. They have less clay in the subsoil than the Aragon soils, and they contain fewer coarse fragments throughout the soil than the Bodine and Shack soils.

EvB—Euharlee silt loam, 2 to 6 percent slopes. This gently sloping soil occupies broad ridgetops. Mapped areas range from 5 to 20 acres in size. This soil has the profile described as representative for the Euharlee series.

Included with this soil in mapping are a few small areas where the soil is 15 percent gravel on the surface and throughout. A few small eroded spots where the surface layer is strong brown sandy clay loam are included. Small areas of Aragon, Fullerton, and Shack soils and some areas that have large stones or boulders at a depth of less than 5 feet are also included.

This Euharlee soil has a moderate erosion hazard if it is cultivated or left bare and is not protected. It is well suited to most locally grown, cultivated crops. This soil responds well to proper management if fertilizer is applied according to results of soil tests. Most of the soil is wooded; some is cultivated or pastured, and some is idle or used for nonfarm purposes. This soil has moderate limitations for most nonfarm uses. Capability unit IIe-2.

EvC—Euharlee silt loam, 6 to 10 percent slopes. This sloping soil occupies long, broad ridgetops and long side slopes. Mapped areas range from 5 to 25 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is dark grayish brown.

Included with this soil in mapping are a few small areas where the soil is more than 15 percent chert fragments on the surface and throughout. Also included are small areas of Aragon, Fullerton, and Shack soils and a few small areas of soil where slopes are more than 10 percent. A few eroded spots, and some places where large stones and boulders are at a depth of less than 5 feet, are included.

This sloping Euharlee soil has a slight or moderate hazard of erosion if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops and pasture plants. It responds well to proper management if fertilizer is applied according to results of soil tests. The most commonly grown crops are cotton, corn, and soybeans. This soil has moderate limitations for most nonfarm uses. Capability unit IIIe-2.

Fullerton series

The Fullerton series consists of deep, well drained, gently sloping to very steep cherty soils that occupy the tops and sides of mountains. These soils formed in residuum from cherty limestone. Slopes range from 2 to 40 percent.

In a representative profile the surface layer is cherty silt loam about 17 inches thick. It is dark grayish brown in the upper 6 inches and strong brown in the lower 11 inches. The subsoil is more than 71 inches thick. In sequence from the top, the upper 7 inches is yellowish red cherty silty clay loam; the next 40 inches is red cherty silty clay; and the lower 24 inches is red cherty clay that has yellowish brown mottles. Depth to cherty limestone bedrock ranges from 6 to 10 feet or more.

The Fullerton soils have low natural fertility and organic matter content. The available water capacity is medium, and the permeability is moderate. Tilth is fair. These soils are strongly acid or very strongly acid except that part where lime has been applied.

Because some slopes are too steep to use for cultivated crops, Fullerton soils are well suited to permanent pasture or woodland. The gently sloping and sloping soils are suited for most locally grown cultivated crops.

Representative profile of Fullerton cherty silt loam, 10 to 15 percent slopes, in Polk County, 0.6 mile southeast of Harmony Baptist Church, 20 feet south of paved road:

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) cherty silt loam; weak, fine, granular structure; very friable; many fine and medium roots, few wormholes and worm casts; 20 percent chert fragments; medium acid; abrupt, smooth boundary.

A3—6 to 17 inches, strong brown (7.5YR 5/6) cherty silt loam; weak, fine, granular structure; very friable; many fine and medium roots; few partly decomposed medium roots; few pores; few wormholes and worm casts; 15 percent chert fragments; very strongly acid; clear, wavy boundary.

B1—17 to 24 inches, yellowish red (5YR 5/6) cherty silty clay loam; weak, fine, subangular blocky structure; friable; few fine roots; few pores, wormholes and worm casts; 30 percent chert fragments; very strongly acid; clear, wavy boundary.

B21t—24 to 64 inches, red (2.5YR 4/6) cherty silty clay; moderate, medium, angular and subangular blocky structure; friable; few pores; few wormholes and worm casts; few fine roots; 30 percent chert fragments, 5 percent cobbles; very strongly acid; gradual, wavy boundary.

B22t—64 to 88 inches, red (2.5YR 5/6) cherty clay; common, medium, prominent, yellowish brown (10YR 5/6) mottles; moderate, medium, angular blocky structure; firm; few pores; few wormholes and worm casts; few fine roots; 20 percent chert fragments; very strongly acid; clear, wavy boundary.

The A horizon ranges from 4 to 17 inches in thickness. It is cherty silt loam or cherty silty clay loam. The A horizon is dark grayish brown, brown, or grayish brown. The B horizon ranges from 60 to 120 inches or more in thickness. The Bt horizon is red or yellowish red cherty silty clay or cherty clay. The solum ranges from 60 to 80 inches or more in thickness. The depth to cherty limestone bedrock ranges from 6 to 10 feet or more.

Fullerton soils are associated in the landscape with Aragon, Dewey, and Shack soils. They have a thicker solum than Aragon soils and contain more coarse fragments than the Aragon and Dewey soils. Fullerton soils have subsoils that are redder and contain more clay than Shack soils. In addition, they contain fewer fragments than Shack soils.

FuB—Fullerton cherty silt loam, 2 to 6 percent slopes. This gently sloping soil occupies broad ridgetops. Mapped areas range from 5 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is 2 to 4 inches thinner. The plow layer is within the original surface layer throughout most of the mapped area.

Included with this soil in mapping are several small areas where the soil contains less chert than the Fullerton soils. These included soils are easier to till than the more cherty Fullerton soils. Also included are a few small gullied spots that have poor tilth and small areas of Aragon, Dewey, and Shack soils.

This Fullerton soil has a hazard of erosion if it is cultivated and is not protected. It is used mostly for cultivated crops, but it is well suited to all crops commonly grown in the survey area. Limitations for most nonfarm uses are moderate. Capability unit IIe-2.

FuC—Fullerton cherty silt loam, 6 to 10 percent slopes. This sloping soil occupies ridgetops and long side slopes. Mapped areas range from 10 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is brown.

Included with this soil in mapping are a few small areas where slope is steeper and the surface layer is very dark grayish brown. Small areas of soils that are less than 15 percent chert throughout are included. Also included are a few small eroded spots that have poor tilth, and small areas of Aragon, Dewey, and Shack soils.

This Fullerton soil has a hazard of erosion if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops, pasture plants, and pine trees. It responds to proper management if fertilizer is applied according to results of soil tests. Limitations for most nonfarm uses are moderate. Capability unit IIIe-2.

FuD—Fullerton cherty silt loam, 10 to 15 percent slopes. This moderately steep soil occupies narrow ridgetops and short side slopes. Mapped areas range from 10 to 40 acres in size. This soil has the profile described as representative for the Fullerton series.

Included with this soil in mapping are a few small areas of soil that contain shallow gullies. These gullies are indicated by a symbol on the soil map. Also included are small areas of Aragon, Dewey, and Shack soils. The Aragon and Dewey soils have better tilth than the Fullerton soils.

This Fullerton soil has a severe hazard of erosion if it is cultivated and is not protected. It is suited to row crops about once every 4 years under proper management. It is also suited to most pasture plants and for woodland. Limitations for most nonfarm uses are moderate. Capability unit IVe-2.

FuE—Fullerton cherty silt loam, 15 to 25 percent slopes. This steep soil occupies narrow ridgetops and short steep side slopes. Mapped areas range from 10 to 70 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is about 2 to 4 inches thinner in most places.

Included with this soil in mapping are a few small eroded spots. Also included are small areas of Aragon, Bodine, and Shack soils.

This Fullerton soil has a severe erosion hazard if the slopes are unprotected. Most of this soil is used for woodland, but some areas are in pasture. Limitations are severe for most nonfarm uses. Capability unit VIe-1.

FuF—Fullerton cherty silt loam, 25 to 40 percent slopes. This very steep soil occupies ridges and short side slopes. Mapped areas range from 20 to more than 100 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is about 2 to 4 inches thinner in most places.

Included with this soil in mapping are few small eroded spots. Also included are small areas of Bodine soils.

This Fullerton soil has a severe erosion hazard if the slopes are unprotected. Most of this soil is used for hardwood and scattered pine trees and it is better suited to this use. The limitations for most nonfarm uses are severe. Capability unit VIIe-1.

FvE2—Fullerton cherty silty clay loam, 10 to 25 percent slopes, eroded. In most places, this moderately steep and steep soil occupies the sides of mountains. It commonly lies between less sloping ridgetops and nearly level bottom lands or drainageways. In other places, it occupies the narrow, convex ridgetops. Mapped areas range from 5 to 10 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is thinner and has some of the subsoil mixed with it.

Included with this soil in mapping are a few small areas of uneroded soils. These soils have retained their original depth and tilth.

This Fullerton soil has a hazard of continued erosion if the slopes are unprotected. Erosion has removed most of the original surface layer which causes poor tilth. This soil is or has been used mainly for cultivated crops and pasture. The erosion hazard and moderately steep and steep slopes limit the suitability of the soil to grasses and legumes or trees. This soil has severe limitations for most nonfarm uses. Capability unit VIe-1.

Grover series

The Grover series consists of well drained upland soils of the Piedmont Plateau. They formed in material weathered from micaceous bedrock. These soils are on ridgetops, hillsides, and side slopes adjacent to drainageways. Areas of these soils are in the southern part of Polk County. Slopes range from 2 to 25 percent.

In a representative profile the surface and subsurface layers are gravelly fine sandy loam. The surface layer is 4 inches thick and is grayish brown. The subsurface layer is yellowish brown and is also 4 inches thick. The subsoil is 42 inches thick. In sequence from the top, the upper 5 inches is strong brown clay loam that has a few, very fine flakes of mica; the next 16 inches is yellowish red clay loam that has a few flakes of mica, and a few brownish yellow and red mottles; and the layer below is 9 inches of strong brown clay loam that has a few brownish yellow mottles and a few flakes of mica. The lower 12 inches is yellowish red and strong brown sandy clay loam that has a few flakes of mica. The underlying material, to a depth of 60 inches, is highly weathered yellowish red and brownish yellow micaceous schist. The depth to weathered schist ranges from 3 to 6 feet.

These soils have moderate natural fertility and low organic matter content. Available water capacity is medium, and permeability is moderate. Tilth is good. These soils are strongly acid to very strongly acid throughout.

Grover soils are well suited to the locally grown, cultivated crops, pasture plants, and pine trees. The natural vegetation was mixed hardwoods and pine trees. Most of this soil has been cleared and used for cultivated crops or pasture. Many areas have reverted to pine trees.

Representative profile of Grover gravelly fine sandy loam, 6 to 10 percent slopes, in Polk County, .5 mile north of Polk and Paulding county line on Georgia Highway 6 and U. S. Highway 278:

O1—1 to 0 inches, partially decomposed leaf litter.

A1—0 to 4 inches, grayish brown (2.Y 5/2) gravelly fine sandy loam; weak, fine, granular structure; very friable with common quartz gravel; abundant small pores; many fine and medium roots; few very fine flakes of mica; strongly acid; abrupt, smooth boundary.

A2—4 to 8 inches, yellowish brown (10YR 5/4) gravelly fine sandy loam; weak, fine, granular structure; very friable; many fine and medium roots; few very fine flakes of mica; common quartz gravel; strongly acid; clear, smooth boundary.

B1—8 to 13 inches, strong brown (7.5YR 5/6) clay loam; moderate, medium, subangular blocky structure; friable; few medium roots; few very fine flakes of mica, slight greasy feel when rubbed between the fingers; strongly acid; gradual, wavy boundary.

B21t—13 to 29 inches, yellowish red (5YR 5/8) clay loam; few, fine, distinct, brownish yellow and red mottles; moderate, medium, subangular blocky structure; friable; few very fine flakes of mica, giving a slight greasy feel when rubbed between fingers; strongly acid; gradual, wavy boundary.

B22t—29 to 38 inches, strong brown (7.5YR 5/8) clay loam; few, fine, distinct, brownish yellow mottles; moderate, medium, subangular blocky structure; friable; few very fine flakes of mica, giving slight greasy feel; very strongly acid; clear, wavy boundary.

B3—38 to 50 inches, yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few very fine flakes of mica, giving slight greasy feel; 40 percent highly weathered, friable, micaceous schist.

C—50 to 60 inches, highly weathered yellowish red and brownish yellow, friable, micaceous schist.

The A horizon ranges from 2 to 10 inches in thickness. The A1 or Ap horizons are grayish brown or brown. The B horizon ranges from 20 to 42 inches in thickness. The Bt horizon is yellowish red, strong brown, or yellowish brown clay loam or sandy clay loam. The solum ranges from 30 to 50 inches in thickness.

Grover soils are associated in the landscape with Madison and Tallapoosa soils. They are grayer in the surface layer and are less red in the subsoil than Madison soils. They have less schist fragments in the subsoil and have a thicker solum than the Tallapoosa soils.

GgB—Grover gravelly fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies broad ridgetops. Mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is several inches thicker.

Included with this soil in mapping are a few small areas of soil that are shallow to the underlying micaceous bedrock, and a few small areas where the soil has shale on the surface and throughout. Also included are small areas of Madison and Tallapoosa soils. Plowing has incorporated subsoil material into the surface layer in a few places. These places are commonly clay loam and are included in mapping.

This Grover soil has a moderate hazard of erosion if it is cultivated and is not protected. It is used mostly for pasture and cultivated crops or planted to pine trees. This soil is suited to many locally grown, cultivated crops. It responds well to proper management if fertilizer is applied according to results of soil tests. Corn and soybeans

are the most commonly grown crops. This soil has moderate limitations for most nonfarm uses. Capability unit IIe-2.

GgC—Grover gravelly fine sandy loam, 6 to 10 percent slopes. This sloping soil is on broad ridgetops and long hillsides. Mapped areas range from 5 to 25 acres in size. This soil has the profile described as representative for the Grover series.

Included with this soil in mapping are a few small areas of soil that are shallow to the underlying micaceous bedrock, and small areas where the soil has shale on the surface and throughout. Also included are a few small areas where the surface layer is clay loam, and small areas of Madison and Tallapoosa soils.

This sloping Grover soil has a hazard of erosion if it is cultivated and is not protected. It is used mostly for pasture and cultivated crops or is planted to pine trees. This soil is suited to most locally grown, cultivated crops and vegetable crops. It responds well to proper management if fertilizer is applied according to results of soil tests. This soil has moderate limitations for most nonfarm uses. Capability unit IIIe-2.

GgE—Grover gravelly fine sandy loam, 10 to 25 percent slopes. This moderately steep and steep soil occupies long hillsides, narrow ridgetops, and short side slopes adjacent to drainageways. Mapped areas range from 5 to 25 acres in size. The profile of this soil is similar to that described as representative for the series, but slopes are steeper and the surface layer is 2 to 4 inches thinner.

Included with this soil in mapping are a few areas of soil that are shallow to the underlying micaceous bedrock. Also included are a few small gullied spots and small areas of Madison and Tallapoosa soils.

This Grover soil has a severe hazard of erosion if the slopes are unprotected. It is not suited to cultivated crops. It is well suited to woodland and permanent pasture. Limitations are moderate or severe for most nonfarm uses. Capability unit VIe-2.

Guthrie Variant

The Guthrie Variant consists of poorly drained soils on upland flats and in depressions. These soils formed in deposits from material weathered from cherty limestone. They have 0 to 2 percent slopes.

In a representative profile the surface and subsurface layers are cherty silt loam about 7 inches thick. The surface layer is gray and 2 inches thick. The subsurface layer is light gray and 5 inches thick. The subsoil is about 55 inches thick. In sequence from the top, the upper 6 inches is white cherty silt loam; the next 11 inches is gray, cherty silty clay loam that has light olive brown mottles; the next 16 inches is light brownish gray very cherty silty clay that has reddish brown and yellowish brown mottles; the next 8 inches is white very cherty clay that has yellow and brown mottles; and the lower 14 inches is light gray and white cherty silty clay loam that has brownish yellow mottles. The depth to hard rock is 6 to 20 feet.

The Guthrie Variant soils have moderately low natural fertility and moderate organic matter content. The available water capacity is medium, and permeability is slow. Tilth is poor. These soils are very strongly acid to strongly acid throughout.

Because of wetness, this soil is poorly suited to cultivated crops. It is well suited to mixed hardwood trees, pasture, or wetland wildlife.

Representative profile of Guthrie Variant soils, in Floyd County, 5 miles south of Darlington School on U. S. Highway 27, .5 mile southwest on Booger Hollow Road, 3/8 mile west of paved road:

A1—0 to 2 inches, gray (10YR 6/1) silt loam; weak, fine, granular structure; very friable; many fine roots; many fine pores; few wormholes; 14 percent chert fragments; very strongly acid; abrupt, wavy boundary.

A2—2 to 7 inches, light gray (5Y 7/1) silt loam; weak, fine, granular structure; slightly hard and compact when dry, friable when moist; many fine and medium roots; many fine pores; few small wormholes and castings; few fine old root channels; 14 percent chert fragments; very strongly acid; abrupt, wavy boundary.

Bx1g—7 to 13 inches, white (N 8/0) cherty silt loam; slightly platy, parting to weak, fine, subangular blocky structure; hard when dry, friable when moist; many fine pores; few fine old root channels; many fine and medium roots; 20 percent chert fragments; strongly acid; clear, wavy boundary.

Bx2g—13 to 24 inches, gray (10YR 6/1) cherty silty clay loam; few fine, distinct, light olive brown mottles; moderate, thick platy parting to moderate, medium, subangular blocky structure; friable; few fine pores; many fine and medium roots; 35 percent chert fragments; very strongly acid; clear, wavy boundary.

B21tg—24 to 40 inches, light brownish gray (2.5Y 6/2) very cherty silty clay; many, fine, prominent, reddish brown and yellowish brown mottles; weak, moderate, subangular blocky structure; firm; many fine pores; many fine to medium roots; clay films on chert surfaces; 60 percent chert fragments; strongly acid; abrupt, wavy boundary.

B22tg—40 to 48 inches, white (5Y 8/1) very cherty clay; common, fine, prominent yellow and brown mottles; weak, moderate, subangular blocky structure; firm; few fine and medium roots; clay films on chert surfaces; 60 percent chert fragments; very strongly acid; gradual, wavy boundary.

B3g—48 to 62 inches, light gray (5Y 7/1) and white (5Y 8/1) cherty silty clay loam; few, fine, prominent, brownish yellow mottles; weak, fine, subangular blocky structure; firm; pockets of silty clay and silt between chert; 20 percent chert fragments; very strongly acid.

The A horizon ranges from 4 to 16 inches in thickness. The A1 horizon is gray or grayish brown. The Ap, if present, is brown or grayish brown. The B horizon ranges from 50 to 70 inches or more in thickness. The Bxg horizon is white or gray cherty silt loam or cherty silty clay loam. The solum ranges from 60 to 80 inches or more in thickness. The Guthrie Variant soils have subsoiis that are variable in the clay content and coarse fragments, but this difference does not alter the use and management or behavior of this soil.

Guthrie Variant soils are associated in the landscape with Aragon, Fullerton, and Shack soils. They are more poorly drained than the associated soils and have a thicker solum and contain more coarse fragments than the Aragon soils. Guthrie Variant soils are grayer and contain less clay than the Fullerton soils and are grayer than the Shack soils.

GU—Guthrie Variant soils. This soil occupies upland flats and depressions. Mapped areas range from 5 to 10 acres in size.

Included with this soil in mapping are a few small areas that are better drained than the Guthrie Variant soils,

and a few areas of soil that have less chert on the surface and throughout. Also included are areas where the surface layer is fine sandy loam and sandy loam and several small areas of Aragon and Fullerton soils.

Because of wetness, these Guthrie Variant soils can be worked only during dry periods. They have a seasonal high water table for 2 to 4 months each year. These soils have a hazard of flooding in winter and in spring. The floods occur once or twice each year and last for 1 or 2 days. Some depressions remain ponded after flooding. Because of wetness, these soils are better suited to pasture, wetland wildlife, and woodland than to cultivated crops. They have severe limitations for most nonfarm uses. Capability unit IVw-2.

Hartsells series

The Hartsells series consists of well drained, gently sloping to steep soils that occupy broad mountaintops and rolling upland hills. These soils formed in material weathered from sandstone bedrock. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is dark grayish brown, fine sandy loam about 3 inches thick. The subsurface layer is yellowish brown fine sandy loam 4 inches thick. The subsoil is 33 inches thick. In sequence from the top, the upper 29 inches is yellowish brown clay loam that has a few pebbles in the lower part; the lower 4 inches is yellowish brown clay loam that has light gray and yellowish red mottles. The underlying material is weathered sandstone bedrock.

The Hartsells soils have moderately low natural fertility and moderate organic matter content. The available water capacity is medium, and permeability is moderate. Tilth is good. These soils are very strongly acid or strongly acid throughout.

Hartsells soils are suited to the commonly cultivated crops if protected from erosion. They are suited to permanent pasture and woodland production. The native vegetation is mostly hardwood trees and a few pines.

Representative profile of Hartsells fine sandy loam, 2 to 6 percent slopes, in Chattooga County, 3.0 miles due east from Alabama and Georgia state line and 0.25 miles south of Walker and Chattooga county line:

O1—1 to 0 inch, decayed organic matter.

A1—0 to 3 inches, dark grayish brown (2.5Y 4/2) fine sandy loam; weak, very fine, granular structure; very friable; many fine roots; 2 percent gravel; very strongly acid; abrupt, smooth boundary.

A2—3 to 7 inches, yellowish brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; very strongly acid; clear, smooth boundary.

B21t—7 to 24 inches, yellowish brown (10YR 5/6) clay loam; weak, fine, subangular blocky structure; friable; few old root channels and wormholes, few thin clay films around wormholes; very strongly acid; clear, smooth boundary.

B22t—24 to 36 inches, yellowish brown (10YR 5/4) clay loam; weak, fine, subangular blocky structure; friable; few patchy clay films on ped surfaces; 5 percent gravel; very strongly acid; gradual, wavy boundary.

B23t—36 to 40 inches, yellowish brown (10YR 5/6) clay loam; many, medium, prominent, light gray (10YR 7/2) and yellowish red (5YR 5/8) mottles; weak, fine, subangular blocky structure; friable; very strongly acid; abrupt, smooth boundary.

R—40 to 60 inches, partially weathered sandstone rock weathered in horizontal planes with the following colors: brownish yellow (10YR 6/8), white (10YR 8/2), and brown to dark brown (7.5YR 4/4).

The A horizon ranges from 2 to 9 inches in thickness. The A1 horizon is dark grayish brown or yellowish brown. The Ap horizon is very dark grayish brown or grayish brown. The B horizon ranges from 20 to 36 inches. The Bt horizon is yellowish brown or strong brown clay loam or sandy clay loam. The solum ranges from 24 to 40 inches in thickness.

Hartsells soils are associated in the landscape with Holston, Hector, and Linker soils. They are shallower to the underlying material than the Holston soils, and they are deeper to the underlying sandstone bedrock than the Hector soils. Hartsells soils have a subsoil that is not so red as the Linker soils.

HaB—Hartsells fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies broad mountain ridgetops. The mapped areas range from 10 to 30 acres in size. This soil has the profile described as representative for the Hartsells series.

Included with this soil in mapping are a few small areas where the soil is 5 to 35 percent gravel on the surface and throughout, and a few small areas where the soil is more than 40 inches to the underlying sandstone, and has slopes of more than 6 percent. Also included are small areas of soil that are less than 20 inches to the underlying sandstone bedrock, and some places where a few rocks crop out.

This Hartsells soil has a slight or moderate hazard of erosion if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops. The Hartsells soils respond well to proper management if fertilizer is applied according to results of soil tests. Limitations for most nonfarm uses are moderate or severe. Capability unit IIe-4.

HaC—Hartsells fine sandy loam, 6 to 10 percent slopes. This sloping soil occupies narrow ridgetops and long side slopes. The mapped areas range from 5 to 35 acres in size. The profile of this soil is similar to that described as representative for the series, but it has a yellowish brown surface layer about 6 inches thick.

Included with this soil in mapping are a few small areas where the soil has 5 to 10 percent gravel on the surface and throughout, and a few small areas that have a depth of more than 40 inches to the underlying sandstone bedrock. Also included are several areas of soil that are less than 20 inches to the underlying sandstone bedrock and a few areas that have sandstone rock outcrops.

This sloping Hartsells soil has a hazard of erosion if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops and pasture plants. This soil responds to good management if fertilizer is applied according to results of soil tests. Corn and soybeans are commonly grown. Limitations for most nonfarm uses are moderate or severe. Capability unit IIIe-5.

HaD—Hartsells fine sandy loam, 10 to 15 percent slopes. This moderately steep soil occupies hillsides. Mapped areas range from 10 to 60 acres in size. The

profile of this soil is similar to that described as representative for the series, but it is moderately steep and has a yellowish brown surface layer about 5 inches thick. The plow layer is within the original surface layer throughout most of the mapped area.

Included with this soil in mapping are a few areas where the soil is 5 to 15 percent gravel on the surface and throughout, and areas where the subsoil is yellowish brown. A few small areas that are more than 40 inches deep to the underlying sandstone bedrock are included. Several areas of soil that are less than 20 inches to the underlying sandstone bedrock are included. Also included are areas that have a few sandstone rock outcrops.

This Hartsells soil has a moderate erosion hazard if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops and pasture plants. Most slopes have reverted to pine trees. Some areas are in pasture. Limitations for most nonfarm uses are moderate or severe. Capability unit IVe-3.

HaE—Hartsells fine sandy loam, 15 to 25 percent slopes. This steep soil occupies long side slopes, hills, and ridges. The mapped areas range from 10 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but it has a yellowish brown surface layer about 3 to 4 inches thick.

Included with this soil in mapping are a few small areas where the soil is 5 to 15 percent gravel and has stone fragments on the surface and throughout, and a few small areas of soil that are more than 40 inches deep to the underlying sandstone bedrock. Also included are several areas of soil that are less than 20 inches to the underlying sandstone, and some areas that have a few sandstone rock outcrops.

This Hartsells soil has a severe erosion hazard if it is unprotected. It is well suited to pine trees and can be used for pasture if proper management is practiced. Limitations for most nonfarm uses are severe. Capability unit VIe-4.

Hector series

The Hector series consists of shallow, well drained, sloping to very steep soils. These soils occupy mountains and side slopes of the ridges. They formed in material weathered from acid sandstone that is interbedded with siltstone or shale in places. Slopes range from 6 to 40 percent.

In a representative profile the surface and subsurface layers are stony fine sandy loam that has common stones and cobbles. The surface layer is dark grayish brown 1 inch thick and the subsurface layer is dark yellowish brown 4 inches thick. The subsoil is brown stony sandy loam about 10 inches thick. The underlying hard sandstone bedrock is brownish yellow, white, brown, and dark brown.

The Hector soils have low natural fertility and organic matter content. The available water capacity is low, and permeability is moderately rapid. Tilth is poor. These soils are very strongly acid throughout.

These soils are not suited to cultivated crops. Most of the soil is wooded, except the lower slopes are idle, used for pasture, or are cultivated. The native trees on Hector soils are hickory, white oak, red oak, post oak, and dogwood. Reforested slopes produce loblolly pine and shortleaf pine.

Representative profile of Hector stony fine sandy loam, 15 to 40 percent slopes, in Chattooga County, 0.12 mile west of Georgia and Alabama state line on Georgia Highway 48, 3.12 miles north of paved county road, 0.12 mile west on dirt road, 75 feet north:

A1—0 to 1 inch, dark grayish brown (10YR 4/2) stony fine sandy loam; weak, fine, granular structure; very friable; many fine roots, few wormholes; few uncoated sand grains; 20 percent stones and cobbles; very strongly acid; abrupt, smooth boundary.

A2—1 to 5 inches, dark yellowish brown (10YR 4/4) stony fine sandy loam; weak, fine, granular structure; very friable; material from A1 horizon in old root channels; many fine roots; few wormholes; 20 percent stones and cobbles, about 10 percent gravel; very strongly acid; clear, smooth boundary.

B—5 to 15 inches, brown (10YR 5/3) stony sandy loam; weak, fine, subangular blocky structure; friable; few fine and medium roots; few worm castings and wormholes; about 25 percent stones and cobbles and 15 percent gravel; very strongly acid; abrupt, smooth boundary.

R—15 inches, hard sandstone rock, brownish yellow (10YR 6/6, 6/8), white (10YR 8/2), and brown to dark brown (7.5YR 4/4).

The A horizon ranges from 3 to 7 inches in thickness. The A1 horizon is dark grayish brown or brown. The B horizon ranges from 7 to 17 inches in thickness. The B horizon is brown or strong brown stony sandy loam or stony fine sandy loam. The solum thickness, or depth to sandstone bedrock, ranges from 10 to 20 inches.

Hector soils are associated in the landscape with Hartsells, Holston, and Linker soils. They have a thinner solum and contain more coarse fragments than the associated soils.

HeD—Hector stony fine sandy loam, 6 to 15 percent slopes. This sloping and moderately steep soil occupies short side slopes of ridges. Mapped areas range from 5 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but it is less sloping and the surface layer is about 7 inches thick.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent gravel and stones, and that are more than 20 inches deep to the hard underlying sandstone. Also included are small areas of Hartsells, Holston, and Tidings soils.

This Hector soil is subject to erosion if not protected. It is better suited to woodland than to other uses, but tree growth is slow because of low available water capacity. Only a few pasture grasses and legumes are suited because of droughtiness. This soil has severe limitations for most nonfarm uses. Capability unit VIs-1.

HeF—Hector stony fine sandy loam, 15 to 40 percent slopes. This steep to very steep soil occupies long side slopes of ridges. Mapped areas range from 10 to 50 acres in size. This soil has the profile described as representative for the Hector series.

Included with this soil in mapping are a few small areas of soil that are less than 15 percent gravel and stones, and that are more than 20 inches deep to the underlying sandstone bedrock, and small areas of soil where slopes

are more than 40 percent. Also included are small areas of Tidings and Montevallo soils and small areas of bedrock outcrop.

This Hector soil has a moderate erosion hazard. It produces slow-growing hardwood trees on most slopes. Huckleberries, mountain laurel, rhododendron, and wild azalea are also grown. The shallow rooting zone and droughtiness restrict root growth. This soil has severe limitations for most nonfarm uses. Capability unit VIIs-1.

Holston series

The Holston series consists of deep, well drained, gently sloping to steep soils. These soils occupy high stream terraces above the flood plain and foot slopes and benches in the uplands adjacent to mountains. They formed in colluvium that originated from material weathered from sandstone, siltstone, and shale. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is brown, fine sandy loam 8 inches thick. The subsoil is more than 56 inches thick. In sequence from the top, the upper 15 inches is yellowish brown sandy clay loam; the next 14 inches is strong brown clay loam that has yellowish brown mottles and a few pebbles; the layer below is 14 inches of yellowish brown clay loam that has strong brown and yellowish red mottles; and the lower 13 inches is red clay that has yellowish brown and strong brown mottles and a few pebbles. The depth to bedrock is more than 60 inches.

The Holston soils have moderate natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderate. The effective rooting zone is thick, and tilth is good. These soils are strongly acid to very strongly acid throughout.

Holston soils are well suited to most locally grown, cultivated crops, pasture plants, and pine trees. Most of these soils have been cleared and are cultivated. Some slopes have reverted to pine trees. Other areas are used for pasture.

Representative profile of Holston fine sandy loam, 2 to 6 percent slopes, in Floyd County, 2 1/2 miles west of Livingston, Georgia, 100 feet east of paved road:

Ap—0 to 8 inches, brown (10YR 5/3) fine sandy loam; weak, medium, granular structure; very friable; many fine roots; very strongly acid; abrupt, smooth boundary.

B21t—8 to 23 inches, yellowish brown (10YR 5/4) sandy clay loam; weak, medium, subangular blocky structure; friable; few fine roots and pores; strongly acid; gradual, smooth boundary.

B22t—23 to 37 inches, strong brown (7.5YR 5/6) clay loam; common, medium, distinct, yellowish brown (10YR 5/4) mottles; moderate, medium, subangular blocky structure; friable; few fine pores; patchy clay film on ped surfaces; 2 percent gravel; strongly acid; clear, wavy boundary.

B23t—37 to 51 inches, yellowish brown (10YR 5/6) clay loam; common, medium, distinct, strong brown (7.5YR 5/6) and yellowish red (5YR 4/6) mottles; moderate, medium, subangular blocky structure; friable; thin patchy clay film on ped surfaces; very strongly acid; gradual, wavy boundary.

B24t—51 to 64 inches, red (2.5YR 5/6) clay; many, medium, prominent, yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; strong, medium, angular blocky structure; firm; continuous clay film on ped surfaces; 2 percent gravel; very strongly acid.

The A horizon ranges from 5 to 12 inches in thickness. The Ap horizon is pale brown, brown, or dark yellowish brown. The A2 horizon, if present, is yellowish brown or light olive brown. The B horizon ranges from 50 to 70 inches or more in thickness. The Bt horizon is strong brown or yellowish brown clay loam or silty clay loam that has none to common red, brown, and yellow mottles. In places, the lower Bt horizon is red clay. The solum ranges from 60 to 80 inches or more in thickness. The Holston soils have subsoils mottled at a shallower depth than is defined as the range for the series, but this difference does not alter the use, management, or behavior of the soil.

The Holston soils are associated in the landscape with Etowah, Hartsells, and Wolftever soils. They are not so red in the subsoil as Etowah soils, and they have a thicker solum than Hartsells soils. Holston soils are better drained than Wolftever soils and contain less clay in the subsoil.

HoB—Holston fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies high stream terraces on foot slopes and benches in the uplands adjacent to mountains. Mapped areas range from 5 to 60 acres in size. This soil has the profile described as representative for the Holston series.

Included with this soil in mapping are a few small areas of soil that have 5 to 15 percent gravel on the surface and throughout, and a few areas of soil that are less than 60 inches to the underlying material. Also included are small areas of Etowah, Hartsells, and Wolftever soils.

This gently sloping Holston soil has a slight hazard of erosion if it is cultivated and is not protected. It is suited to most locally grown, cultivated crops and pasture plants. This soil responds well to proper management if fertilizer is applied according to results of soil tests. It has slight or moderate limitation for most nonfarm uses. Capability unit IIe-3.

HoC—Holston fine sandy loam, 6 to 10 percent slopes. This sloping soil occupies long foot slopes at the base of mountains and the larger ridges. Mapped areas range from 5 to 10 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is dark yellowish brown and about 6 inches thick.

Included with this soil in mapping are a few small areas of soil that have 5 to 10 percent gravel on the surface and throughout, and a few areas of soil that are less than 60 inches to the underlying material. Also included are small areas of Etowah, Hartsells, and Wolftever soils, and a few small areas of eroded soils.

This sloping Holston soil has a moderate hazard of erosion if it is cultivated and is not protected. It is easy to work throughout a wide range of moisture conditions. It is well suited to most locally grown, cultivated crops and pasture crops. This soil responds to proper management if fertilizer is applied according to results of soil tests. The most commonly grown crops are corn and soybeans. This soil has moderate limitations for most nonfarm uses. Capability unit IIIe-3.

HoD—Holston fine sandy loam, 10 to 25 percent slopes. This moderately steep and steep soil occupies short foot slopes at the base of mountains and high

ridges. Mapped areas range from 5 to 50 acres in size. This soil is similar to that described as representative for the series, but the surface layer is dark yellowish brown and is about 5 inches thick.

Included with this soil in mapping are a few small areas of soil that have 5 to 10 percent gravel on the surface and throughout, and a few areas where the soil is less than 60 inches to the underlying material. Also included are small areas of Allen, Hartsells, and Hector soils.

This Holston soil has a severe hazard of erosion if it is cultivated and is not protected. It is suited to a few locally grown, cultivated crops on the lower slopes, but it is better suited to pasture. Most slopes have reverted to trees. This soil has moderate or severe limitations for most nonfarm uses. Capability unit IVe-1.

Linker series

The Linker series consists of well drained, sloping to steep soils. These soils occupy steep ridgetops and side slopes of mountains. They formed in material weathered from sandstone. Slopes range from 6 to 25 percent.

In a representative profile the surface layer is 7 inches thick. It is brown fine sandy loam that has common cobbles and a few stones. The subsoil is 31 inches thick. In sequence from the top, the upper 8 inches is yellowish red sandy clay loam; the next 19 inches is red clay loam; and the lower 4 inches is red clay loam that has yellowish brown mottles and a few weak red and strong brown fragments of sandstone. The underlying material is weak red and strong brown slightly weathered sandstone bedrock.

The Linker soils have moderate natural fertility and organic matter content. The available water capacity is medium, and permeability is moderate. The effective rooting zone is moderately thick, and tilth is generally good. These soils are strongly acid to very strongly acid throughout unless limed.

Most of the larger areas of this soil have been cleared and are cultivated. A few areas are pastured. The sloping soils are suited for most locally grown, cultivated crops but the steeper soils are better suited to pasture or mixed hardwood and pine trees.

Representative profile of Linker fine sandy loam, 10 to 25 percent slopes, in Chattooga County, 4 miles west of Sardis Baptist Church, 100 yards north of dirt road:

Ap—0 to 7 inches, brown (7.5YR 4/4) fine sandy loam; weak, fine, granular structure; very friable; few fine and medium roots; common cobbles, few stones; medium acid; abrupt, smooth boundary.

B1—7 to 15 inches, yellowish red (5YR 4/8) sandy clay loam; weak, fine, granular structure; friable; few fine and medium roots; strongly acid; clear, smooth boundary.

B2t—15 to 34 inches, red (2.5YR 4/6) clay loam; moderate, medium, subangular blocky structure; friable; few thin patchy clay films on surfaces of peds; very strongly acid; clear, smooth boundary.

B3—34 to 38 inches, red (2.5YR 4/6) clay loam; moderate, medium, subangular blocky structure; friable; common, fine, distinct, yellowish brown (5YR 5/6) mottles; weak red and strong brown fragments of sandstone; very strongly acid; clear smooth boundary.

R—38 to 45 inches, weak red and strong brown slightly weathered sandstone.

The A horizon ranges from 4 to 17 inches in thickness. The Ap horizon is dark yellowish brown or dark brown. The A1 horizon, if present, is dark grayish brown or very dark grayish brown. The B horizon ranges from 18 to 36 inches in thickness. The Bt horizon is red or yellowish red loam or clay loam. The solum ranges from 20 to 40 inches in thickness.

The Linker soils are associated in the landscape with Allen, Hartsells, and Holston soils. They have a thinner solum than Allen and Holston soils and a redder subsoil than the Hartsells and Holston soils.

LkC—Linker fine sandy loam, 6 to 10 percent slopes. This sloping soil occupies long sides of mountains and ridges. Mapped areas range from 5 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but it is less sloping and the surface layer is about 2 to 4 inches thicker.

Included with this soil in mapping are a few small areas where the surface layer is yellowish red sandy clay loam. Also included are small areas of Allen, Hartsells, and Holston soils.

This Linker soil has a moderate erosion hazard on unprotected slopes. It responds well to proper management if fertilizer is applied according to results of soil tests. It is suited to most locally grown, cultivated crops and pasture plants. This soil has moderate or severe limitations for most nonfarm uses. Capability unit IIIe-5.

LkE—Linker fine sandy loam, 10 to 25 percent slopes. This moderately steep or steep soil occupies mountain ridges and side slopes. Mapped areas range from 5 to 20 acres in size. This soil has the profile described as representative for the Linker series.

Included with this soil in mapping are a few small areas where the subsoil is dark red clay. Also included are small areas of Allen, Hartsells, and Holston soils.

This Linker soil has a severe hazard of erosion if it is not protected. It has fair tilth on the moderately steep slopes. It is well suited to pasture and trees. This soil has severe limitations for most nonfarm uses. Capability unit VIe-4.

Lyerly series

The Lyerly series consists of well drained and moderately well drained, nearly level to sloping soils. These soils occupy limestone and shaly limestone valleys. They formed in material weathered from limestone, and in some areas, from limestone interbedded with calcareous shale. Slopes range from 0 to 10 percent.

In a representative profile the surface layer is yellowish brown silt loam 6 inches thick. The subsoil is 26 inches thick. In sequence from the top, the upper 10 inches is yellowish brown clay; the next 6 inches is brownish yellow clay; and the lower 10 inches is light olive brown clay. The depth to hard limestone rock is 32 inches.

The Lyerly soils have low natural fertility and organic matter content. Th available water capacity is medium, and permeability is very slow. The effective rooting zone is moderately deep. These soils are slightly acid to very strongly acid in the surface layer and in the upper and middle parts of the subsoil. They are slightly acid or neutral in the lower part of the subsoil.

These soils are not well suited to cultivated crops. They are better suited to pasture plants than to other uses if proper management is practiced.

Representative profile of Lyerly silt loam, 2 to 6 percent slopes, in Chattooga County, 1 mile north-northeast of New Antioch Baptist Church, and 50 feet south of paved road:

Ap—0 to 6 inches, yellowish brown (10YR 5/4) silt loam; weak, fine, granular structure; very friable; many fine roots, few worm castings; common limestone gravel; strongly acid; abrupt, smooth boundary.

B21t—6 to 16 inches, yellowish brown (10YR 5/6) clay; moderate, medium, angular blocky structure; firm; plastic; common fine roots, few medium roots; patchy thin clay films on faces of peds; very strongly acid; gradual, wavy boundary.

B22t—16 to 22 inches, brownish yellow (10YR 6/6) clay; weak, medium, angular blocky structure; grooved intersecting natural fragments; firm; plastic; few medium roots; common fine medium shiny surfaces on peds; very strongly acid; abrupt, smooth boundary.

B3—22 to 32 inches, light olive brown (2.5Y 5/4) clay; weak, medium, blocky structure; grooved intersecting natural fragments; very firm; very plastic; few medium roots; common fine, black concretions; many fine and medium shiny surfaces on peds; many dark colored, soft brown bodies; few fine calcium carbonate concretions; slightly acid.

R—32 inches, limestone rock.

The A horizon ranges from 3 to 7 inches in thickness. The Ap horizon is light yellowish brown, yellowish brown, or light olive brown. The Bt horizon is yellowish brown, olive yellow, brownish yellow, or light olive brown silty clay or clay. The solum ranges from 20 to 36 inches in thickness.

Lyerly soils are associated in the landscape with Conasauga, Townley, and Wolftever soils. They are less acid in the lower part of the subsoil than the associated soils, and are not so red throughout as the Townley soils.

LyA—Lyerly silt loam, 0 to 2 percent slopes. This nearly level soil occupies valleys. Mapped areas range from 10 to 35 acres in size. The profile of this soil is similar to that described as representative for the series, but it is nearly level and the surface layer is light yellowish brown.

Included with this soil in mapping are a few small areas of soil that have limestone boulders on the surface. Also included are a few small areas where the soil is more than 10 percent gravel on the surface and small areas of Conasauga, Townley, and Wolftever soils.

This nearly level Lyerly soil has only a slight hazard of erosion. Because this soil is moderately deep to bedrock and has very slow permeability, it is not suited to a wide range of cultivated crops. This soil is better suited to pasture than to other uses if proper management is practiced. Limitations for most nonfarm uses are severe. Capability unit IIIs-2.

LyB—Lyerly silt loam, 2 to 6 percent slopes. This gently sloping soil occupies wide valleys. Mapped areas range from 10 to 75 acres in size. This soil has the profile described as representative for the Lyerly series.

Included with this soil in mapping are a few small areas where limestone crops out, and a few small areas where the soil has gravel on the surface. Also included are areas of Conasauga, Townley, and Wolftever soils.

This gently sloping Lyerly soil has a slight hazard of erosion. Shallow soil and very slow permeability restrict the use of this soil for most locally grown, cultivated crops. It is better suited to permanent pasture grasses and legumes. This soil has severe limitations for most nonfarm uses. Capability unit IIIs-2.

LyC—Lyerly silt loam, 6 to 10 percent slopes. This sloping soil in most places occupies short side slopes at the sides of valleys. Mapped areas range from 5 to 15 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is light olive brown.

Included with this soil in mapping are a few small areas of soils where limestone crops out, and a few places where the surface layer is gravelly or shaly. Also included are small areas of Conasauga, Cunningham, and Townley soils.

This sloping Lyerly soil has a moderate erosion hazard. Moderately deep soil and very slow permeability restrict the use of this soil for most locally grown, cultivated crops. This soil is better suited to permanent pasture grasses and legumes. Limitations for most nonfarm uses are severe. Capability unit IVs-1.

Madison series

The Madison series consists of moderately deep to deep, well drained, gently sloping to very steep upland soils of the Piedmont Plateau. These soils occupy broad to narrow ridgetops and long to short side slopes. They formed in material weathered from mica schist, granite gneiss, and quartz mica schist. Slopes range from 2 to 35 percent.

In a representative profile the surface layer is yellowish red gravelly clay loam 6 inches thick. The subsoil is about 24 inches thick. It is red clay in the upper 19 inches and red clay loam in the lower 5 inches. The underlying material, to a depth of 60 inches, is partially weathered multicolored schist, but it is predominantly pale red. Depth to weathered and broken rock is 3 to 10 feet.

The Madison soils have moderate natural fertility and organic matter content. The available water capacity is medium, and permeability is moderate. The effective rooting zone is moderately thick, and tilth is good. These soils are very strongly acid or strongly acid throughout.

The gently sloping and sloping Madison soils are well suited to locally grown, cultivated crops. The moderately steep slopes are suited for cultivated crops about once in four years in a sequence with grasses and legumes. The steep and very steep soils are well suited to permament pasture or pine trees.

Representative profile of Madison gravelly clay loam, 6 to 10 percent slopes, eroded, in Polk County, 1 1/2 miles west, southwest of Hightower Lake:

Ap—0 to 6 inches, yellowish red (5YR 5/6) gravelly clay loam; weak, fine, granular structure; very friable; few wormholes; many fine roots; few very fine flakes of mica; 15 percent gravel; very strongly acid; abrupt, smooth boundary.

B21t—6 to 12 inches, red (2.5YR 5/6) clay; moderate, medium, subangular blocky structure; friable; common fine and medium roots; clay film on some surfaces of peds; Ap material in old root channels; few very fine flakes of mica; 5 percent gravel; very strongly acid; clear, wavy boundary.

B22t—12 to 25 inches, red (2.5YR 4/8) clay; moderate, medium, angular and subangular blocky structure; friable; clay film on most surfaces of peds; few fine roots; few very fine flakes of mica; very strongly acid; clear, wavy boundary.

B3—25 to 30 inches, red (2.5YR 4/8) clay loam; weak, fine, subangular blocky structure; friable; clay film around most fragments of schist and in pockets, highly weathered schist in approximately 15 percent by volume of the material; common fine flakes of mica; very strongly acid; abrupt, smooth boundary.

C—30 to 60 inches, partially weathered multicolored schist, the dominant color is pale red (2.5YR 6/2).

The A horizon ranges from 4 to 8 inches in thickness. The Ap horizon is brown or yellowish red and is from 15 to 20 percent schist, quartz, and gneiss fragments. The B horizon ranges from 18 to 36 inches in thickness. The Bt horizon is red or yellowish red clay or clay loam. The solum ranges from 20 to 40 inches in thickness.

Madison soils are associated in the landscape with Grover and Tallapoosa soils. They have redder subsoils and contain more clay than Grover soils, and contain fewer coarse fragments and have a thicker solum than the Tallapoosa soils.

MgB2—Madison gravelly clay loam, 2 to 6 percent slopes, eroded. This gently sloping soil occupies narrow to broad, smooth ridgetops and short side slopes. Mapped areas range from 5 to 30 acres in size. The profile of this soil is similar to the one described as representative for the series, but it has a brown surface layer.

Included with this soil in mapping are a few small areas of soil that are less than 15 percent gravel on the surface. Some small galled spots that are in most areas are included. Also included are small areas of Grover and Tallapoosa soils.

This Madison soil has a moderate hazard of erosion if it is cultivated and is not protected. It has good tilth except in the included galled spots where tilth is poor. This soil responds well to proper management if fertilizer is applied according to results of soil tests. It is suited to most locally grown, cultivated crops, pasture plants, and pine trees. The limitations for most nonfarm uses are slight or moderate. Capability unit IIe-1.

MgC2—Madison gravelly clay loam, 6 to 10 percent slopes, eroded. This sloping soil occupies narrow to moderately broad ridgetops and long side slopes. Mapped areas range from 5 to 35 acres in size. This soil has the profile described as representative for the Madison series.

Included with this soil in mapping are small areas of Grover and Tallapoosa soils. Small areas where soils are less than 15 percent schist fragments on the surface and a few small galled spots that are in most areas are included.

This Madison soil has a severe hazard of erosion if it is cultivated and is not protected. The plow layer has good tilth except in the included galled spots. This soil responds to proper management if fertilizer is applied according to results of soil tests. It is suited to most locally grown, cultivated crops, pasture plants, and pine trees. Limitations for most nonfarm uses are moderate. Capability unit IIIe-1.

MgD2—Madison gravelly clay loam, 10 to 15 percent slopes, eroded. This moderately steep soil occupies long, narrow ridgetops and short side slopes. Mapped areas range from 5 to 40 acres in size. The profile of this soil is similar to the one described as representative for the series, but it is more sloping and the surface layer is an inch or two thinner.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent gravel on the surface, and a few small galled spots that are in most areas. Also included are a few areas of Grover and Tallapoosa soils.

This Madison soil has a severe erosion hazard if it is cultivated and is not protected. The plow layer has good tilth except in the included galled spots where tilth is poor. This soil responds well to proper management if fertilizer is applied according to the results of soil tests. It is poorly suited to cultivated crops, but it can be cropped about once in 4 years in a sequence with grasses and legumes. This soil has moderate or severe limitations for most nonfarm uses. Capability unit IVe-1.

MgE2—Madison gravelly clay loam, 15 to 35 percent slopes, eroded. This steep and very steep soil occupies ridgetops and short side slopes. Mapped areas range from 5 to 60 acres in size. The profile of this soil is similar to the one described as representative for the series, but it has a thinner surface layer.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent gravel on the surface and a few areas of Grover and Tallapoosa soils. Also included are a few galled spots and severely eroded areas.

This Madison soil has a severe erosion hazard if it is not protected. It is not suited to cultivated crops, but is suited to pine trees and pasture grasses. Limitations are severe for most nonfarm uses. Capability unit VIe-2.

Mine pits

Mo—Mine pits consist of areas that have been disturbed, overturned, or removed by mining minerals such as iron, bauxite, and manganese. Many iron ore mines are throughout Polk and Floyd Counties.

The mining operations left large holes 10 to 100 feet or more in depth and 5 acres to 320 acres in size. Some of these holes retain several feet of water the year round. Between the holes are large, uneven mounds or hills of soil material, lying as short, high narrow bands in most places.

These mounds, or hills, have a severe hazard of erosion. Many large gullies have formed in places. Other areas have been smoothed by grading. The older abandoned mining areas are wooded with Virginia pines in places. Some of these open mine pits are used for sanitary landfills. After these pits are alternately filled with refuse and soil material and smoothed, most areas can be returned to productive use.

Montevallo series

The Montevallo series consists of well drained, sloping to very steep mountain soils. These soils occupy slopes of the mountains and ridges. The landscape has numerous shallow drainageways, irregularly shaped hills, and intermittent streams. These soils formed in material weathered from acid shales or siltstone. Slopes range from 6 to 45 percent.

In a representative profile the surface layer is very shaly silt loam 4 inches thick. The upper 1 inch is dark grayish brown, and the lower 3 inches is dark brown. The subsoil is yellowish brown very shaly silt loam about 10 inches thick. The underlying material, to a depth of 48 inches, is gray, brown, olive, and olive gray weathered shale. The depth to weathered shale bedrock is 10 to 20 inches.

The Montevallo soils have low natural fertility and organic matter content. The available water capacity is low, and permeability is moderate. The effective rooting zone is shallow, and tilth is poor. These soils are very strongly acid and strongly acid throughout.

The present vegetation is mostly hardwood trees and scattered pines. About 10 percent of the soil is used for cultivated crops and pasture. Montevallo soils are droughty and are not suited to cultivated crops. They are suited to pasture or woodland.

Representative profile of Montevallo very shaly silt loam, 6 to 15 percent slopes, in Floyd County, 0.7 mile east of intersection of U.S. Highway 27 with old road to Dalton, turn right and 1.7 miles:

A11—0 to 1 inch, dark grayish brown (0YR 4/2) very shaly silt loam; weak, fine, granular structure; very friable; many fine roots; 15 percent by volume fragments of shale; very strongly acid; abrupt, irregular boundary.

A12—1 to 4 inches, dark brown (10YR 4/3) very shaly silt loam; weak, fine, granular structure; very friable; many fine roots; 40 percent by volume shale; very strongly acid; abrupt, smooth boundary.

B2—4 to 14 inches, yellowish brown (10YR 5/6) very shaly silt loam; weak, fine, subangular blocky structure; very friable; many fine roots, few large flattened roots; 50 percent by volume shale; very strongly acid; abrupt, irregular boundary.

C—14 to 48 inches, gray (5Y 5/1), brown (10YR 4/3) weathered shale and olive (5Y 5/3), olive gray (5Y 4/2) soft somewhat weathered shale coatings of dark yellowish brown (10YR 4/4); 95 percent fragments of shale and a few pockets weathered out; very strongly acid.

The A horizon ranges from 3 to 7 inches in thickness. It is grayish brown, dark brown, or dark grayish brown. Shale fragments range from 10 to 40 percent by volume. The B horizon ranges from 4 to 14 inches in thickness. Soil material between the coarse fragments in the B horizon includes silt loam, loam, clay loam, or silty clay loam. The B2 horizon is yellowish brown or yellowish red. The solum ranges from 10 to 20 inches in thickness.

Montevallo soils are associated in the landscape with Conasauga, Cunningham, and Townley soils. They have less clay in the subsoil and more coarse fragments throughout than the associated soils. Also, Montevallo soils are not so red as Cunningham and Townley soils, and they are better drained than the Conasauga soils.

MsD—Montevallo very shaly silt loam, 6 to 15 percent slopes. This sloping to moderately steep soil occupies long side slopes of the ridges. Mapped areas range from 5 to 25 acres in size. This soil has the profile described as representative for the Montevallo series.

Included with this soil in mapping are a few small areas of soil that have 5 to 15 percent shale or gravel on the surface and throughout the soil. Also included are small areas of Conasauga, Cunningham, and Townley soils.

This sloping to moderately steep Montevallo soil has a moderate hazard of erosion. About 90 percent of it is in woodland, and the rest is used for pasture or cultivated crops. Because this soil is shallow to the underlying shale bedrock and has low available water capacity, it is not suited to cultivated crops. This soil is better suited to pasture or woodland than to other uses if proper management is practiced. It has a moderate or severe limitation for most nonfarm uses. Capability unit VIe-4.

MsF—Montevallo very shaly silt loam, 15 to 45 percent slopes. This steep to very steep soil occupies ridgetops and short side slopes. Mapped areas range from 25 to 150 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is grayish brown.

Included with this soil in mapping are a few small areas where soils are 5 to 50 percent fragments of shale on the surface and throughout. Also included are small areas of Fullerton and Townley soils.

This steep or very steep Montevallo soil has a severe erosion hazard. It is not suited to cultivation, but is better suited to pine trees. Limitations for most nonfarm uses are severe. Capability unit VIIe-3.

Nella series

The Nella series consists of well drained, steep soils. These soils occupy mountainsides. They formed in material weathered from the underlying sandstone or siltstone. Slopes range from 15 to 45 percent.

In a representative profile the surface and subsurface layers are cobbly loam. The surface layer is dark grayish brown and about 1 inch thick, and the subsurface layer is brown and 2 inches thick. The subsoil is more than 59 inches thick. In sequence from the top, the upper 5 inches is reddish brown cobbly clay loam; the next 16 inches is yellowish red cobbly clay loam; the next 20 inches is red, gravelly clay loam; and the lower 18 inches is yellowish red gravelly clay loam that has red and brown mottles. Depth to sandstone bedrock is more than 72 inches.

The Nella soils have moderate natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderate. The effective rooting zone is thick, and tilth is poor. These soils are strongly acid to very strongly acid throughout unless limed.

Because these soils are steep and their surface layers are cobbly, Nella soils are better suited to pasture or woodland than to cultivated crops. Most slopes are wooded in mixed hardwood and pine trees.

The steep Nella soils are mapped in association with Townley soils. Because these soils are steep and their use

and management or behavior are similar, they are mapped together as an association.

Representative profile of Nella cobbly loam, from an area of Nella-Townley association, steep, in Chattooga County, 2.5 miles northeast of Ebenezar Baptist Church, 0.3 mile west on John's Mountain:

A1—0 to 1 inch, dark grayish brown (10YR 4/2) cobbly loam; weak, fine, granular structure; very friable; many fine roots and pores; 35 percent sandstone gravel and 20 percent cobbles; medium acid; abrupt, smooth boundary.

A2—1 to 3 inches, brown (10YR 4/3) cobbly loam; weak, fine, granular structure; very friable; many fine roots and pores; 15 percent cobbles and 10 percent gravel; medium acid; clear, smooth boundary.

B1—3 to 8 inches, reddish brown (5YR 4/4) cobbly clay loam; weak, fine, subangular blocky structure; friable; few fine roots, few common fine pores; 15 percent cobbles and 10 percent gravel; very strongly acid; clear, smooth boundary.

B21t—8 to 24 inches, yellowish red (5YR 4/8) cobbly clay loam; moderate, medium, subangular blocky structure; friable; few fine roots, few old root channels with some decaying roots; patchy clay films on surfaces of peds; 18 percent sandstone gravel and 10 percent cobbles; very strongly acid; gradual, wavy boundary.

B22t—24 to 44 inches, red (2.5YR 4/6) gravelly clay loam; moderate, medium, subangular blocky structure; friable; patchy clay film on surfaces of peds; about 20 percent sandstone gravel; very strongly acid; gradual, wavy boundary.

B23t—44 to 62 inches, yellowish red (5YR 5/8) gravelly clay loam; common,fine, distinct, red (2.5YR 4/6) and brown (7.5YR 5/4) mottles; moderate, medium, subangular blocky structure; friable; thin patchy clay films on surfaces of peds; 15 percent sandstone gravel; very strongly acid.

The A horizon ranges from 3 to 12 inches in thickness. It is dark grayish brown, brown, light yellowish brown, or yellowish brown. The B horizon ranges from 50 to 80 inches or more in thickness. The Bt horizon is yellowish red or red. It is clay loam or sandy clay loam in the fine earth fraction. The solum ranges from 60 to 80 inches or more in thickness.

Nella soils are associated in the landscape with Hartsells, Holston, and Townley soils. They have a thicker solum than Hartsells and Townley soils, and they contain more coarse fragments than the associated soils. Nella soils have subsoils that are redder than Hartsells and Holston soils.

NTF—Nella-Townley association, steep. This steep association occupies long sides of mountains and ridges. Mapped areas range from 40 to 1,500 acres in size. About 60 percent is Nella soils and 40 percent is Townley soils. The Townley soil has the profile described as representative for the Townley series but it is steep.

Included with this association in mapping are small areas of Allen, Hartsells, and Holston soils, and a few rock outcrops. Also included are soils that have stones covering 5 to 10 percent of the surface.

Because of steep slopes and a severe erosion hazard, these soils are better suited to trees than to cultivated crops. All of the soil is wooded except a few small areas that have been cleared for residential or industrial sites. Limitations for nonfarm uses are severe. Capability unit VIIe-3.

Roanoke series

The Roanoke series consists of poorly drained, nearly level soils. These soils are near drainageways, in upland depressions, and on low stream terraces. They formed in clayey alluvial deposits. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is very dark gray silt loam about 4 inches thick. The subsurface layer is gray loam that has yellowish brown mottles and is 7 inches thick. The subsoil is more than 49 inches thick. In sequence from the top, the upper 9 inches is gray clay loam that has brownish yellow mottles; the next 12 inches is gray silty clay that has brownish yellow mottles; below this is 13 inches of gray silty clay that has yellowish brown and olive brown mottles; and the lower 15 inches is gray clay that has brownish yellow and yellowish brown mottles. Depth to hard rock is more than 60 inches.

The Roanoke soils have low natural fertility and organic matter content. The available water capacity is medium, and permeability is slow. These soils have water on the surface for long periods after flooding. The seasonal water table is at a depth of less than 12 inches in most places. The effective rooting zone is thick, but the clayey subsoil and high water table restrict root penetration. Tilth is poor. These soils are strongly acid or very strongly acid throughout.

Most of this soil is used for hardwood trees or pasture. Because of wetness, it is suited only to a few locally grown cultivated crops and pasture grasses.

Representative profile of Roanoke silt loam, in Floyd County, .25 mile west of intersection of Morton Bend and Shipley roads, 200 yards south of paved road:

A1—0 to 4 inches, very dark gray (10YR 3/1) silt loam; weak, fine, granular structure; very friable; common fine roots; many fine voids and pores; few small wormholes; strongly acid; abrupt, smooth boundary.

A2—4 to 11 inches, gray (10YR 6/1) loam; few, fine, faint, yellowish brown mottles; weak, fine, granular structure; friable; few fine roots, voids and pores; strongly acid; clear, smooth boundary.

B1g—11 to 20 inches, gray (10YR 6/1) clay loam; common, medium, prominent, brownish yellow (10YR 6/6 and 6/8) mottles; moderate, medium, subangular blocky structure; few fine roots; few very fine flakes of mica; strongly acid; gradual, smooth boundary.

B21tg—20 to 32 inches, gray (10YR 6/1) silty clay; many medium, prominent, brownish yellow (10YR 6/6 and 6/3) mottles; moderate, medium, angular blocky structure; firm; few very fine flakes of mica; strongly acid; gradual, smooth boundary.

B22tg—32 to 45 inches, gray (N 5/0) silty clay; common, fine, prominent, yellowish brown (10YR 5/6) and common, fine, distinct, olive brown (2.5Y 5/4) mottles; moderate, medium, angular blocky structure; very firm; few very fine flakes of mica; strongly acid; gradual, smooth boundary.

B23tg—45 to 60 inches, gray (10YR 6/1) clay; many, medium, prominent, brownish yellow and yellowish brown (10YR 6/6 and 6/8) mottles; moderate, medium, angular blocky structure; firm; very strongly acid.

The A horizon ranges from 8 to 14 inches in thickness. The Ap horizon is dark grayish brown or dark gray. The A1, if present, is black or very dark gray. The B horizon ranges from 36 to 60 inches in thickness. The Btg horizon is silty clay or clay. The solum ranges from 40 to 60 inches or more in thickness.

The Roanoke soils have more clay content throughout the lower part of the subsoil than is defined as the range for the series, but this difference does not alter the use and management or behavior of the soil.

Roanoke soils are associated in the landscape with Chewacla, Rome, and Toccoa soils. They are grayer, are more poorly drained, and have more clay in the subsoil than the associated soils. They contain less sand throughout than the Chewacla and Toccoa soils.

Rn—Roanoke silt loam. This soil occupies low stream terraces, drainageways, and upland depressions. Mapped areas range from 5 to 20 acres in size.

Included with this soil in mapping are a few small areas that are better drained than Roanoke soils, and small areas where the soil has concretions on the surface and throughout. Also included are small areas of Chewacla, Rome, and Toccoa soils.

This Roanoke soil is subject to flooding. Because of wetness, it is poorly suited to cultivated crops. During years of low rainfall, some areas are suited to crops. This soil can be used for pasture if proper management practices that include drainage are applied. Limitations are severe for most nonfarm uses. Capability unit Vw-1.

Rome series

The Rome series consists of deep, well drained, nearly level to gently sloping soils. These soils occupy low stream terraces. They formed in alluvium deposited by streams. Slopes range from 0 to 6 percent.

In a representative profile the surface layer is yellowish brown fine sandy loam about 9 inches thick, and 2 percent black concretions. The subsoil is about 57 inches thick. In sequence from the top, the upper 11 inches is strong brown loam and 5 percent black concretions; the next 14 inches is strong brown clay loam that has brownish yellow and yellowish red mottles and 5 percent black concretions; the layer below is 19 inches of yellowish brown sandy clay loam that has yellowish red and very pale brown mottles and 3 percent black concretions; and the lower 13 inches is brownish yellow sandy clay loam that has pale yellow and yellowish red mottles. The depth to hard rock is more than 6 feet.

Rome soils are high in natural fertility and moderate in organic matter content. The available water capacity is medium, and the permeability is moderate. Tilth is good. These soils are strongly acid or very strongly acid except where lime has been applied.

Most of the soils have been cleared and are used for cultivated crops and pasture. These soils are well suited to most locally grown crops and pasture grasses.

Representative profile of Rome fine sandy loam, 2 to 6 percent slopes, in Floyd County, 1.3 miles south of post office, Coosa, Georgia, on Georgia Highway 100; 3.0 miles west of Georgia Highway 100 to Clemmons River Bend Farm, 0.5 mile southwest of farmstead:

Ap—0 to 9 inches, yellowish brown (10YR 5/4) fine sandy loam; weak, fine, granular structure; very friable; common fine roots; few fine pores; 2 percent black concretions; medium acid; abrupt, smooth boundary.

B21t—9 to 20 inches, strong brown (7.5YR 5/6) loam; weak, fine, subangular blocky structure; fiable; few fine common roots and pores; 5 percent black concretions; thin patchy clay films on faces of peds; strongly acid; clear, wavy boundary.

B22t—20 to 34 inches, strong brown (7.5YR 5/6) clay loam; common, fine, distinct, brownish yellow (10YR 6/6) and yellowish red (5YR 4/8) mottles; moderate, medium, subangular blocky structure; friable; few fine roots and pores; thin patchy clay films on faces of peds; 5 percent black concretions; strongly acid; clear, wavy boundary.

B23t—34 to 53 inches, yellowish brown (10YR 5/6) sandy clay loam; common, fine, prominent, yellowish red (5YR 4/8) and few, fine, prominent, very pale brown (10YR 7/4) mottles; moderate, medium, subangular blocky structure; friable; few fine roots and pores; thin patchy clay films on faces of peds; 3 percent black concretions; very strongly acid; clear, wavy boundary.

B3—53 to 66 inches, brownish yellow (10YR 6/8) sandy clay loam; many, fine, distinct, pale yellow (2.5Y 7/4) and common, medium, prominent, yellowish red (5YR 4/8) mottles; weak, fine, subangular blocky structure; friable; very strongly acid.

The Ap horizon ranges from 4 to 10 inches in thickness. It is brown, dark yellowish brown, light olive brown, or light yellowish brown. The A1 horizon, if present, ranges from 5 to 9 inches in thickness. The Bt horizon is strong brown, yellowish brown, brown, or brownish yellow. It is sandy clay loam, clay loam, loam, or silty clay loam. Concretions range from common to many in Bt horizons. The solum ranges from 60 to 75 inches in thickness.

Rome soils are associated in the landscape with Etowah, Toccoa, Wax, and Wolftever soils. They are not so red as the Etowah soils, and they are better drained than the Toccoa soils. They do not have the firm and brittle layer in the lower part of the subsoil of the Wax soils. Rome soils have less clay in the subsoil and are better drained than the Wolftever soils.

RoA—Rome fine sandy loam, 0 to 2 percent slopes. This nearly level soil occupies low stream terraces. Mapped areas range from 10 to 35 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is brown.

Included with this soil in mapping are a few small areas where the soil has gravel on the surface and throughout. Also included are small areas of Etowah, Toccoa, Wax, and Wolftever soils.

Most of this Rome soil is used for cultivated crops or pasture. It responds to proper management if fertilizer is applied according to results of soil tests. It is well suited to most locally grown crops. Limitations for most nonfarm uses are moderate. Capability unit I-2.

RoB—Rome fine sandy loam, 2 to 6 percent slopes. This gently sloping soil occupies low stream terraces. Mapped areas range from 5 to 50 acres in size. This soil has the profile described as representative for the Rome series.

Included with this soil in mapping are a few small areas where the surface layer is grayish brown. Also included are small areas of soil that have gravel on the surface and throughout; areas where the lower part of the subsoil is grayish; and small areas of Etowah, Toccoa, Wax, and Wolftever soils.

This gently sloping Rome soil has a moderate erosion hazard. It responds to proper management if fertilizer is applied according to results of soil tests. Most of this soil is used for cultivated crops or pasture. Limitations for most nonfarm uses are slight or moderate. Capability unit IIe-3.

Shack series

The Shack series consists of moderately well drained, gently sloping to steep soils. These soils occupy ridgetops and mountainsides. They formed in material weathered from cherty limestone, interbedded with small amounts of

sandstone, siltstone, and shale. Slopes range from 2 to 25 percent.

In a representative profile the surface layer is dark gray cherty silt loam 6 inches thick. The subsurface layer is pale olive cherty silt loam 4 inches thick. The subsoil is more than 57 inches thick. In sequence from the top, the upper 11 inches is light yellowish brown cherty loam; the next 10 inches is yellowish brown cherty clay loam; the next 7 inches is mottled light yellowish brown, yellowish brown, strong brown, and gray cherty clay loam that is firm, compact, and slightly brittle in the yellowish brown and strong brown parts of the soil; the layer below is 8 inches of mottled strong brown, red and light gray cherty clay loam that is firm, compact, and slightly brittle in the strong brown part of the soil; the next 9 inches is yellowish red cherty clay loam that has light yellowish brown and light gray mottles; and the lower 12 inches is strong brown cherty clay that has red, light gray and light yellowish brown mottles. The solum is more than 60 inches thick. The depth to hard rock is more than 10 feet, but in places large boulders are at shallower depths.

Shack soils are moderate in natural fertility and low in content of organic matter. The available water capacity is medium, and permeability is moderately slow. Tilth is fair. These soils are very strongly acid or strongly acid throughout.

Because some slopes are too steep to use for cultivated crops, Shack soils are better suited to permanent pasture or woodland. The gently sloping to moderately steep soils are suited to most locally grown, cultivated crops and pasture grasses.

Representative profile of Shack cherty silt loam, 6 to 10 percent slopes, in Floyd County, 3.9 miles east of traffic light in Cave Spring, Georgia, along paved road to Big Cedar Creek bridge, then south on dirt road 1/4 mile to Chubtown and Jim Shack Road intersection, 100 feet north of intersection and 10 feet east of Jim Shack Road:

A1—0 to 6 inches, dark gray (10YR 4/1) cherty silt loam; weak, fine, granular structure; very friable; many fine and medium roots; 25 percent chert fragments; very strongly acid; clear, wavy boundary.

A2—6 to 10 inches, pale olive (5Y 6/3) cherty silt loam; weak, fine, granular structure; very friable; many fine and medium roots; 20 percent chert fragments; very strongly acid; clear, wavy boundary.

B1—10 to 21 inches, light yellowish brown (2.5Y 6/4) cherty loam; weak, medium, subangular blocky structure; friable; common fine roots; few fine holes; 20 percent chert fragments; few fine pores; very strongly acid; gradual, wavy boundary.

B21t—21 to 31 inches, yellowish brown (10YR 5/4) cherty clay loam; moderate, medium, subangular blocky structure; friable; common fine roots; 20 percent chert fragments; common fine pores; very strongly acid; abrupt, wavy boundary.

B22t—31 to 38 inches, mottled light yellowish brown (2.5Y 6/4), yellowish brown (10YR 5/8), strong brown (7.5YR 5/6), and gray (5Y 6/1) cherty clay loam; weak, medium, angular blocky structure; firm; compact and slightly brittle in yellowish brown and strong brown areas; 35 percent chert fragments by volume; common medium pores; few fine roots in gray areas; very strongly acid; clear, wavy boundary.

B23t—38 to 46 inches, mottled strong brown (7.5YR 5/6), red (2.5YR 4/6), and light gray (5Y 7/1) cherty clay loam; moderate, medium, angular blocky and platy structure; firm; compact and slightly brittle, about 40 percent of volume in strong brown parts; 30 percent chert fragments; few roots in the light gray material; very strongly acid; gradual, wavy boundary.

B24t—46 to 55 inches, yellowish red (5YR 5/6) cherty clay loam; many, medium, distinct, light yellowish brown (2.5Y 6/4) and few, medium, distinct, light gray (5Y 6/1) mottles; moderate, medium, subangular blocky structure; firm; 15 percent chert fragments; few fine pores; very strongly acid; gradual, smooth boundary.

B25t—55 to 67 inches, strong brown (7.5YR 5/6) cherty clay; many, medium, prominent, red (2.5YR 4/6) and common, medium, prominent, light gray (5Y 6/1) and light yellowish brown (2.5Y 6/4) mottles; moderate, medium, subangular blocky structure; firm; 20 percent chert fragments; few pores; very strongly acid.

The A1 horizon is dark gray, very dark gray, olive, grayish brown, or dark grayish brown. The A2 horizon is pale olive, light yellowish brown, olive, or light olive brown. The Ap horizon, if present, is dark brown, light yellowish brown, or grayish brown. The upper Bt horizon is yellowish brown, strong brown, brownish yellow, yellow, olive yellow, light olive brown, and yellowish brown cherty clay loam, cherty silty clay loam, or cherty loam. The middle and lower Bt horizon is mottled in shades of brown, gray, yellow, and red, and is cherty clay loam or cherty clay. There are few to many chert fragments on the surface and throughout the soil. Solum ranges from 60 to 80 inches in thickness.

The Shack soils are near Aragon, Bodine, Decatur, Dewey, Fullerton, and Wax soils in the landscape. They are not so red and have less clay in the B horizon than the Aragon, Fullerton, Dewey, and Decatur soils. Shack soils have more coarse fragments throughout the soil than Dewey, Decatur, and Wax soils and are not so cherty as the Bodine soils.

ShB—Shack cherty silt loam, 2 to 6 percent slopes. This gently sloping soil occupies broad ridgetops. The mapped areas range from 5 to 20 acres in size. This soil is similar to that described as representative for the series, but it is less sloping and the surface layer is dark grayish brown.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent chert on the surface and areas of soil that have more than 35 percent chert throughout. Also included are a few small areas of soil that have stones on the surface and throughout, and small areas of Dewey, Fullerton, and Wax soils.

This Shack soil has a slight erosion hazard. Most of this soil has been cleared and is used for cultivated crops. Some areas have reverted to pine trees. This soil is suited to most locally grown, cultivated crops and pasture grasses. The limitations for most nonfarm uses are moderate. Capability unit IIe-2.

ShC—Shack cherty silt loam, 6 to 10 percent slopes. This sloping soil occupies ridgetops and sides of ridges. Mapped areas range from 10 to 50 acres in size. This soil has the profile that is described as representative for the series.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent chert on the surface and throughout, and a few small areas where the soil has more than 35 percent chert on the surface and throughout. Also included are small areas of Dewey, Fullerton, and Wax soils.

This sloping Shack soil has a moderate erosion hazard. It responds to proper management if fertilizer is applied according to results of soil tests. It is suited to most locally grown cultivated crops and pasture grasses. Large areas of this soil have been cleared and are used for cul-

tivated crops and pasture. Many areas have reverted to pine trees. The limitations for most nonfarm uses are moderate. Capability unit IIIe-2.

ShD—Shack cherty silt loam, 10 to 15 percent slopes. This moderately steep soil occupies ridgetops and short side slopes. Mapped areas range from 15 to 75 acres in size. This soil has a profile similar to that described as representative for the series but the surface layer is dark grayish brown or light yellowish brown.

Included with this soil in mapping are a few small areas of soil that have less than 15 percent chert on the surface and throughout, and a few small areas of soil that have stones on the surface. Also included are areas of Dewey and Fullerton soils.

This moderately steep Shack soil has a moderate erosion hazard. It is suited to most locally grown, cultivated crops and pasture grasses. Most of this soil is in woodland and pasture. Many cleared areas have reverted to pine trees. The limitations for most nonfarm uses are moderate. Capability unit IVe-2.

ShE—Shack cherty silt loam, 15 to 25 percent slopes. This steep soil occupies ridgetops and long side slopes. Mapped areas range from 20 to 120 acres in size. This soil has a profile similar to that described as representative for the series, but the surface layer is grayish brown.

Included with this soil in mapping are a few small areas where the soil has less than 15 percent chert fragments on the surface and throughout, and a few small areas where the soil is more than 35 percent chert fragments throughout. Also included are a few small areas of Bodine, Decatur, Dewey, and Fullerton soils.

This steep Shack soil has a severe erosion hazard if it is used for cultivated crops. Most of this soil is used for hardwood trees. A few areas have been cleared and used for cultivated crops and pasture. Most cleared areas have reverted to pine trees and mixed hardwoods. This soil is well suited to woodland. The limitations for most nonfarm uses are severe. Capability unit VIe-1.

Staser series

The Staser series consists of well drained, nearly level soils. These soils occupy long, narrow bottom lands. They formed in alluvium deposits weathered from limestone. Slopes range from 0 to 2 percent.

In a representative profile the upper 8 inches of the surface layer is dark brown silt loam. The next 16 inches of the surface layer is very dark grayish brown silt loam, the next 12 inches is dark brown to very dark grayish brown silt loam, and the lower 10 inches is dark brown silty clay loam. The subsoil, to a depth of 52 inches, is dark yellowish brown silt loam. The depth to hard rock is more than 4 feet.

The Staser soils have high natural fertility and moderate organic matter content. Available water capacity is medium, and permeability is moderate. The rooting zone is thick, and tilth is good. These soils are slightly acid or neutral.

The Staser soils are suited to most locally grown, cultivated and pasture crops. Very few areas are used for hardwood and pine trees. About one-half of this soil is used for cultivated crops, and the other half is used for pasture.

Representative profile of Staser silt loam, in Floyd County, 200 yards east along the south side of the Coosa River at the bridge on Georgia Highway 100, south of Coosa Post Office:

Ap—0 to 8 inches, dark brown (10YR 3/3) silt loam; weak, fine, granular structure; friable; many fine roots; common fine flakes of mica; slightly acid; abrupt, wavy boundary.

A12—8 to 24 inches, very dark grayish brown (10YR 3/2) silt loam; weak, medium, subangular blocky structure; friable; common fine flakes of mica; slightly acid; clear, wavy boundary.

A13—24 to 36 inches, dark brown (10YR 3/3) to very dark grayish brown (10YR 3/2) silt loam; weak, medium, subangular blocky structure; friable; common fine flakes of mica; slightly acid; gradual, wavy boundary.

A14—36 to 46 inches, dark brown (10YR 3/3) silty clay loam; weak, fine, subangular blocky structure; friable; common fine flakes of mica; slightly acid; gradual, wavy boundary.

B—46 to 52 inches, dark yellowish brown (10YR 4/4) silt loam; weak, fine, granular structure; very friable; common fine flakes of mica; slightly acid.

The A horizon ranges from 24 to 46 inches in thickness. The Ap and A1 horizons are dark brown or very dark grayish brown. The B horizon ranges from 24 to 52 inches in thickness. It is dark yellowish brown or yellowish brown silty clay loam or silt loam. Depth of the alluvium to limestone or to an older soil ranges from about 40 to more than 60 inches.

Staser soils are associated in the landscape with Chewacla, Roanoke, and Toccoa soils. They are better drained than the Chewacla and Roanoke soil and have more silt throughout than the Toccoa soils.

St—Staser silt loam. This nearly level soil occupies long, narrow bottom lands near major streams and in drainageways. Mapped areas range from 5 to 20 acres in size.

Included with this soil in mapping are a few small areas of soil that are not so well drained, and a few areas of soil that are sandier throughout and have lighter color. Also included are small areas of Chewacla and Toccoa soils.

This Staser soil is suited to most locally grown cultivated crops and pasture grasses. It responds to proper management if fertilizer is applied according to results of soil tests. Because of flooding, this soil has severe limitations for most nonfarm uses. Capability unit IIw-1.

Subligna series

The Subligna series consists of well drained, nearly level and gently sloping soils. These soils occupy alluvial fans at the foot of mountains. They occupy steep ridges and are along small drainageways. They formed in colluvium from material weathered from sandstone, shale, and siltstone. Slopes range from 1 to 6 percent.

In a representative profile the surface and subsurface layers are gravelly loam about 5 inches thick. The upper 1 inch is very dark grayish brown and is 20 percent gravel, 15 percent cobbles, and 5 percent stones; and the lower 4 inches is light olive brown and is about 20 percent gravel

and 15 percent cobbles. The subsoil is strong brown very gravelly sandy clay loam that is 30 percent gravel and 10 percent cobbles, to a depth of 30 inches. The underlying material, to a depth of 62 inches, is yellow gravelly sandy loam and about 40 percent gravel, 20 percent cobbles, and 5 percent stones. The depth to hard rock is more than 6 feet.

The Subligna soils are low in natural fertility and content of organic matter. The available water capacity is medium, and permeability is rapid. Tilth is poor. These soils are strongly acid or very strongly acid throughout unless limed.

Because most Subligna soils contain many fragments of gravel, cobbles, and some stones, they are not well suited to cultivated crops. They are better suited to pasture and woodland. Part of the soil is used for cultivated crops, but the majority is used for woodland or pasture.

Representative profile of Subligna gravelly loam, 1 to 6 percent slopes, .5 mile north of Subligna Baptist Church, 100 yards west of paved road on old stream bank:

A1—0 to 1 inches, very dark grayish brown (2.5Y 3/2) gravelly loam; weak, fine, granular structure; very friable; many fine roots; few small pores; few worm castings and wormholes; 20 percent gravel, 15 percent cobbles, 5 percent stones; strongly acid; abrupt, smooth boundary.

A2—1 to 5 inches, light olive brown (2.5Y 5/4) gravelly loam; weak, medium, granular structure; very friable; many fine roots; few fine wormholes and pores; 20 percent gravel, 15 percent cobbles; strongly acid; clear, wavy boundary.

B2t—5 to 30 inches, strong brown (7.5YR 5/6) very gravelly sandy clay loam; weak, fine, subangular blocky structure; friable; few fine roots; many fine wormholes and pores; few old root channels filled with material from A horizon; 30 percent gravel, 10 percent cobbles; very strongly acid; clear, wavy boundary.

C—30 to 62 inches, yellow (10YR 7/6) gravelly sandy loam; single grained; very friable; few fine live partially decayed roots; 40 percent gravel, 20 percent cobbles, 5 percent stones; strongly acid.

The A horizon ranges from 3 to 8 inches in thickness. It is very dark grayish brown, light olive brown, brown, or yellowish brown. The Ap horizon, if present, is brown, light olive, brown, or dark yellowish brown. The Bt horizon ranges from 15 to 40 inches in thickness. It is strong brown, light olive brown, yellowish brown, dark yellowish brown, or brown gravelly sandy clay loam or gravelly silty clay loam. The underlying material is yellowish brown, yellow, or dark yellowish brown. The solum ranges from 20 to 40 inches in thickness.

Subligna soils are associated in the landscape with Allen, Holston, and Wax soils. They contain more coarse fragments than the associated soils and lack the dense, brittle subsoils of the Wax soils. Subligna soils have subsoils that are not so red as, and contain less clay than, Allen soils.

SuB—Subligna gravelly loam, 1 to 6 percent slopes. This nearly level and gently sloping soil occupies alluvial fans, mountain foot slopes, and is along small drainageways. Mapped areas range from 5 to 10 acres in size.

Included with this soil in mapping are small areas where the surface layer is gravelly sandy clay loam and cobbly silt loam, and small areas where the soil is without gravel fragments throughout. Also included are small areas of Allen, Holston, and Wax soils.

This Subligna soil is not well suited to cultivated crops. Crops respond to proper management if fertilizer is applied according to results of soil tests. This soil is well suited to pine trees. Most of the soil is used for woodland or pasture, and the rest is used for cultivated crops. Limitations are severe for most nonfarm uses because of flooding. Capability unit IIIs-1.

Tallapoosa series

The Tallapoosa series consists of well drained, moderately steep and very steep soils of the Piedmont Plateau. These soils occupy narrow ridgetops and dissected hillsides. They formed in material weathered chiefly from schist and phyllite. Slopes range from 10 to 60 percent.

In a representative profile 2 inches of decomposing pine needles and hardwood leaves overlie the mineral surface layer. The mineral surface layer is brown gravelly fine sandy loam about 4 inches thick. The subsoil is strong brown silty clay loam about 6 inches thick. The underlying material, to a depth of 40 inches, is strong brown channery silty clay loam between fragments of schist. Depth to hard rock is less than 6 feet.

The Tallapoosa soils are low in natural fertility and content of organic matter. The available water capacity is low, and permeability is moderate. Tilth is fair. These soils are very strongly acid or strongly acid throughout unless limed.

Most of these soils are in mixed hardwoods and pine trees. Some of the soils occupying lower slopes are used for pasture. These soils are better suited to woodland.

Representative profile of Tallapoosa gravelly fine sandy loam, 25 to 60 percent slopes, in Polk County, 1 mile southeast of Culps Lake, east roadbank:

O1—2 to 1 inch, black (10YR 2/1) decomposing pinestraw and hardwood leaves.

O2—1 to 0 inch, dark gray (10YR 4/1) decomposed pinestraw, hardwood leaves, and twigs.

A1—0 to 4 inches, brown (10YR 4/3) gravelly fine sandy loam; weak, fine, granular structure; very friable; many fine roots; 20 percent schist fragments; medium acid; abrupt, smooth boundary.

B2t—4 to 10 inches, strong brown (7.5YR 5/6) silty clay loam; weak, moderate, subangular blocky structure; friable; few fine and medium roots, few small pores; 10 percent schist fragments; strongly acid; clear, wavy boundary.

C—10 to 40 inches, strong brown (7.5YR 5/6) channery silty clay loam in pockets between the fragments of schist; weak, fine, granular structure; friable; 65 percent schist fragments; strongly acid.

The A horizon ranges from 2 to 6 inches in thickness. The A horizon is brown or yellowish red. The B horizon ranges from 6 to 18 inches in thickness. The Bt horizon is strong brown, yellowish brown, or yellowish red silty clay loam, gravelly silty clay loam, or gravelly loam and is about 8 to 35 percent schist fragments. The solum ranges from 3 inches to 20 inches in thickness.

Tallapoosa soils are associated in the landscape with Grover and Madison soils. They have a thinner solum and contain more coarse fragments than the Grover and Madison soils and have subsoils that are redder than subsoils of the Grover soils.

TaE2—Tallapoosa gravelly fine sandy loam, 10 to 25 percent slopes, eroded. This moderately steep and steep soil occupies ridges and hillsides that are dissected by nu-

merous drainageways. The mapped areas range from 20 to 100 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer has part of the upper subsoil mixed in it.

Included with this soil in mapping are a few small areas of severely eroded soils where the surface layer is silty clay loam. Also included are small areas of Grover and Madison soils.

This moderately steep and steep Tallapoosa soil has a severe erosion hazard. It is better suited to woodland than to other uses. Most areas used for cultivated crops have reverted to pine trees. The limitations for most nonfarm uses are severe because these soils are shallow to the underlying bedrock and are moderately steep and steep. Capability unit VIIe-2.

TaF—Tallapoosa gravelly fine sandy loam, 25 to 60 percent slopes. This very steep soil occupies the short sides of ridges. Mapped areas range from 5 to 200 acres in size. This soil has the profile described as representative for the Tallapoosa series.

Included with this soil in mapping are a few areas of soil where boulders are on the surface layer. Also included are small areas of Grover and Madison soils.

This very steep Tallapoosa soil has a severe erosion hazard. It responds to proper timber management and is suited to pine trees. Limitations are severe for most nonfarm uses. Capability unit VIIe-2.

Tidings series

The Tidings series consists of well drained, gently sloping to very steep soils. These soils occupy the ridgetops and short sides of ridges and mountains. They formed in material weathered from shale, siltstone, and sandstone. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is very dark gray gravelly silt loam about 2 inches thick. The subsurface is olive gravelly silt loam 2 inches thick. The subsoil is 32 inches thick. In sequence from the top, the upper 12 inches is pale olive gravelly silt loam; the next 9 inches is light yellowish brown gravelly silty clay loam; and the lower 11 inches is light yellowish brown gravelly silty clay loam that has pale olive and brownish yellow mottles. The underlying material, to a depth of 50 inches, is weathered sandstone and shale. Depth to hard rock is 40 to 60 inches.

The Tidings soils have moderate natural fertility and low organic matter content. The available water capacity is medium, and permeability is moderate. The effective rooting zone is moderately thick, and tilth is fair. These soils are strongly acid or very strongly acid throughout unless limed.

The Tidings soils are well suited to cultivated crops. About 75 percent of these soils are in mixed hardwood and pine trees. The rest is used for cultivated crops or pasture.

Representative profile of Tidings gravelly silt loam, 10 to 25 percent slopes, 1.5 miles west of Tidings Country Store on U. S. Highway 27, 0.4 mile south on Silver Hill Road, 0.3 mile east on dirt road:

A1—0 to 2 inches, very dark gray (5Y 3/1) gravelly silt loam; weak, fine, granular structure; very friable; many fine roots and pores; few worm castings with pores; 30 percent gravel; strongly acid; abrupt, smooth boundary.

A2—2 to 4 inches, olive (5Y 5/3) gravelly silt loam; weak, fine, granular structure; very friable; few medium roots; many fine pores and few medium pores; 25 percent gravel; strongly acid; clear, wavy boundary.

B1—4 to 16 inches, pale olive (5Y 6/3) gravelly silt loam; weak, fine, subangular blocky structure; friable; few to common fine roots, many fine and medium pores; many worm castings; 15 percent gravel; very strongly acid; gradual, wavy boundary.

B21t—16 to 25 inches, light yellowish brown (2.5Y 6/4) gravelly silty clay loam; moderate, medium, angular blocky structure; friable; few fine roots, many fine pores; 15 percent gravel; thin patches of clay film on faces of peds; very strongly acid; clear, wavy boundary.

B22t—25 to 36 inches, light yellowish brown (2.5Y 6/4) gravelly silty clay loam; common, fine, distinct, brownish yellow (10YR 6/6) and pale olive (5Y 6/3) mottles; moderate, medium, angular and subangular blocky structure; friable; few fine roots, many, fine pores; thin patchy clay films on faces of peds; 15 percent gravel; very strongly acid; abrupt, smooth boundary.

C—36 to 50 inches, mottled yellowish brown (10YR 5/8), yellow (5Y 7/6), light gray (5Y 7/2), and pinkish gray (5YR 6/2) weathered sandstone and shale; fragments and fractures coated and filled with light yellowish brown (2.5Y 6/4) and pale olive (5Y 6/3) silty clay loam; very strongly acid.

The A horizon ranges from 2 to 11 inches in thickness. The A1 horizon is very dark gray, olive gray, dark grayish brown, light brownish gray, dark gray, or grayish brown. The A2 horizon is olive, pale olive, light brownish gray, light yellowish brown, or pale yellow. The Ap horizon, if present, is yellowish brown or light yellowish brown. The B horizon ranges from 18 to 44 inches in thickness. The Bt horizon is light yellowish brown, strong brown, or pale yellow gravelly clay loam, gravelly silty clay loam, or gravelly loam. The solum ranges from 20 to 40 inches in thickness.

Tidings soils are associated in the landscape with Hartsells, Holston, and Townley soils. They have a thicker solum than Hartsells and Townley soils and have subsoils with less clay than subsoils of the Townley soils. Tidings soils contain more coarse fragments throughout and have a thinner solum than the Holston soils.

TdC—Tidings gravelly silt loam, 2 to 10 percent slopes. This gently sloping and sloping soil occupies short sides of ridgetops and short hillsides. Mapped areas range from 5 to 30 acres in size. The profile of this soil is similar to that described as representative for the series, but it is less sloping and the surface layer is olive gray to pale olive and is several inches thicker.

Included with this soil in mapping are a few small areas where the subsoil is redder and is gravelly silty clay. Also included are small areas of Hartsells, Holston, and Townley soils.

This Tidings soil is subject to a severe erosion hazard if it is cultivated and is unprotected. It is suited to most locally grown, cultivated crops. The most common crops are cotton, corn, soybeans, and grain sorghum. This soil is suited to all locally grown pasture plants. Pastures respond to proper management if fertilizer is applied according to results of soil tests. This soil has slight or moderate limitations for most nonfarm uses. Capability unit IIIe-5.

TdD—Tidings gravelly silt loam, 10 to 25 percent slopes. This moderately steep and steep soil occupies short ridges and long mountainsides. Mapped areas range from 10 to 20 acres in size. This soil has the profile described as representative for the Tidings series.

Included with this soil in mapping are a few small areas where the surface layer is gravelly fine sandy loam. Also included are small areas of Hartsells, Holston, and Townley soils.

This moderately steep and steep Tidings soil has a severe erosion hazard. Small scattered areas are used for producing mostly corn and vegetable crops. This soil is better suited to woodland than to other uses. About 80 percent of this soil is used for woodland; the rest is used for cultivated crops, is idle, or is used for nonfarm purposes. Limitations are severe for most nonfarm uses. Capability unit VIe-6.

TdF—Tidings gravelly silt loam, 25 to 45 percent slopes. This very steep soil occupies ridges and short mountainsides. Mapped areas range from 20 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is grayish brown.

Included with this soil in mapping are a few areas of soil that are less than 15 percent gravel, cobbles, and stones. Also included are a few areas of Hartsells, Hector, and Montevallo soils.

This very steep Tidings soil has a severe erosion hazard. It responds to proper timber management, and is better suited to pine trees. Limitations are severe for most nonfarm uses. Capability unit VIIe-3.

Toccoa series

The Toccoa series consists of well drained, nearly level soils. These soils occupy bottom lands. They formed in alluvium from material weathered from limestone, cherty limestone, sandstone, shale, and siltstone. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is brown fine sandy loam about 15 inches thick. The underlying material, to a depth of 60 inches, is yellowish brown fine sandy loam that has many very fine flakes of mica. Depth to hard rock is 5 to 8 feet or more.

The Toccoa soils are moderate in natural fertility and content of organic matter. The available water capacity is medium, and permeability is moderately rapid. The effective rooting zone is thick, and tilth is generally good. These soils are slightly acid or medium acid throughout.

The Toccoa soils are suited to most locally grown, cultivated crops and pasture grasses. Most areas have been cleared and are used for cultivated crops or pasture.

Representative profile of Toccoa fine sandy loam, in Floyd County, 2 miles north-northwest of Community Chapel Church, and about 100 feet south of Coosa River:

Ap—0 to 9 inches, brown (10YR 4/3) fine sandy loam; weak, fine, granular structure; very friable; many fine and medium roots; few wormholes; few uncoated sand grains; many fine flakes of mica; few small pores; slightly acid; clear, wavy boundary.

A1—9 to 15 inches, brown (10YR 5/3) fine sandy loam; weak, fine, granular structure; very friable; many very fine flakes of mica; many fine and medium roots; few wormholes; few uncoated sand grains; few fine pores; slightly acid; clear, wavy boundary.

C1—15 to 28 inches, yellowish brown (10YR 5/4) fine sandy loam; massive; friable; many very fine flakes of mica; few fine roots and pores; medium acid; gradual, wavy boundary.

C2—28 to 40 inches, yellowish brown (10YR 5/6) fine sandy loam; massive; friable; many very fine flakes of mica; medium acid; clear, wavy boundary.

C3—40 to 60 inches, yellowish brown (10YR 5/4) fine sandy loam; massive; friable; many very fine flakes of mica; pockets of pale brown (10YR 6/3) sand; medium acid.

The A horizon ranges from 4 to 17 inches in thickness. The Ap and A1 horizons are brown, dark grayish brown, or yellowish brown. The C horizon ranges from 30 to 60 inches or more in thickness. The C horizon is yellowish brown, dark yellowish brown, or dark brown.

Toccoa soils are associated in the landscape with Chewacla, Roanoke, and Rome soils. They are better drained than the Chewacla and Roanoke soils and have less clay below a depth of about 10 to 15 inches than Rome soils and Roanoke soils.

Tk—Toccoa fine sandy loam. This soil occupies long, narrow tributaries and long, narrow areas near the larger streams. Mapped areas range from 5 to 30 acres in size.

Included with this soil in mapping are a few, small, moderately well drained areas where the subsoil is sandy clay loam. These included soils are near the larger streams at a slightly higher elevation than the Toccoa soils. They are commonly used for cotton. Also included are small areas of Chewacla, Roanoke, and Rome soils and small areas where the surface layer is gravelly fine sandy loam.

This Toccoa soil has a hazard of flooding for brief periods. It responds to proper management if fertilizer is applied according to results of soil tests. It is suited to most locally grown, cultivated crops and pasture grasses. Limitations are severe for most nonfarm uses. Capability unit IIw-2.

Townley series

The Townley series consists of well drained, gently sloping to very steep soils. These soils occupy upland ridges, low hills, and dissected mountainsides. They formed in material weathered from acid shale. Slopes range from 2 to 45 percent.

In a representative profile the surface layer is yellowish brown silt loam about 5 inches thick. The subsoil is about 15 inches thick. In sequence from the top, the upper 8 inches is yellowish red silty clay that has strong brown mottles and dark red and yellowish brown shale fragments; and the lower 7 inches is yellowish red, strong brown, and yellowish brown shaly clay that is about 25 percent red, light yellowish brown, and yellowish brown shale fragments. The underlying material, to a depth of 60 inches, is weak red and black shale. Depth to hard rock is more than 60 inches.

Townley soils are low in natural fertility and content of organic matter. The available water capacity is low, and permeability is slow. Tilth is poor. These soils are very strongly acid or extremely acid throughout.

These soils are suited to a few locally grown crops and pasture grasses, but are better suited to woodland.

Townley soils in some very steep landscapes are mapped with Nella soils. Because these soils are steep or very steep and their use and management or behavior are similar, they are mapped together as an association. (See Nella series).

Representative profile of Townley silt loam, 2 to 10 percent slopes, in Floyd County, 1.1 miles north of main entrance to Berry College on U. S. Highway 27, 60 feet south of its intersection with the old road to Dalton, 700 feet east by road in a wooded area, and 145 feet north:

Ap—0 to 5 inches, yellowish brown (10YR 5/6) silt loam; weak, medium, granular structure; very friable; few fine round pores; few wormholes and worm castings; 5 percent yellowish brown and dark red shale fragments less than 20 millimeters in size; extremely acid; abrupt, smooth boundary.

B2t—5 to 13 inches, yellowish red (5YR 5/6) silty clay; common, medium, faint, strong brown (7.YR 5/6) mottles; moderate, medium, subangular and angular blocky structure; firm; few worm castings and few fine pores; many thin continuous clay films around most ped surfaces and shale fragments; few fine flatten (old black) roots, few fine roots; 5 percent dark red and yellowish brown shale fragments; very strongly acid; clear, wavy boundary.

B3—13 to 20 inches, yellowish red (5YR 5/6), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/4) shaly clay; weak, medium, subangular blocky and platy structure; firm; few fine roots; few black flatten roots; 25 percent red, light yellowish brown, and yellowish brown shale fragments and 20 percent weathered soft shale fragments; very strongly acid; abrupt, wavy boundary.

C—20 to 60 inches, black (10YR 2/1) and weak red (2.5YR 5/2) shale; thin dark red, dark gray, yellowish brown, and yellowish red coating between the platy shale fragments; extremely acid.

The Ap horizon ranges from 4 to 8 inches in thickness. It is dark grayish brown or yellowish brown. The B2t horizon ranges from 7 to 10 inches in thickness. It is yellowish red, strong brown, or red silty clay or clay. The B3 horizon has mottles in shades of red, yellow, gray, or brown. It is shaly clay or shaly silty clay. Shale fragments range from few to many in the surface layer and in the subsoil. The solum ranges from 18 to 30 inches in thickness.

The Townley soils are associated in the landscape with Conasauga, Cunningham, and Montevallo soils. They have more clay in the subsoil than Montevallo soils and are shallower to shale bedrock than Cunningham soils. Townley soils are redder and better drained than Conasauga soils.

TnC—Townley silt loam, 2 to 10 percent slopes. This gently sloping and sloping soil occupies ridges and low hills. Mapped areas range from 10 to 30 acres in size. This soil has the profile described as representative for the Townley series.

Included with this soil in mapping are a few shallow gullies and galled spots, and soils that have a shaly silt loam surface layer. Also included are small areas of Cunningham and Montevallo soils.

This Townley soil has an erosion hazard if it is used for cultivated crops and is not protected. It is poorly suited to most row crops. It is better suited to pasture grasses and legumes or woodland than to other uses. Limitations for most nonfarm uses are moderate or severe. Capability unit IVe-6.

TnE—Townley silt loam, 10 to 25 percent slopes. This moderately steep and steep soil occupies low ridges and dissected side slopes. The mapped areas range from 20 to 60 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is dark grayish brown.

Included with this soil in mapping are a few small areas where the surface layer is fine sandy loam or shaly silt loam. In places, a few rills are included. Also included are soils that have a combined surface layer and subsoil more than 24 inches thick, and a few small areas of Cunningham and Montevallo soils.

This Townley soil has a severe hazard of erosion if it is used for cultivated crops and is not protected. It is poorly suited to cultivated crops and is better suited to pine trees. Limitations for most nonfarm uses are severe. Capability unit VIe-6.

TnF—Townley silt loam, 25 to 45 percent slopes. This very steep soil occupies low hills and sides of ridges. Mapped areas range from 25 to 200 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is thinner.

Included with this soil in mapping are a few small areas where the surface layer is gravelly fine sandy loam or shaly silt loam and areas where the surface layer and subsoil are more than 24 inches thick. Also included are a few small areas of Cunningham and Montevallo soils.

This very steep Townley soil has a severe erosion hazard. It is poorly suited to cultivated crops. It is better suited to woodland than to other uses. Limitations for most nonfarm uses are severe. Capability unit VIe-6.

ToE—Townley-Urban land complex, 15 to 25 percent slopes. This complex occupies steep and very steep landscapes. About 65 percent is Townley soils and about 35 percent is Urban land. Mapped areas are small to large. The profile of the Townley soil is similar to that described as representative for the series, but the surface layer is thinner. Most areas of Townley soils are covered with sod.

Included with the Townley soils in mapping are bare and eroded soils that have shallow gullies or small rills in many places. Also included are small areas of Montevallo and Cunningham soils.

The soils in the Urban land areas have been altered by grading, cutting, filling, shaping, and smoothing for community development. Most Urban land is used for industrial sites, shopping centers, parking lots, private dwellings, streets, schools, and churches.

Included with Urban land in mapping, in a few places, are Townley soils that are essentially unaltered.

This complex has severe limitations for most nonfarm uses. Capability unit VIe-6.

Tupelo series

The Tupelo series consists of somewhat poorly drained, nearly level soils. These soils occupy stream terraces, broad flat upland depressions, and drainageways. They formed in alluvium deposits weathered from limestone. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is grayish brown silt loam 4 inches thick. The subsurface layer is light olive gray silt loam 8 inches thick. The subsoil is 34 inches thick. In sequence from the top, the upper 7 inches is yellowish brown silty clay loam that is 5 percent gravel and common fine and medium black concretions; the next 11 inches is light yellowish brown silty clay that is 12 percent gravel and many, medium, black concretions; and the lower 16 inches is light olive brown clay that has light gray mottles, is 10 percent gravel, and has common, medium, black, round concretions. The underlying material is limestone bedrock.

The Tupelo soils are moderately low in natural fertility and low in content of organic matter. The available water capacity is medium, and permeability is slow. The effective rooting zone is thick, but the clayey subsoil somewhat restricts root growth. Tilth is fair. These soils are slightly acid in the surface layer, and the subsoil ranges from mildly alkaline to strongly acid.

Tupelo soils not frequently flooded are suited to most pasture and hay crops . Areas of this soil have been cleared and used for cultivated crops. Most of this soil is used for pasture or hardwood trees.

Representative profile of Tupelo silt loam, 0 to 3 percent slopes, in Floyd County, 1 1/2 miles west of Livingston Court House, .5 mile north of paved road:

A1—0 to 4 inches, grayish brown (2.5Y 5/2) silt loam; weak, fine, granular structure; very friable; many fine roots; few voids; common small and medium black round concretions; slightly acid; abrupt, smooth boundary.

A2—4 to 12 inches, light olive gray (5Y 6/2) silt loam; weak, fine, granular structure; very friable; common black concretions; few pebbles; mildly alkaline; clear, smooth boundary.

B1—12 to 19 inches, yellowish brown (10YR 5/6) silty clay loam; weak, fine, subangular blocky structure; friable; common, fine and medium, black, round concretions; 5 percent gravel; mildly alkaline; clear, wavy boundary.

B21t—19 to 30 inches, light yellowish brown (2.5Y 6/4) silty clay; common, fine, distinct, light brownish gray (2.5Y 6/2) mottles; moderate, medium, subangular blocky structure; firm; many, medium, black, round concretions; 12 percent gravel; moderately alkaline; gradual, wavy boundary.

B22t—30 to 46 inches, light olive brown (2.5Y 5/6) clay; common, medium, distinct, light gray (2.5Y 7/2) mottles; weak, medium, subangular blocky structure; firm; common, medium, black, round concretions; 10 percent gravel; strongly alkaline; abrupt, smooth boundary.

R—46 inches, limestone bedrock.

The A horizon ranges from 6 to 12 inches in thickness. It is silt loam or clay loam. The Ap or A1 horizons are grayish brown, dark grayish brown, light olive gray, or brown. The B horizon ranges from 28 to 50 inches or more in thickness. The Bt horizon is yellowish brown, light olive brown, pale olive, light yellowish brown, or pale brown clay or silty clay. The solum ranges from 36 to 60 inches in thickness.

The soil reaction is higher in the surface layer and upper part of the subsoil than is defined as the range for the Tupelo series, but this difference does not alter the usefulness or behavior of the soils.

Tupelo soils are associated in the landscape with Conasauga, Dowellton, and Lyerly soils. They are not so well drained as Conasauga and Lyerly soils, but are better drained than the Dowellton soils.

Tu—Tupelo silt loam, 0 to 3 percent slopes. This nearly level soil occupies stream terraces, upland depressions and drainageways. The mapped areas range from 5 to 25 acres in size. This soil has the profile described as representative for the Tupelo series.

Included with this soil in mapping are a few small areas where the soil has gravel in the surface layer. Also included are small areas of Conasauga, Dowellton, and Lyerly soils.

This Tupelo soil has a slight erosion hazard in areas where it is more sloping. Cultivated crops are affected by the soil's slow "warmup" in the spring, and by ponding in some places during periods of heavy rainfall. Limitations for most nonfarm uses are severe. Capability unit IIIw-3.

Tv—Tupelo clay loam, frequently flooded. This nearly level soil occupies stream terraces, upland depressions, and drainageways. Mapped areas range from 5 to 20 acres in size. This soil has a profile similar to that described as representative for the series, but the surface layer is clay loam.

Included with this soil in mapping are small areas where there is a dense, brittle layer in the subsoil, and a few places where the surface layer formed in silty clay loam or silty clay overwash material. Also included are small areas of Conasauga, Dowellton, and Lyerly soils.

This Tupelo soil is poorly suited for cultivated crops because of wetness and frequent flooding. Most of this soil is used for mixed hardwood trees. A few areas have been cleared and are used for cultivated crops and pasture. Limitations are severe for most nonfarm uses. Capability unit IIIw-3.

Ud—Udorthents. This unit consists of soils more than 60 inches thick that were deposited as a result of iron ore mining operations. Some of the soil material was deposited on the lowland flats and along small drainageways, but most areas are enclosed by dikes.

The sandy loam and fine sandy loam deposits are closer to the main mining operation in most places. The more silty and more clayey deposits are commonly filtered out farthest from the main discharge point. They are commonly deposited in layers 1/2 inch to 3 inches thick. These layers have a wide range of colors and texture.

These areas are well drained and will produce loblolly pine. Some locally grown crops are suitable in a few areas.

Wax series

The Wax series consists of moderately well drained, nearly level to gently sloping soils. These soils occupy long, narrow, low stream terraces, toe slopes, and drainageways. They formed in alluvium from material weathered from cherty limestone or shale. Slopes range from 0 to 6 percent.

In a representative profile the surface layer is 10 inches thick. The upper 4 inches is dark brown loam that is 10 percent chert fragments. The lower 6 inches is dark yellowish brown loam that is about 10 percent chert fragments. The subsoil is more than 50 inches thick. In sequence from the top, the upper 10 inches is yellowish brown clay loam that is 6 percent chert fragments; the

next 10 inches is brownish yellow clay loam that is 6 percent chert fragments; and the next 18 inches is brownish yellow very cherty sandy clay loam that has brown and light brownish gray mottles. This last layer is firm and brittle and is about 70 percent chert fragments. Beneath this is 12 inches of mottled strong brown, light brownish gray, brownish yellow and reddish yellow very cherty clay loam. This layer is firm and brittle and is about 75 percent chert fragments. The depth to hard rock is more than 60 inches.

The Wax soils are moderately low in natural fertility and in organic matter content. The available water capacity is medium, and permeability is slow. Tilth is good. These soils are very strongly acid or strongly acid throughout.

Wax soils formed mostly under hardwood trees and some pine trees. Most of the soil was cleared and is used for cultivated crops and pasture plants. Because of the slow permeability in the lower part of the subsoil, this soil is not well suited to cultivated crops.

Representative profile of Wax loam, 0 to 2 percent slopes, in Floyd County, 0.3 mile south of New Bethel Methodist Church, 15 feet west from center of paved county road, in pasture:

A11—0 to 4 inches, dark brown (10YR 3/3) loam; weak, fine, granular structure; very friable; many fine and few medium roots, many fine wormholes; many fine pores; 10 percent chert fragments; very strongly acid; clear, smooth boundary.

A12—4 to 10 inches, dark yellowish brown (10YR 4/4) loam; weak, fine, subangular blocky structure; friable; few fine roots and pores; few fine wormholes; 10 percent chert fragments; very strongly acid; abrupt, smooth boundary.

B1—10 to 20 inches, yellowish brown (10YR 5/6) clay loam; moderate, fine and medium, subangular blocky structure; friable; many fine roots and few fine pores; few fine wormholes; 6 percent chert fragments; very strongly acid; gradual, smooth boundary.

B2t—20 to 30 inches, brownish yellow (10YR 6/6) clay loam; moderate, medium, subangular blocky structure; friable; few fine pores; common fine roots; patchy clay film on faces of peds; 6 percent chert fragments; very strongly acid; clear, smooth boundary.

IIBx1—30 to 48 inches, brownish yellow (10YR 6/6) very cherty sandy clay loam; common, medium, distinct, strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; moderate, medium, angular blocky structure; firm and brittle; thin patchy clay film on faces of peds; 70 percent chert fragments; strongly acid; abrupt, smooth boundary.

IIBx2—48 to 60 inches, mottled strong brown (7.5YR 5/6), light brownish gray (2.5Y 6/2), brownish yellow (10YR 6/6), and reddish yellow (5YR 6/6) very cherty clay loam; weak, medium, angular blocky structure; firm, brittle, and hard; 75 percent chert fragments; patchy clay films on faces of peds; very strongly acid.

The A horizon ranges from 7 to 12 inches in thickness. The Ap horizon is brown, yellowish brown or light olive brown. The A1 horizon is dark brown, dark yellowish brown, grayish brown, or dark grayish brown. The B horizon ranges from 40 to 60 inches in thickness. The Bt horizon is olive yellow, light yellowish brown, light olive brown, yellowish brown, brownish yellow, or strong brown. It is clay loam, silty clay loam, or loam. The IIBx horizon is brownish yellow, yellowish brown, light yellowish brown, or olive yellow. It is very cherty sandy clay loam, very cherty clay loam, or very cherty loam. The solum ranges from 40 to 72 inches in thickness.

The Wax soils are associated in the landscape with Aragon, Fullerton, and Shack soils. They have a dense, brittle layer in the subsoil that the Aragon soils do not have. They have a thicker solum than Aragon soils. They contain less coarse fragments than, and are not so deep to bedrock as, Fullerton and Shack soils. In addition, Wax soils have a subsoil that has less clay than, and are not so red as, the subsoil of Fullerton soils.

WaA—Wax loam, 0 to 2 percent slopes. This nearly level soil occupies low stream terraces, toe slopes, and narrow drainageways. Mapped areas range from 5 to 25 acres in size. This soil has the profile described as representative for the Wax series.

Included with this soil in mapping are a few small areas of soil that have gravelly surface layers. Also included are a few areas of Chewacla and Toccoa soils.

This Wax soil is well suited for most pasture grasses and legumes. It responds to proper management if fertilizer is applied according to results of soil tests. The slow permeability in the lower part of the subsoil restricts suitability of the cultivated crops. This soil is subject to flooding in a few places. Limitations are severe for most nonfarm uses. Capability unit IIw-1.

WaB—Wax loam, 2 to 6 percent slopes. This gently sloping soil occupies low stream terraces near narrow drainageways, and slight depressions near toe slopes. Mapped areas range from 5 to 20 acres in size. The profile of this soil is similar to that described as representative for the series, but the surface layer is light yellowish brown.

Included with this soil in mapping are a few small areas of soil that have a gravelly surface layer. Also included are few small areas of Chewacla, Toccoa, and Roanoke soils, and a few small eroded areas.

This Wax soil is well suited to most pasture grasses and legumes. It responds to proper management if fertilizer is applied according to results of soil tests. The slow permeability in the lower part of the subsoil restricts suitability of the cultivated crops grown. This soil has severe limitations for most nonfarm uses. Capability unit IIe-5.

Whitwell series

The Whitwell series consists of moderately well drained, nearly level soils. These soils occupy long, narrow bottom lands and low stream terraces. They formed in loamy alluvium. Slopes range from 1 to about 3 percent.

In a representative profile the surface layer is brown and yellowish brown silt loam about 8 inches thick. The subsoil is 40 inches thick. In sequence from the top, the upper 5 inches is dark yellowish brown clay loam; the next 10 inches is yellowish brown silty clay loam; the next 13 inches is yellowish brown clay loam that has strong brown and light brownish gray mottles; and the lower 12 inches is strong brown clay loam that has light brownish gray and light olive brown mottles. The underlying material, to a depth of 60 inches, is light olive brown loam that has light brownish gray and olive mottles. The depth to hard rock is more than 60 inches.

The Whitwell soils have moderate natural fertility and organic matter content. The available water capacity is high, and permeability is moderate. The effective rooting

zone is thick, and tilth is good. These soils are very strongly acid or strongly acid throughout.

Most of this soil has been cleared for cultivated crops or pasture. These soils are suited to most locally grown, cultivated crops and pasture grasses.

Representative profile of Whitwell silt loam, in Floyd County, 3.4 miles south of intersection of Turner Bend Road with Mays Bridge Road, 200 yards north of Coosa River:

Ap—0 to 8 inches, brown (10YR 4/3) and yellowish brown (10YR 5/4) silt loam; weak, fine, granular structure; friable; many fine pores; few medium wormholes, few worm castings; few fine flakes of mica; very strongly acid; clear, wavy boundary.

B1—8 to 13 inches, dark yellowish brown (10YR 4/4) clay loam; weak, fine, subangular blocky structure; friable; few medium wormholes; few very fine flakes of mica; peds coated with material from Ap horizon; very strongly acid; gradual, wavy boundary.

B21t—13 to 23 inches, yellowish brown (10YR 5/4) silty clay loam; moderate, medium, subangular blocky structure; friable; few medium wormholes; peds coated with Ap horizon material, common fine soft black specks; few very fine flakes of mica; very strongly acid; gradual, wavy boundary.

B22t—23 to 36 inches, yellowish brown (10YR 5/6) clay loam; few, fine, faint, strong brown and light brownish gray mottles; moderate, medium, subangular blocky structure; friable; many fine pores; very strongly acid; gradual, wavy boundary.

B3—36 to 48 inches, strong brown (7.5YR 5/6) clay loam; common, fine, faint, light brownish gray and light olive brown mottles; weak, medium, subangular blocky structure; friable; few very fine flakes of mica; very strongly acid; gradual, wavy boundary.

C—48 to 60 inches, light olive brown (2.5Y 5/4) loam; many, fine, faint, light brownish gray and many, fine, prominent, olive mottles; massive; friable; few, black concretions; common very fine flakes of mica; very strongly acid.

The A horizon ranges from 4 to 12 inches in thickness. The Ap horizon is brown, dark brown, strong brown, dark yellowish brown, or yellowish brown. The B horizon ranges from 30 to 54 inches in thickness. The Bt horizon is dark yellowish brown, yellowish brown, strong brown, or brown silty clay loam or clay loam. The solum ranges from 30 to 60 inches in thickness.

Whitwell soils are associated in the landscape with Chewacla, Rome, and Toccoa soils. They are better drained than the Chewacla soils, but they are not so well drained as the Rome and Toccoa soils.

Wh—Whitwell silt loam. This nearly level soil occupies bottom lands and low stream terraces. The mapped areas range from 5 to 50 acres in size.

Included with this soil in mapping are a few small areas that have soils less than 30 inches thick, and a few small areas where there is a dense brittle layer in the subsoil about 4 to 8 inches thick. Also included are small areas of Chewacla, Rome, and Toccoa soils.

This soil is suited to many locally grown, cultivated crops. It responds to proper management if fertilizer is applied according to results of soil tests. Because of nearby streams, water for irrigating is available during periods of light rainfall. This soil has a hazard of flooding for very brief periods. Most of this soil is used for pasture or for cultivated crops. It has a moderate or severe limitation for most nonfarm uses. Capability unit IIw-1.

Wolftever series

The Wolftever series consists of moderately well drained, nearly level and gently sloping soils. These soils occupy low stream terraces. They formed in alluvium deposits, mainly material weathered from limestone and shale. Slopes range from 0 to 6 percent.

In a representative profile the surface and subsurface layers are silt loam about 6 inches thick. The surface layer is grayish brown and the subsurface layer is light yellowish brown. The subsoil is 52 inches thick. In sequence from the top, the upper 6 inches is olive yellow silty clay loam; the next 10 inches is yellowish brown silty clay; below this is 13 inches of yellowish brown silty clay that has light gray mottles; and the lower 23 inches is yellowish brown silty clay that has pinkish gray mottles. The underlying material, to a depth of 62 inches, is yellowish red and strong brown weathered shale. Depth to hard rock is more than 6 feet.

The Wolftever soils have moderate natural fertility and organic matter content. The available water capacity is medium, and permeability is moderately slow. The effective rooting zone is thick, but the clayey subsoil somewhat restricts root growth. Tilth is good. These soils are strongly acid throughout.

The Wolftever soils are suited to most locally grown, cultivated crops. Most of this soil has been cleared and is used for cultivated crops or pasture.

Representative profile of Wolftever silt loam, 2 to 6 percent slopes, in Floyd County, 3.75 miles west northwest of Cedar Creek Baptist Church in roadcut:

A1—0 to 2 inches, grayish brown (10YR 5/2) silt loam; weak, very fine, granular structure; very friable; many fibrous roots; strongly acid; abrupt, wavy boundary.

A2—2 to 6 inches, light yellowish brown (2.5Y 6/4) silt loam; weak, very fine, granular structure; very friable; many fibrous roots; strongly acid; clear, wavy boundary.

B1—6 to 12 inches, olive yellow (2.5Y 6/6) silty clay loam; weak, fine, subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

B21t—12 to 22 inches, yellowish brown (10YR 5/6) silty clay; weak, fine, subangular blocky structure; firm; few clay films on ped surfaces; strongly acid; gradual, irregular boundary.

B22t—22 to 35 inches, yellowish brown (10YR 5/6) silty clay; few, fine, prominent light gray mottles increasing to common, medium, prominent mottles in the lower part; moderate, medium, subangular blocky structure; firm; strongly acid; gradual, irregular boundary.

B23t—35 to 58 inches, yellowish brown (10YR 5/6) silty clay; many, medium, prominent, pinkish gray (5YR 7/2) mottles; moderate, medium, subangular blocky structure; firm; slight compacted clay film on most ped surfaces; strongly acid; clear, wavy boundary.

IIC—58 to 62 inches, yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) weathered shale.

The A horizon ranges from 4 to 12 inches in thickness. The Ap horizon is grayish brown, dark grayish brown, or brown. The B horizon ranges from 40 to 60 inches or more in thickness. The Bt horizon is yellowish brown, dark yellowish brown, or strong brown silty clay or silty clay loam. The solum ranges from 27 to 60 inches or more in thickness.

Wolftever soils are associated in the landscape with Roanoke, Tupelo, and Whitwell soils. They are better drained than Roanoke and Tupelo soils and contain more clay in the subsoil than the subsoil of Whitwell soils.

WoA—Wolftever silt loam, 0 to 2 percent slopes. This nearly level soil occupies broad low stream terraces. The mapped areas range from 5 to 35 acres in size. The profile of this soil is similar to that described as representative for the series, but it is nearly level and the surface layer is brown silt loam and several inches thicker.

Included with this soil in mapping are a few small areas of soil that have gravel on the surface and throughout. Also included are small areas of Etowah, Roanoke, and Tupelo soils.

This Wolftever soil is subject to flooding. Cultivated crops are affected by the slow soil "warmup" in the spring, and by ponding in some places during periods of heavy rainfall. This soil has moderate or severe limitations for most nonfarm uses (fig. 4). Capability unit IIw-1.

WoB—Wolftever silt loam, 2 to 6 percent slopes. This gently sloping soil occupies low terraces. Mapped areas range from 5 to 50 acres in size. This soil has the profile similar to that described as representative for the Wolftever series.

Included with this soil in mapping are small areas of soils that have limestone rock outcrops, and a few small areas where the surface layer is gravelly. Also included are small areas of Conasauga, Etowah, and Rome soils.

This gently sloping Wolftever soil has a slight erosion hazard. Most of this soil was cleared and is used for cultivated crops and pasture. Cultivated crops are affected by the slow soil "warmup" in the spring. This soil has moderate limitations for most nonfarm uses. Capability unit IIe-5.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture, and woodland, as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities, and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Changing economic conditions, new techniques of farm management, new machines and materials, and improved crop varieties are some of the things that affect the behavior of soils and influence use and management of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

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

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

Crops and pasture

JAMES E. HELM, conservation agronomist, Soil Conservation Service, assisted in writing this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. The system of land capability classification used by the Soil Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

Changes in the behavior of soils under new and different management techniques are not unusual and should be anticipated. Thus, in addition to management practices suggested here, those who manage soils need to keep alert to alternate practices possibly dictated by new techniques, improved technology, economic changes, and special conditions peculiar to a specific site. Also, since many soil series concepts have undergone changes in the last 10 to 20 years, it is recommended that present interpretations and predictions about a particular soil be

carefully studied before applying them to the soils of the same name in older soil surveys.

Management is needed for the soils in Chattooga, Floyd, and Polk Counties mainly to control erosion by reducing the amount of runoff on uplands, to dispose of excess water on flood plains, and to maintain good tilth and productivity.

Excess water is the main limitation of several soils on flood plains. Chewacla, Staser, and Toccoa soils are in this category. The drainage needed depends on the amount of water in the soil and on the kinds of crops grown. After the water is controlled, only practices that help to maintain productivity and good tilth are needed.

Several management practices contribute to maintenance of soil productivity and good tilth, and help to control soil loss. Among these are regular applications of lime and fertilizer according to plant needs; good management of crop residue, usually by shredding and leaving the residue on the surface between seasons of crop production; and use of suitable cropping systems.

Complementary practices include grassed waterways or outlets. These are essential for the disposal of runoff water from straight row farming, contour farming, terracing, or stripcropping. A field border of perennial grass to control erosion at some locations along the edge of fields and to reduce weed growth is another helpful practice. Such a border is attractive and allows more efficient operation of farm equipment. Farm roads and fences need to be located on the crest of slopes where the watershed divides, or on the contour. Location of roads and fences should not interfere with a field and row arrangement that will facilitate efficient farming operations. Fences can be located in or adjacent to natural waterways.

All of the upland soils in the three counties, for example, Decator, Dewey, Madison, and Grover, are susceptible to erosion. The degree of susceptibility depends on the erodibility, the frequency and intensity of rainfall, the steepness and length of slopes, and the kind and amount of ground cover. The more gently sloping soils need only contour cultivation in combination with terraces and a cropping system that includes annual close-growing crops, crops producing large quantities of residue, or perennial crops. Slopes greater than 10 percent may require stripcropping in addition to these practices. Regardless of the practices used, a grassed waterway or proper outlet is essential. The practice of planting in sod, or no-till farming, is an effective way of reducing soil losses on sloping land.

The following paragraphs give, for specified crops, the rates of fertilization and seeding and other practices that are required to obtain the yields shown in table 2.

Cotton.—Apply 90 to 120 pounds of nitrogen, 50 to 150 pounds of phosphoric acid, and 75 to 150 pounds of potash. Plant enough seed to produce 30,000 to 50,000 plants per acre. Establish an effective insect-control program.

Corn.—Apply 100 to 150 pounds of nitrogen, 40 to 50 pounds of phosphoric acid, and 60 to 70 pounds of potash per acre. Plant enough seed to produce 15,000 to 20,000 plants per acre. Turn under all crop residue or grow a winter cover crop and turn it under. Apply lime according to the need indicated by soil tests.

Grain sorghum.—Apply 50 to 60 pounds of nitrogen, 40 to 50 pounds of phosphoric acid, and 60 to 70 pounds of potash per acre at the time of planting. In addition, sidedress with nitrogen at the rate of 40 to 50 pounds per acre. Adequate control of plant diseases must be provided. The planting rate is 4 to 6 pounds per acre.

Soybeans.—Apply 0 to 20 pounds of nitrogen, 40 to 50 pounds of phosphoric acid, and 50 to 75 pounds of potash. Innoculate seed and apply 1 ounce of molybdenum salt per bushel of seed as seed treatment. Use lower fertilizer rates when soybeans follow a heavily fertilized crop.

Pasture.—On soils for which table 2 lists an estimated acre yield of 9 or 10 animal-unit-months or more for improved bermudagrass, apply 125 to 175 pounds of nitrogen, 50 to 70 pounds of phosphoric acid, and 70 to 100 pounds of postash per acre. The planting rate is 10,000 to 14,000 sprigs per acre. Lime is applied according to the need indicated by soil tests. On soils for which table 2 lists an estimated acre yield of 6 animal-unit-months or more for tall fescue and white clover, apply 80 to 100 pounds of nitrogen, 40 to 60 pounds of phosphoric acid, and 60 to 80 pounds of potash per acre. One ton of lime per acre is also required every 3 years, or according to the need indicated by soil tests.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 2. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to, or not commonly grown on the soil, or that a given crop is not commonly irrigated.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 2.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of

nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

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

Crops other than those shown in table 2 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are 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 that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk 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 some 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 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is indicated in table 1. All soils in the survey area except those named at a level higher than the series are included. Some of the soils that are well suited to crops and pasture may be in low-intensity use, for example, soils in capability classes I and II. Data in this table can be used to determine the farming potential of such soils.

The capability unit is identified in the description of each soil mapping unit in the section "Soil maps for detailed planning." 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. 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-4 or IIIe-6.

Capability unit I-1

This unit consists of well drained soils near intermittent streams or in depressions. These soils are in the Emory series. Slopes range from 0 to 4 percent. The surface layer is silt loam 4 to 10 inches thick. The subsoil is silty clay loam.

The soils in this unit are high in natural fertility and moderate in content of organic matter. The available water capacity is medium, and the permeability is moderate. Tilth is generally good. The rooting zone is thick. The soils are medium acid to strongly acid throughout.

The soils in this unit are well suited to corn, cotton, soybeans, wheat, and truck crops. They are also well suited to improved bermudagrass, tall fescue, white clover, and lespedeza for hay and pasture. Most of the soils are used for cultivated crops and pasture.

These soils are easy to manage. Cultivated crops can be grown year after year if plant residue is returned to the

soil to maintain good tilth. A planned sequence of crops helps to control weeds and diseases. This practice also helps to improve the effectiveness of fertilizer. Because these soils are in depressions, in places, they are subject to ponding for short periods. If the depressions are adequately drained, these soils are well suited to cultivated crops.

Capability unit I-2

This unit consists of well drained soils on low stream terraces. These soils are in the Etowah and Rome series. Slopes range from 0 to 4 percent. The surface layer is loam or fine sandy loam about 4 to 13 inches thick. The subsoil is mostly clay loam, sandy clay loam, and loam.

The soils of this unit are moderately high to high in natural fertility, and the content of organic matter is moderate to low. The available water capacity is medium or high, and the permeability is moderate. Tilth is good. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

The soils in this unit are well suited to corn, cotton, soybeans, small grain, and truck crops. They are also well suited to bahiagrass, improved bermudagrass, crimson clover, lespedeza, tall fescue, and white clover for hay or pasture. Most of the soils are used for cultivated crops and pasture.

These soils are easy to manage. Cultivated crops can be grown year after year if plant residue is returned to the soil to maintain good tilth. A planned sequence of crops helps to control weeds, insects, and diseases. This practice also helps to improve the effectiveness of fertilizer.

Capability unit IIe-1

This unit consists of deep or moderately deep, well drained soils on uplands. These soils are in the Decatur, Dewey, and Madison series. Slopes range from 2 to 6 percent. The surface layer is silt loam, loam, or gravelly clay loam about 3 to 13 inches thick. The subsoil is silty clay, clay, clay loam, or silty clay loam.

The soils of this unit are moderate to moderately high in natural fertility, and the content of organic matter is low or moderate. The available water capacity is medium, and the permeability is moderate. Tilth is good in most places. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

The soils in this unit are well suited to corn, cotton, wheat, soybeans, and truck crops. They are also well suited to improved bermudagrass, tall fescue, and white clover. Most of the soils are used for cultivated crops and pasture.

Erosion control helps hold soil losses within allowable limits. Erosion control practices such as terracing or contour tillage can be used. These practices determine the cropping system. A typical example of a suitable cropping system for a terraced field that has slopes of 4 percent is 1 year of corn followed by 1 year of cotton or wheat.

Capability unit IIe-2

This unit consists of well drained or moderately well drained soils on uplands. These soils are in the Euharlee, Fullerton, Grover, and Shack series. Slopes range from 2 to 6 percent. The surface layer is silt loam, cherty silt loam, and gravelly fine sandy loam 2 to 17 inches thick. The subsoil is silt loam, loam, clay loam, gravelly silty clay, cherty silty clay loam, cherty silty clay, cherty clay, or cherty clay loam.

The soils in this unit are moderate or low in natural fertility and low in organic matter content. The available water capacity is medium, but the gravel and chert fragments reduce infiltration and moisture storage. Permeability is moderate or moderately slow. Tilth is good or fair. The rooting zone is thick. The soils are strongly acid or cherty strongly acid throughout.

The soils in this unit are suited to corn, cotton, soybeans, and small grain. They are well suited to tall fescue, white clover, improved bermuda, crimson clover, and lespedeza for pasture and hay. Most of the soils are used for cultivated crops and pasture.

Gravel and chert fragments on the surface layer and in the soil are concerns of management because they increase runoff and reduce plant population. The soil should be managed so that soil losses from erosion are held within allowable limits. The steepness and length of slopes or the erosion control practices determine the cropping system needed. An example of a suitable cropping system is a mulch planted row crop, such as corn, grown year after year. The crop residue should be mowed and left undisturbed for winter cover. This system is suited for fields that are cultivated on the contour, that are not terraced, and that have slopes no steeper than 4 percent and no more than 300 feet long.

Capability unit IIe-3

This unit consists of deep, well drained soils on uplands and stream terraces. These soils are in the Allen, Etowah, Holston, and Rome series. They are slightly eroded. Slopes range from 2 to 6 percent. The surface layer is fine sandy loam or loam 4 to 13 inches thick. The subsoil is clay loam, sandy clay loam, clay, or loam.

The soils in this unit are moderate to high in natural fertility, and content of organic matter is moderate to low. Available water capacity is medium to high, and the permeability is moderate. Tilth is good. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

About 50 percent of the areas of soils is used for cultivated crops or pasture. These soils are suited to most locally grown crops, including improved bermudagrass, tall fescue, and white clover. Crops are easy to establish and to maintain, and they respond well if fertilizer and lime are applied. Clean-cultivated crops should not be grown continuously, because there is a slight to moderate hazard of erosion. These soils are suited to irrigation.

If the soils in this unit are cultivated, they can be managed so that soil losses from erosion are held within allowable limits. A suitable cropping system is governed by the steepness and length of slopes and the practices used for control of erosion. An example of a suitable cropping system on a terraced slope of 3 percent is 1 year of corn, cotton, or some other row crop followed by 1 year of small grained crops.

Capability unit IIe-4

The only soil in this unit is Hartsells fine sandy loam, 2 to 6 percent slopes. It is a moderately deep, well drained soil on uplands. It is slightly eroded. The surface layer is fine sandy loam about 2 to 9 inches thick. The subsoil is clay loam.

The soil in this unit is moderately low in natural fertility and moderate in content of organic matter. Available water capacity is medium, and the permeability is moderate. Tilth is good. The rooting zone is moderately thick. This soil is very strongly acid or strongly acid throughout.

About 50 percent of the area of soil is used for cultivated crops or pasture. The rest of the area is wooded or idle.

This soil is well suited to most locally grown crops, including improved bermudagrass, tall fescue, white clover, and most truck crops. Crops are easy to establish and to maintain, and they respond well if fertilizer and lime are applied. Clean cultivated crops should not be grown continuously, because there is a slight to moderate hazard of erosion.

Where this soil is cultivated, erosion can be controlled by using a combination of erosion control practices and a cropping system that includes close growing annuals or perennials or crops that produce a large amount of residue. An example of a suitable cropping system on a slope of 4 percent is corn or another row crop planted with a small grained crop on the contour in parallel, alternate strips and rotated each year. For good crop growth, an adequate amount of fertilizer and lime must be applied, and all plant residue should be returned to the soil.

Capability unit IIe-5

This unit consists of moderately well drained, moderately deep soils on low stream terraces, toe slopes, and drainageways. The soils are in the Wax and Wolftever series. Slopes range from 2 to 6 percent. The surface layer is silt loam or loam about 7 to 12 inches thick. The upper part of the subsoil is clay loam, silty clay loam, silty clay, or loam, and the lower part of the subsoil is very cherty sandy clay loam, very cherty clay loam, and silty clay.

The soils in this unit are moderately low in natural fertility and low in organic matter content. The available water capacity is medium. Permeability is moderate in the upper part of the subsoil and moderately slow or slow in the lower part of the subsoil. Tilth is good or fair. The rooting zone is moderately thick. The soils are strongly acid to extremely acid throughout.

About 50 percent of the areas of soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

This soil is well suited to tall fescue and white clover, but it is less well suited to wheat, alfalfa, and rye. It responds well if fertilizer and lime are applied. The slow permeability in the lower part of the subsoil restricts suitability of the cultivated crops.

Where the soil in this unit is cultivated, it should be managed so that soil losses from erosion are held within allowable limits. A suitable cropping system is needed. The choice of this system is governed by the steepness and length of slopes, the rate water moves through the lower part of the subsoil, and the practices used for control of erosion. An example of a suitable cropping system on a terraced slope of 3 percent is 1 year of corn, cotton, or some other row crop followed by 1 year of wheat or rye.

Capability unit IIe-6

This unit consists of deep or moderately deep, well drained soils on uplands. These soils are in the Aragon and Cunningham series. Most of these soils are slightly eroded. Slopes range from 2 to 6 percent. The surface layer is fine sandy loam, silty clay loam, or loam about 4 to 9 inches thick. The subsoil is clay loam, loam, or clay.

The soils in this unit are low in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is slow. Tilth is generally good or fair. The rooting zone is thick. The soils are strongly acid to extremely acid throughout.

The soils in this unit are used mostly for cultivated crops or pasture. The rest are wooded or idle.

These soils are suited to most locally grown crops. Crops are easy to establish and maintain, and they respond well if fertilizer and lime are applied. Clean-cultivated crops should not be grown continuously because there is a slight or moderate hazard of erosion.

Control of erosion and slow permeability in the subsoil are primary concerns of management. The soils should be managed so that soil losses from erosion will be held within allowable limits. The steepness and length of slopes, the rate water moves through the subsoil, and the erosion control practices determine the cropping system needed. A good example of a suitable cropping system on a slope of 3 percent is cotton, corn, or another row crop planted with a small grained crop on the contour in parallel, alternate strips and rotated each year. For good crop growth, an adequate amount of fertilizer and lime must be applied and all plant residue should be returned to the soil.

Capability unit IIs-2

Ennis cherty silt loam is the only soil in this unit. It is deep and well drained. It occupies areas near intermittent streams and small irregularly shaped depressions. Slopes range from 0 to 4 percent. The surface layer is cherty silt loam about 6 inches thick. The subsoil is cherty loam and cherty clay loam.

Ennis soils have moderate natural fertility and low organic matter content. The available water capacity is medium, but the chert fragments reduce infiltration and moisture storage area. Permeability is moderately rapid. Tilth is good. The rooting zone is moderately thick. The soils are strongly acid or very strongly acid throughout.

About 50 percent of the areas of soils is used for pasture, 25 percent is used for cultivated crops, and 25 percent is used for woodland and nonfarm purposes.

Chert fragments on the surface layer and in the soil are concerns of management because they reduce plant population and interfere with farming operations. These soils are suited to most locally grown, cultivated crops if protected from flooding. Most crops respond well to regular applications of fertilizer. If fertilized, Ennis soils are suited to tall fescue and bermudagrass for pasture. Yellow poplar, loblolly pine, and black walnut are suited to these soils.

Capability unit IIw-1

This unit consists of deep, well drained or moderately well drained soils on bottom lands, toe slopes, and low stream terraces. These soils are in the Staser, Wax, Whitwell, and Wolftever series. Slopes range from 0 to 2 percent. The surface layers are loam or silt loam about 4 to 45 inches thick. The subsoil is clay loam, silt loam, silty clay loam, silty clay, very cherty sandy clay loam, and very cherty clay loam.

The soils of this unit are high to moderately low in natural fertility and moderate or low in content of organic matter. The available water capacity is medium or high. Permeability is moderate, except the lower part of the subsoil of Wax soils is slow, and the subsoil of Wolftever soils is moderately slow. Tilth is generally good. The rooting zone is thick. The soils are very strongly acid to neutral throughout.

These soils are used mostly for cultivated crops or pasture. Crops on these soils respond well if proper amounts of fertilizer and lime are applied.

The soils in this unit, generally, are not subject to erosion, but they are subject to occasional scouring by floodwater and slow runoff of surface water. Overflow from streams once or twice annually is the main hazard where the soils are cultivated.

Capability unit IIw-2

This unit consists of well drained soils on bottom lands. These soils are in the Toccoa series. Slopes range from 0 to 2 percent. The surface layer is fine sandy loam about 4 to 17 inches thick. The underlying layers are stratified fine sandy loam. In some places, loamy sand, silt loam, and silty clay loam layers are common.

The soils of this unit are moderate in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is moderately rapid. Tilth is generally good. The rooting zone is thick. The soils are slightly acid or medium acid throughout.

About 25 percent of the areas of soils is used for cultivated crops or pasture. Crops on these soils respond well if suitable amounts of fertilizer and lime are applied.

The soils in this unit generally do not have a hazard of erosion, but are occasionally scoured by floodwater and have slow runoff of surface water. Because of the moderately rapid permeability, available water is lacking during seasonally dry periods. A cropping system that helps to maintain or increase organic matter content is needed. Corn can be grown continuously if adequate amounts of fertilizer and lime are applied, and if all plant residue is returned to the soil.

Overflow from streams once or twice annually is the main hazard if the soils on bottom lands are used for cultivated crops.

Capability unit IIIe-1

This unit consists of deep or moderately deep, well drained soils on uplands. These soils are slightly eroded to eroded. They are in the Decatur, Dewey, and Madison series. Slopes range from 6 to 10 percent. In the slightly eroded areas, the upper 3 to 14 inches of these soils is loam or silt loam. In the eroded areas, the surface layer is gravelly clay loam 4 to 8 inches thick. The subsoil is silty clay, clay, clay loam, or silty clay loam.

The soils in this unit are moderate to moderately high in natural fertility, and the content of organic matter is moderate or low. The available water capacity is medium, and the permeability is moderate. Tilth is generally good. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

About 25 percent of the areas of soils is used for crops and pasture. The rest of the areas are wooded or idle.

The soils in this unit are suited to most locally grown crops and pasture plants. Crops respond well to suitable amounts of fertilizer and lime.

Because of the runoff, erosion is the chief hazard where these soils are cultivated or left bare. Contour tillage and terracing are practices that help to control erosion. The cropping system should include close-growing crops, and all plant residue should be returned to the soil. The steepness and length of slopes govern the choice of the erosion control practices and cropping systems. An example of a suitable cropping system on a terraced slope of 5 percent is 1 year of cotton, corn or some other row crop followed by 2 years of small grained crops and lespedeza.

Capability unit IIIe-2

This unit consists of deep to moderately deep, well drained and moderately well drained soils on uplands.

Most soils are slightly eroded. The soils of this unit are in the Euharlee, Grover, Fullerton, and Shack series. Slopes range from 6 to 10 percent. The surface layer is 2 to 17 inches thick. It is silt loam, gravelly fine sandy loam, or cherty silt loam. The subsoil is cherty silty clay loam, cherty silty clay, cherty clay loam, silt loam, loam, clay loam, gravelly silty clay, and cherty clay. The subsoil is generally 30 to more than 60 inches thick.

The soils in this unit are moderate or low in natural fertility and low in content of organic matter. The available water capacity is medium, but gravel and chert fragments reduce infiltration and moisture storage area. Permeability is moderate or moderately slow. The Euharlee and Grover soils have good tilth. Fullerton and Shack soils have fair tilth. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

Less than a fourth of the areas of soils is used for cultivated crops and pasture. The rest of the areas are wooded or idle.

The soils in this unit are suited to most locally grown, cultivated crops, including grasses and legumes. Crops are easy to establish and maintain and they respond well if suitable amounts of fertilizer and lime are applied.

Gravel and chert fragments on the surface layer and in the soil are concerns of management because they increase runoff and reduce plant population. Erosion is a hazard in cultivated areas and in areas that are left bare. Practices that help to control erosion are needed, including a complete system for the disposal of water. The steepness and length of slopes govern the choice of the erosion control practices and the cropping system. An example of a suitable cropping system on a slope of 8 percent that is 150 feet long is cotton or some other row crop planted with grass on the contour in parallel, alternate strips and rotated every 2 years.

Capability unit IIIe-3

This unit consists of deep, well drained soils on uplands and high steam terraces. Most of the soils are slightly eroded, and some have been greatly altered for urban uses. In this unit are soils of the Allen, Etowah, and Holston series and the Etowah-Urban land complex. Slopes range from 6 to 10 percent. The surface layer is fine sandy loam or loam about 5 to 13 inches thick. The subsoil is clay loam, clay, and sandy clay loam about 54 to 60 inches thick.

The soils of this unit are moderate to moderately high in natural fertility and low in the content of organic matter. The available water capacity is medium to high, and the permeability is moderate. Tilth is generally good. The rooting zone is thick. The soils are strongly acid to very strongly acid throughout.

These soils are used mostly for cultivated crops or pasture. Other areas are wooded or idle and the rest is used for residential or industrial sites.

These soils are suited to truck crops. Crops are easy to establish and maintain.

Erosion is a hazard in cultivated areas and in areas that are left bare. Practices that help to control erosion are needed, including a complete system for the disposal of water. The steepness and length of slopes govern the choice of the erosion control practices and the cropping system. An example of a suitable cropping system on a slope of 8 percent that is 150 feet long is cotton or some other row crop and grass planted on the contour in parallel, alternate strips and rotated every 2 years.

Capability unit IIIe-4

This unit consists of moderately deep or deep, well drained and moderately well drained soils on uplands. These soils are slightly eroded. They are in the Aragon, Conasauga, and Cunningham series. Slopes range from 1 to 10 percent. The surface layer is loam, silty clay loam, silt loam, or fine sandy loam 3 to 12 inches thick. The subsoil is clay loam, clay, silty clay, loam, or silty clay loam. It is about 25 to more than 60 inches thick.

The soils in this unit are moderate or low in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is slow or moderately slow. Tilth is generally good to fair. The rooting zone is thick. The soils are strongly acid to extremely acid throughout.

More than 25 percent of the areas of soils is used for cultivated crops and pasture. Some areas are wooded, idle, or are used for nonfarm purposes.

The soils in this unit are suited to most locally grown, cultivated crops and pasture plants. They respond well to applications of fertilizer and lime.

Because of the runoff, erosion is the chief hazard where these soils are cultivated or left bare. Contour tillage and terracing are practices that help to control erosion. In addition to erosion, the slow or moderately slow permeability in the subsoil is a management concern. The cropping system should include close-growing crops, and all plant residue should be returned to the soil. The steepness and length of the slopes and the rate water moves through the subsoil govern the choice of erosion control practices and cropping systems. An example of a suitable cropping system on a terraced slope of 5 percent is 1 year of cotton, corn, or some other row crop followed by 2 years of small grained crops and lespedeza.

Capability unit IIIe-5

This capability unit consists of moderately deep, well drained, slightly eroded soils on the uplands. These soils are in the Hartsells, Linker, and Tidings series. Slopes range from 2 to 10 percent. The surface layer is gravelly silt loam or fine sandy loam about 2 to 17 inches thick. The subsoil is sandy clay loam, clay loam, silty clay loam, loam, gravelly clay loam, gravelly silty clay loam, or gravelly loam about 25 to 40 inches thick.

The soils in this unit are moderate to moderately low in natural fertility and moderate to low in content of organic matter. The available water capacity is medium, and the permeability is moderately rapid or moderate. Tilth is generally good to fair. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

More than 50 percent of the areas of soils is used for cultivated crops and pasture. The rest of the areas are wooded or idle.

The soils in this capability unit are suited to most locally grown crops and pasture. Crops respond well to good management and to high applications of fertilizer and the appropriate amount of lime.

Erosion is a hazard in cultivated areas and in areas that are left bare. Practices that help to control erosion are needed, including a complete system for the disposal of water. The steepness and length of slopes and the rate water moves through the subsoil govern the choice of the erosion control practices and the cropping system. An example of a suitable cropping system on a slope of 8 percent that is 150 feet long is cotton or some other row crop planted with grass on the contour in parallel, alternate strips and rotated every 2 years.

Capability unit IIIs-1

Subligna gravelly loam is the only soil in this capability unit. It is moderately deep and well drained. It occupies alluvial fans at the foot of mountains and is on ridges and along small drainageways. Slopes range from 1 to 6 percent. The surface layer is gravelly loam 3 to 8 inches thick. The subsoil is sandy clay loam, gravelly sandy clay loam, or gravelly silty clay loam.

The Subligna soil has low natural fertility and organic matter content. The available water capacity is medium, and the permeability is rapid. Tilth is generally poor. The rooting zone is moderately thick. The soil is strongly acid or very strongly acid throughout except that part where lime has been applied.

About 75 percent of the areas of this soil is wooded. The rest is used for cultivated crops or pasture, and some is idle. This soil is suited to tall fescue and white clover. It is moderately well suited to cultivated crops. Tillage operations and mowing are difficult because of the gravel, cobbles, and stones on the surface and throughout the soil.

If annual crops are grown, residue kept on the surface between seasons helps keep soil losses within tolerable limits. Most crops respond well to applications of fertilizer and lime.

Capability unit IIIs-2

This unit consists of moderately deep, well drained and moderately well drained soils in the Lyerly series. These soils occupy limestone and shaly limestone valleys. Slopes are 0 to 6 percent. The surface layer is silt loam 3 to 7 inches thick. The subsoil is plastic clay or silty clay.

The soils of this unit are low in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is very slow. Tilth is generally poor. The rooting zone is moderately deep. These soils are slightly acid to very strongly acid in the surface layer and in the upper and middle parts of the subsoil. They are slightly acid or neutral in the lower part of the subsoil.

About 75 percent of the areas of soils is wooded. The soils are suited to tall fescue and white clover and are moderately well suited to corn, grain sorghum, bermudagrass, soybeans, and annual lespedeza or kudzu. Crops on the soils respond moderately well to fertilizer. Planting corn or some other row crop each year and returning all residue to the soil is an example of a suitable cropping system.

Very slow permeability in the subsoil is the primary concern of management. In areas used intensively for row crops, turning under cover crops and including a suitable perennial in the cropping system help maintain the supply of organic matter. Soil losses because of erosion are kept within tolerable limits if residue is retained on the surface between cropping seasons. Most crops respond favorably to regular applications of a complete fertilizer. Legumes require nitrogen only at the time of planting.

Capability unit IIIw-1

The only soil in this unit is Chewacla silt loam. It is a deep, somewhat poorly drained soil on flood plains. Slopes are 0 to 2 percent. The surface layer is silt loam 2 to 17 inches thick. The underlying layers are mostly silt loam, loam, or sandy loam. In a few places, gravel layers are at depths of 3 to 5 feet.

This soil is moderate in natural fertility and content of organic matter. The available water capacity is high, and the permeability is moderate. Tilth is good in most places. The effective rooting zone is thick. The soil is slightly acid or medium acid throughout.

About 75 percent of the areas of this soil is wooded or idle. This soil is suited to corn, grain sorghum, tall fescue, bermudagrass, annual lespedeza, and white clover. It generally is not suited to cotton, wheat, alfalfa, sericea lespedeza, kudzu, or crimson clover. This soil generally is suited to sprinkler irrigation, and nearby streams usually are a good source of water.

Row crops can be grown continuously on this soil if flooding is controlled and if all crop residue is turned under. These practices also help to maintain the organic matter content and good tilth. Crops on this soil respond well to a complete fertilizer and to lime.

Overflow from streams once or twice annually for a period of a few days is the main hazard where these soils are cultivated. A drainage system that removes excess surface water and improves internal drainage is needed.

Capability unit IIIw-2

Cedarbluff silt loam is the only soil in this capability unit. This somewhat poorly drained soil is on the low stream terraces and in upland depressions. Slopes range from 0 to 2 percent. The surface layer is silt loam 4 to 12 inches thick. The subsoil is silty clay loam, clay loam, or clay. Cedarbluff soils have a dense, brittle layer at a depth of about 25 inches. This layer in most places is about 10 to 20 inches thick.

The soil in this unit is low in natural fertility and moderate in content of organic matter. The available water capacity is medium. Permeability is moderate in the upper part of the soil and slow in the lower part. Tilth is fair. The rooting zone is moderately thick. The soil is medium acid or strongly acid throughout.

This soil is mostly wooded. The rest is used for cultivated crops and pasture or is idle.

Because of flooding, Cedarbluff soil is not well suited to most cultivated crops. It is well suited to tall fescue and white clover, but it generally is not suited to cotton, wheat, or barley. Yellow-poplar, sweetgum, and loblolly pine are suited to this soil.

The slow rate water moves through the lower subsoil is a concern of management. In areas used intensively for row crops, turning under cover crops and including a suitable perennial in the cropping system helps maintain the supply of organic matter and improves the tilth. If annual crops are grown, all residue should be kept on the surface between cropping seasons. Most crops respond favorably to regular applications of lime and a complete fertilizer. Legumes, however, need nitrogen only at the time of planting.

Capability unit IIIw-3

This unit consists of deep, somewhat poorly drained soils on stream terraces and in broad, flat, upland depressions, and drainageways. These soils are in the Tupelo series. Slopes range from 0 to 3 percent. The surface layer is silt loam or clay loam 4 to 12 inches thick. The subsoil is mostly silty clay or clay.

The soils of this unit are moderately low in natural fertility, and content of organic matter is low. The available water capacity is medium, and the permeability is slow. Tilth is generally fair. The rooting zone is thick, but the clayey subsoil somewhat restricts root growth. Tupelo soils are slightly acid in the surface layer, and the subsoil ranges from mildly alkaline to strongly acid.

About 75 percent of the areas of these soils is wooded. These soils are suited to tall fescue and white clover and are moderately well suited to corn, grain sorghum, bermudagrass, soybeans, and annual lespedeza or kudzu. They are not suited to cotton, and some other clean tilled crops may fail in some years because of wetness. Crops on these soils respond moderately well to fertilizer. Planting corn or some other row crop each year and returning all residue to the soil is an example of a suitable cropping system.

Slow permeability in the subsoil is the primary concern of management. In areas used intensively for row crops, turning under cover crops and including a suitable perennial in the cropping system helps maintain the supply of organic matter and improves tilth. If annual crops are grown, all residue should be kept on the surface between cropping seasons. Most crops respond favorably to regular applications of lime and a complete fertilizer. Legumes, however, need nitrogen only at the time of planting.

Annual flooding, a high water table, and clayey subsoils are the chief limitations. A drainage system is needed to carry off excess surface water and improve internal drainage.

Capability unit IVe-1

This unit consists of moderately deep to deep, well drained, slightly eroded and eroded soils on uplands. These soils are in the Allen, Decatur, Dewey, Holston, and Madison series. Slopes range from 10 to 25 percent. The surface layer is fine sandy loam, clay silt loam, or gravelly clay loam 4 to 14 inches thick. The subsoil is silty clay, clay, clay loam, or sandy clay loam more than 56 inches thick.

The soils of this unit are moderate to moderately high in natural fertility. The content of organic matter is moderate or low. The available water capacity is medium, and the permeability is moderate. Tilth is generally good to fair. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

About 25 percent of the areas of soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

These soils generally are suited to most of the crops grown locally, but are better suited to grasses and legumes than to row crops. Row crops can be grown occasionally in rotation with perennial crops. The most eroded soils are difficult to till and can be cultivated without clodding or puddling only within a narrow range of moisture content.

If these soils are cultivated, erosion is the chief hazard. Contour tillage, terracing, grassed waterways, and stripcropping are practices that help to control erosion. In addition, a close-growing crop should be included in the cropping system. Lime and fertilizer are needed for favorable yields and should be applied regularly. An example of a suitable cropping system on a slope of 10 percent is 3 years of grass followed by 1 year of corn planted on the contour.

Capability unit IVe-2

This unit consists of deep, well drained to moderately well drained, cherty soils on uplands. These soils are in the Fullerton and Shack series. Slopes range from 10 to 15 percent. The surface layer is cherty silt loam about 4 to 17 inches thick. The subsoil is cherty silty clay loam, cherty clay, cherty clay loam, cherty silty clay, or cherty loam.

The soils of this unit are moderate or low in natural fertility and low in content of organic matter. The available water capacity is medium, but the chert fragments reduce infiltration and moisture storage area. Permeability is moderate or moderately slow. Tilth is generally fair. The rooting zone is thick. The soils are strongly acid or very strongly acid throughout.

About 25 percent of the areas of the soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

These soils generally are suited to most of the crops grown locally, but are better suited to grasses and legumes than to row crops. Row crops can be grown occasionally in rotation with perennial crops.

Chert fragments on the surface layer and in the soil are concerns of management because they increase runoff and reduce plant population. If these soils are cultivated, erosion is also a concern. Contour tillage, terracing, grassed waterways, and stripcropping are practices that help to control erosion. In addition, a close-growing crop should be included in the cropping system. Lime and fertilizer are needed for favorable yields and should be applied regularly. An example of a suitable cropping system on a slope of 10 percent is 3 years of grass followed by 1 year of corn planted on the contour.

Capability unit IVe-3

The only soil in this unit is Hartsells fine sandy loam, 10 to 15 percent slopes. It is a moderately deep, well drained, slightly eroded soil on sandstone uplands. The surface layer is fine sandy loam about 2 to 9 inches thick. The subsoil is sandy clay loam or clay loam 18 to 36 inches thick.

The Hartsells soil is moderately low in natural fertility, and the content of organic matter is moderate. The available water capacity is medium, and the permeability is moderate. Tilth is generally good. The rooting zone is moderately thick. This soil is strongly acid or very strongly acid throughout, unless limed.

About 50 percent of the areas of the soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

This soil generally is suited to most of the crops grown locally but is better suited to grasses and legumes than to row crops. Row crops can be grown occasionally in rotation with perennial crops.

Because bedrock is at a depth of about 2 to 3 feet, available water is lacking during seasonally dry periods. If these soils are cultivated, erosion is also a problem. Contour tillage, terracing, grassed waterways, and stripcropping are practices that help to control erosion. In addition, a close-growing crop should be included in the cropping system. Lime and fertilizer are needed for favorable yields and should be applied regularly. An example of a suitable cropping system on a slope of 10 percent is 3 years of grass followed by 1 year of corn planted on the contour.

Capability unit IVe-5

This unit consists of moderately deep, well drained, slightly eroded soils on cherty and shaly uplands. These soils are in the Aragon and Cunningham series. Slopes range from 10 to 15 percent. The surface layer is fine sandy loam or loam 4 to 9 inches thick. The subsoil is clay, clay loam, or loam 26 to more than 60 inches thick.

The soils of this unit are low in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is slow. Tilth is generally good or fair. The rooting zone is moderately thick. The soils are very strongly acid to extremely acid.

About 25 percent of the areas of the soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

These soils generally are suited to most of the crops grown locally but are better suited to grasses and legumes than to row crops. Row crops can be grown occasionally in rotation with perennial crops.

Slow permeability in the subsoil is a primary concern of management. Where these soils are cultivated, erosion also is a problem. Contour tillage, terracing, grassed waterways, and stripcropping are practices that help to control erosion. In addition, a close-growing crop should be included in the cropping system. Lime and fertilizer are needed for favorable yields and should be applied regularly. An example of a suitable cropping system on a slope of 10 percent is 3 years of grass followed by 1 year of corn planted on the contour.

Capability unit IVe-6

This unit consists of well drained, slightly eroded soils on uplands. These soils are in the Townley series. Slopes range from 2 to 10 percent. The surface layer is silt loam 4 to 8 inches thick. The subsoil is silty clay, shaly silty clay, shaly clay, or clay 7 to 10 inches thick.

The soils of this unit are low in natural fertility, and content of organic matter is low. Available water capacity is low, and the permeability is slow. Tilth is generally poor. The rooting zone is moderately thick. The soils are very strongly acid or extremely acid throughout.

About 25 percent of the areas of the soils is used for cultivated crops or pasture. The rest of the areas are wooded or idle.

These soils are suited to most crops grown locally but are better suited to grasses and legumes than to row crops. Row crops can be grown occasionally in rotation with perennial crops. The most eroded soils are difficult to till and can be cultivated without clodding or puddling only within a narrow range of moisture content.

Slow permeability and shallowness to shale material are primary management concerns. If these soils are cultivated, erosion also is a problem. Contour tillage, terracing, grassed waterways, and stripcropping are practices that help to control erosion. In additon, a close-growing crop should be included in the cropping system. Lime and fertilizer are needed for favorable yields and should be

applied regularly. An example of a suitable cropping system on a slope of 8 percent is 3 years of grass followed by 1 year of corn planted on the contour.

Capability unit IVs-1

Lyerly silt loam, 6 to 10 percent slopes, is the only soil in this unit. It is moderately deep, well drained and moderately well drained. Lyerly soils occupy limestone and shaly limestone valleys. The surface layer is silt loam 3 to 7 inches thick. The subsoil is plastic clay or silty clay.

This soil is low in natural fertility and content of organic matter. The available water capacity is medium, and the permeability is very slow. Tilth is generally poor. The rooting zone is moderately deep. The soil is slightly acid to very strongly acid in the surface layer and the upper and middle parts of the subsoil. It is slightly acid or neutral in the lower part of the subsoil.

About 75 percent of the areas of the soil is wooded. This soil is suited to tall fescue and white clover and is moderately well suited to corn, grain sorghum, bermudagrass, soybeans, and annual lespedeza or kudzu. Crops respond moderately well to fertilizer. Planting corn or some other row crop each year and returning all residue to the soil is an example of a suitable cropping system.

Very slow permeability and shallowness to limestone rock are primary management concerns. In areas used intensively for row crops, turning under cover crops and including a suitable perennial in the cropping system help maintain the supply of organic matter and improve the tilth. If annual crops are grown, all residue should be kept on the surface between cropping seasons. Most crops respond favorably to regular applications of a complete fertilizer. Legumes, however, need nitrogen only at the time of planting.

Capability unit IVw-2

Guthrie Variant soils are the only soils in this unit. They are deep, poorly drained soils in depressions and on upland flats. Slopes range from 0 to 2 percent. The surface layer is cherty silt loam about 4 to 16 inches thick. The subsoil is cherty silt loam, cherty silty clay loam or cherty silty clay more than 40 inches thick.

The Guthrie Variant soils are moderately low in natural fertility and moderate in content of organic matter. The available water capacity is medium, but the chert fragments reduce infiltration and moisture storage areas. Permeability is slow. Tilth is poor. The rooting zone is moderately deep. The soil is strongly acid to very strongly acid throughout.

About 85 percent of the areas of the soils is wooded. Most of the soils, unless drained, are not suited to cultivated crops. These soils are better suited to tall fescue and clover pasture than to other uses. Lime and complete fertilizer are needed and need to be applied regularly.

Chert fragments on the surface layer and in the soil are concerns of management because they reduce plant population. Slow permeability and wetness are also concerns of management. The seasonal high water table lasts for 2 to 4 months each year. The soils are subject to flooding once or twice each year. The floods last for 1 or 2 days in winter and spring. Some depressions remain ponded after flooding. A drainage system is needed to remove the excess surface water and to improve internal drainage.

Suitable crops can be grown continuously if the soils are adequately drained. A planned sequence of crops aids in the control of weeds and disease and makes the use of fertilizer and lime more efficient. An example of a suitable cropping system for areas where these soils are adequately drained is a row crop for 2 years followed by 2 years of fescue and clover.

Capability unit IVw-3

This unit consists of moderately deep or deep, poorly drained soils on low stream terraces and in upland depressions. These soils are in the Dowellton series. Slopes range from 0 to 2 percent. The surface layer is silty clay loam 3 to 11 inches thick. The subsoil is silty clay loam, clay loam, and silty clay or clay.

The soils of this unit are moderate in natural fertility and content of organic matter. The available water capacity is low, and permeability is slow. Tilth is generally poor. The rooting zone is shallow. The depth to which plant roots penetrate depends mainly on the depth to the water table. Dowellton soils are neutral to strongly acid in the surface layer and upper part of the subsoil. They are slightly acid to mildly alkaline in the lower part of the subsoil.

About 75 percent of the areas of the soils is wooded. Most of the soils, unless drained, are not suitable for cultivated crops. These soils are best suited to tall fescue, dallisgrass, annual lespedeza, white clover, and other forage plants. Lime and a complete fertilizer are needed and should be applied regularly.

Slow permeability and shallowness to limestone bedrock are primary management concerns. Flooding and a high water table are also problems on these soils. A drainage system is needed to remove the excess surface water and to improve internal drainage.

Suitable crops can be grown continuously in areas if these soils are adequately drained and good tilth is maintained. A planned sequence of crops aids in the control of weeds, insects, and disease and makes the use of fertilizer more efficient.

Capability unit Vw-1

The only soil in this unit is Roanoke silt loam. It is a deep, poorly drained, nearly level soil near drainageways, upland depressions and low stream terraces. Slopes range from 0 to 2 percent. The surface layer is silt loam 8 to 14 inches thick. The subsoil is silty clay or clay 36 to 60 inches thick.

This Roanoke soil is low in natural fertility and organic matter content. Permeability is slow. Tilth is poor. The ef-

fective rooting zone is thick, but the clayey subsoil and high water table restrict root penetration. This soil is strongly acid to very strongly acid throughout.

Most of this soil is used for hardwood trees or pasture. Because of wetness it is suited to only a few locally grown, cultivated crops and pasture grasses and legumes.

Flooding, slow permeability, and a high water table are the main concerns of management. A good drainage system is needed to remove the excess surface water and to improve internal drainage. An example of a suitable cropping system for areas where these soils are adequately drained is a row crop for 1 year followed by 3 years of fescue grass and clover.

Capability unit VIe-1

This unit consists of deep, well drained to moderately well drained soils on uplands. These soils are in the Allen, Decatur, Fullerton, and Shack series. Slopes range from 10 to 25 percent. The surface layer is fine sandy loam, clay, cherty silt loam, or cherty silty clay loam 3 to 13 inches thick. The subsoil is clay loam, sandy clay loam, clay, silty clay, cherty silty clay loam, cherty clay, cherty clay loam, silty clay loam, cherty silty clay, or cherty loam, mostly more than 40 inches thick.

The soils in this unit are moderately high or low in natural fertility and low in content of organic matter. The available water capacity is medium, and the permeability is moderate or moderately slow. Tilth is good to fair. The rooting zone is thick. The soils are strongly acid to very strongly acid throughout.

In places, chert fragments are on the surface layer and in the soil because they reduce plant population and increase runoff. Most of these soils have been used for cultivated crops, but about 80 percent has reverted to woodland, predominantly loblolly and shortleaf pines, or is idle. The rest is used for pasture, row crops, or nonfarm purposes. Steepness of the soils and the severe hazard of erosion make these soils unsuited to cultivation. All of the grasses and legumes grown locally, except alfalfa, can be grown on these soils, but establishing a stand is difficult. Pasture plants or hay crops can be established more easily if tillage and planting are done on the contour. Response of suited plants is generally favorable if lime and fertilizer are applied. If replanting must be done, seeding pasture plants and hay crops in alternate strips helps to control erosion.

Grazing must be controlled in pasture to maintain the plant cover.

Capability VIe-2

This unit consists of moderately deep, well drained soils that are slightly eroded or eroded. These soils are in the Grover and Madison series. They are on uplands. Slopes range from 10 to 36 percent. The surface layer is gravelly fine sandy loam or gravelly clay loam 2 to 8 inches thick. The subsoil is clay, clay loam, or sandy clay loam 18 to 36 inches thick.

The soils in this unit are moderate in natural fertility and moderate or low in content of organic matter. The available water capacity is medium, and the permeability is moderate. Tilth is good. The rooting zone is moderately thick. The soils are strongly acid to very strongly acid throughout.

Most of these soils have been cultivated, but about 80 percent has reverted to woodland or is idle. The rest is used for pasture, row crops, or nonfarm purposes.

Steepness of the soils and the severe hazard of erosion make these soils unsuited to cultivation. All of the grasses and legumes grown locally, except alfalfa, can be grown on these soils, but establishing a stand is difficult. Pasture plants or hay crops can be established more easily if tillage and planting are done on the contour. Response of suited plants is generally favorable if lime and fertilizer are applied. If replanting must be done, seeding pasture plants and hay crops in alternate strips helps to control erosion.

Grazing must be controlled in pasture to maintain the plant cover.

Capability unit VIe-3

This unit consists of moderately deep, well drained and moderately well drained clayey soils that are slightly eroded or eroded on uplands. These soils are in the Aragon, Conasauga, and Cunningham series and Conasauga-Urban land complex. Slopes range from 2 to 25 percent. The surface layer is fine sandy loam or silt loam in the slightly eroded areas and is silty clay loam in the eroded areas. The subsoil is silty clay loam, silty clay, clay, or clay loam 18 to 55 inches thick.

The soils in this unit are moderate or low in natural fertility and are low in content of organic matter. The available water capacity is medium or low, and permeability is slow. Tilth is good to fair in the slightly eroded areas and poor in the eroded areas. The rooting zone is moderately thick or thick. The soils are strongly acid to extremely acid throughout.

The steep slopes and severe hazard of erosion make these soils unsuited to cultivation and generally unsuited to pasture or hay crops. These soils are suited to loblolly pines. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion.

Capability unit VIe-4

This unit consists of moderately steep or steep, well drained, shallow to moderately deep soils on mountains and ridges. These soils are in the Hartsells, Linker, and Montevallo series. Slopes range from 10 to 25 percent. The surface layer is very shaly silt loam or fine sandy loam 3 to 17 inches thick. The subsoil is mostly clay loam or sandy clay loam about 10 to 40 inches thick.

The soils in this unit have moderate to low natural fertility and organic matter content. The available water capacity is medium to low, and permeability is moderate

to moderately rapid. Tilth is generally good to poor. The rooting zone is moderately thick or shallow. The soils are very strong or strongly acid throughout.

The steep slopes make these soils unsuited to cultivation and generally unsuited to pasture or hay crops. The soils are suited to loblolly and shortleaf pines. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion.

Capability unit VIe-6

This unit consists of moderately deep or shallow, well drained soils on uplands. These soils are droughty and have severe limitations because of slope. They are in the Tidings and Townley series and the Townley-Urban land complex. Slopes range from 10 to 45 percent. The surface layer is gravelly silt loam or silt loam 2 to 8 inches thick. The subsoil is gravelly loam, gravelly silt loam, silty clay, clay, shaly clay, shaly silty clay, gravelly silty clay loam, or gravelly clay loam about 7 to 44 inches thick.

These soils are moderate or low in natural fertility and low in content of organic matter. The available water capacity is medium or low, and the permeability is moderate or slow. Tilth is fair or poor. The rooting zone is moderately thick. The soils are strongly acid to extremely acid throughout.

The steep slopes, pebbles, and cobbles on the surface make these soils unsuited to cultivation and generally unsuited to pasture or hay crops. The lower slopes can be used for pasture and hay crops. The soils are suited to loblolly, shortleaf, and Virginia pines. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion.

Capability unit VIs-1

The only soil in this unit is Hector fine sandy loam, 6 to 15 percent slopes. It is a slightly eroded soil on uplands. The surface layer is stony fine sandy loam about 3 to 7 inches thick. The subsoil is stony fine sandy loam or stony sandy loam about 7 to 17 inches thick.

The soils in this unit are low in natural fertility and content of organic matter. The available water capacity is low, and permeability is moderately rapid. Tilth is poor. The rooting zone is shallow. The soils are very strongly acid throughout.

About 85 percent of the areas of soil are wooded. The rest is pastured, used for cultivated crops, or is idle. The shallowness to rock and the gravel, stones, and shale fragments on and in the surface layer make these soils unsuited to row crops. This soil can be pastured but establishing pasture and mowing are difficult because of the coarse fragments on the surface. The shallow soil limits growth. This soil is better suited to loblolly pine than to other trees. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion and help prevent large gullies from forming on the hillsides.

Capability unit VIIe-1

Fullerton cherty silt loam, 25 to 40 percent slopes, is the only soil in this unit. It is a deep and well drained soil on uplands. The surface layer is cherty silt loam 4 to 13 inches thick. The subsoil is cherty silty clay loam, cherty silty clay, or cherty clay more than 60 inches thick.

The soils in this unit are low in natural fertility and content of organic matter. The available water capacity is medium, and permeability is moderate. Tilth is fair. The rooting zone is thick. The soil is strongly acid to very strongly acid unless limed.

About 85 percent of the areas of the soils is wooded. The rest is pastured, used for cultivated crops, or is idle. The steep and very steep slopes and cherty surface layer make these soils unsuited to cultivated crops. This soil is better suited to loblolly, shortleaf, Virginia, and eastern white pine and yellow-poplar. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion and help prevent large gullies from forming on the hillsides.

Capability unit VIIe-2

This unit consists of well drained, shallow soils on uplands that are slightly eroded or eroded. These soils are in the Tallapoosa series. They are on narrow ridgetops and dissected hillsides. Slopes range from 10 to 60 percent. The surface layer is gravelly fine sandy loam 2 to 6 inches thick. The subsoil is silty clay loam, gravelly silty clay loam, or gravelly loam.

The soils in this unit are low in natural fertility and content of organic matter. The available water capacity is low, and permeability is moderate. Tilth is generally fair. The rooting zone is shallow. The soils are very strongly acid or strongly acid throughout unless limed.

The steep slopes and the severe hazard of erosion make these soils unsuited to cultivation and generally unsuited to pasture or hay. These soils are suited to shortleaf and loblolly pines. Placing logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion.

Capability unit VIIe-3

This unit consists of moderately deep, deep, or shallow, well drained soils on mountains and uplands. These soils are in the Montevallo, Nella, and Tidings series. Slopes range from 10 to 45 percent. The surface layer is gravelly silt loam, very shaly silt loam, or cobbly loam about 2 to 11 inches thick. The subsoil is mostly silty clay, gravelly clay loam, gravelly silty clay loam, gravelly loam, clay, shaly clay loam, shaly silty clay loam, shaly silt loam, cobbly clay loam or cobbly sandy clay loam.

The soils in this unit are moderate or low in natural fertility and low in content of organic matter. The available water capacity is medium or low and permeability is moderate, but Townley soils have low available water capacity and slow permeability. Tilth is fair to poor. The rooting zone is thick to shallow. These soils are medium acid to very strongly acid throughout.

The steep slopes, droughtiness, and the severe hazard of erosion make these soils unsuited to cultivation and generally unsuited to pasture or hay. They are suited to shortleaf, Virginia, and loblolly pines.

Capability unit VIIs-1

This unit consists of well drained or excessively well drained soils on mountains. These soils are in the Bodine and Hector series. Slopes range from 10 to 60 percent. The surface layer is 3 to 17 inches thick. It is very stony silt loam or stony fine sandy loam. The subsoil is stony clay loam, stony silty clay loam, stony sandy loam, or stony fine sandy loam.

The soils of this unit are low in natural fertility and organic matter content. The available water capacity is low, and the permeability is moderately rapid or rapid. Tilth is generally poor. The rooting zone is thick. These soils are very strongly acid or strongly acid throughout, unless limed.

The steep slopes and stones on the surface make these soils unsuited to cultivation and generally unsuited to pasture or hay. These soils are suited to shortleaf and loblolly pines. Planning logging roads and firebreaks on the contour and doing all other woodland operations on the contour help control erosion.

Woodland management and productivity

W.P. THOMPSON, forester, Soil Conservation Service, assisted in the preparation of this section.

This section explains how soils affect tree growth and management in the counties. Field information was gathered by teams of foresters and soil scientists. Representatives of Federal and State agencies, the wood-using industry, and others cooperated in gathering field data.

Originally Chattooga, Floyd, and Polk Counties were mainly forest. In 1970, trees cover about 65 percent of the area, 5 percent of which is in Chattahoochie National Forest. Good stands of commercial trees are produced in these counties. Needleleaved forest species are most frequently on the hills, and broadleaved species generally predominate on the bottom land along the rivers and creeks.

The forest products industry provides a substantial income, although this income is below its potential. Other wooded areas provide wildlife habitat, recreation, enjoyment of natural beauty, and conservation of soil and water.

Table 3 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, t, d, c, s, f, and r.

In table 3 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

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

Considered in the ratings of *windthrow hazard* are characteristics of the soil that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate*, that some trees are blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that

woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

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

Engineering

ROGER A. ADAMS, civil engineer, Soil Conservation Service, assisted in the preparation of this section.

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

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

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

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

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

The information is presented mainly in tables. Table 4 shows, for each kind of soil, the degree and kind of limitations for building site development; table 5, for sanitary facilities; and table 7, for water management. Table 6 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

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

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 4. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and

the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 4 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 4 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 5 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. *(3)* Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in ex-

cavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 5 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 6 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 10 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 6 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 10.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

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

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 7 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Soil and site limitations are expressed as slight, moderate, and severe. *Slight* means that the soil properties and site features are generally favorable for the specified use and that any limitation is minor and easily overcome. *Moderate* means that some soil properties or site features are unfavorable for the specified use but can be overcome or modified by special planning and design. *Severe* means that the soil properties and site features are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive maintenance is required.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

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

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

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

Approximately 3 percent of Chattooga County, 5 percent of Floyd County, and 3 percent of Polk County are used for recreation. Hunting and fishing are the main recreational activities used by the largest number of people in the three county area. The area has a good potential for recreation because of the clear, fresh water streams and picturesque mountains.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability (*9*) for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

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

The information in table 8 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 5, and interpretations for dwellings without basements and for local roads and streets, given in table 4.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy

foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

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

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

JESSIE MERCER JR., biologist, Soil Conservation Service, assisted in preparing this section.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

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

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

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

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, clover, and annual and shrub lespedeza.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and fescue.

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

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil proper-

ties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, hemlock, redcedar and ornamental trees and shrubs.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, or foliage used by wildlife or that provide cover and shade for some species of wildlife. Major soil properties that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and moisture. Examples of shrubs are mountain laurel, rhododendron, snowberry, and blueberries.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, and cordgrass and rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include bobwhite quail, morning dove, meadowlark, field sparrow, cottontail rabbit, and red fox.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

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

Soil properties

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

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

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 10 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 10 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 10 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

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

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

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

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 13. The estimated classification, without group index numbers, is given in table 10. Also in table 10 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

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

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

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

Physical and chemical properties

Table 11 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

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

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

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

Salinity is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of the nonirrigated soils. The salinity of individual irrigated fields is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of individual fields can differ greatly from the value given in table 11. Salinity affects the suitability of a soil for crop production, its stability when used as a construction material, and its potential to corrode metal and concrete.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special

designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Soil and water features

Table 12 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

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

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

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 12 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

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

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

Test data

Table 13 contains engineering test data for some of the major soil series in Chattooga, Floyd, and Polk Counties. 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. 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 as moisture content increases. 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.

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 the semisolid to 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 13.

Formation and classification of soils

GLENN L. BRAMLETT, soil scientist, Soil Conservation Service, assisted in the preparation of this section.

This section consists of two main parts. In the first part the factors of soil formation and how they affected the development of soils in Chattooga, Floyd, and Polk Counties are explained. In the second part the system of soil classification currently used is explained, and each soil series in the three counties is placed in classes of this system.

Formation of the soils

Soil is produced when soil-forming factors, such as parent material, climate, relief, plants and living organisms, interact for a period of time. These factors determine the nature of the soil that forms at any given point on the earth. All of these factors affect the formation of each soil, but the relative importance of each factor differs from place to place. In some areas one factor may determine most of the properties, as is common when parent material consists of quartz sand which is highly resistant to change. Soils derived from pure quartz sand commonly have faint horizons, but a distinct profile can be formed under certain vegetation if the relief is low and flat and if the water table is high. The five factors that affect soil formation are discussed in the following paragraphs.

Parent material

Parent material is the unconsolidated mass from which soil forms. It largely determines the chemical and mineralogical composition of a soil. Most of the soils in Chattooga, Floyd, and Polk Counties formed from residual materials that weathered from the underlying rock. Chattooga, Floyd, and Polk Counties are composed of shale of the Conasauga, Rome, and Floyd Formations, limestone of the Knox Dolomitic and Fort Payne Formations, sandstone of the Lookout Mountain Formation, and schist of the Talladega Formation (*4*).

The soils near the larger streams formed in materials that were transported and deposited by streams. Much of this alluvium originated from rocks of nearby uplands, but some was derived from metamorphic rocks of the mountains. The Etowah and Holston soils formed in old alluvium. They occupy old high terraces and benches that have been in place long enough to develop distinct horizons. The Chewacla soils on bottom lands indicate little profile development. These bottom lands receive alluvial deposits that are influenced very little by soil forming processes.

Climate

Climate affects the formation of soils through its influence on the rate of weathering of rocks and the decomposition of minerals and organic matter. It also affects biological activity in the soils and the leaching and movement of weathered materials.

Chattooga, Floyd, and Polk Counties have a moist, temperate climate with an average daily minimum temperature of about 30 degrees F. in February and an average daily maximum temperature of about 89 degrees F. in August. The warm moist climate promotes rapid weathering of hard rock. Consequently, in much of the area, the soils are 3 to 6 feet thick over a thick layer of loose, disintegrated weathered rock which blankets the hard rock underlying the counties.

About 52 inches of precipitation falls annually. Much of this precipitation percolates through the soil and moves dissolved or suspended materials downward. This movement leaves the soils generally low in bases. Plant remains decay rapidly and produce organic acids that hasten the breakdown of minerals in the underlying rock. Thus, the organic matter content is low in the surface layer of soils that have good drainage.

Relief

Relief influences soil formation through its effect on runoff, movement of water within the soil, plant cover, and, to some extent, soil temperature.

The length, shape, and steepness of slope determine the rate of runoff. Runoff is more rapid on steep slopes than it is in areas where the soil is level or nearly level. Thus, steep soils erode faster than level ones, even if both are the same material. In Chattooga, Floyd, and Polk Counties, for example, the steep Hector soils generally have a

thinner solum and a more weakly expressed profile than the less sloping Hartsells soils.

A level or nearly level soil allows more time for water to penetrate and percolate through the soil layers. The amount of water, in turn, influences the translocation of soluble materials. The moisture available in the soil also determines to a significant extent the amount and kinds of plants that grow. Thus, steep soils that are slowly permeable generally are drier than level or nearly level soils, and less vegetation grows on them.

These counties range from nearly level to very steep, but they are not extremely mountainous. The effect of relief on soil temperature is not so pronounced as in more mountainous areas. In general, slopes that face south are warmer than those that face north.

Plants and animals

Plants, animals, bacteria, and other organisms are active in the soil forming processes. The changes they effect depend mainly on the life processes peculiar to each. The kinds of plants and animals that live on and in the soil are determined by the climate, the parent material, the relief, and the age of the soils.

Most of the soils in Chattooga, Floyd, and Polk Counties formed under a forest of hardwoods and softwoods. These trees supply most of the organic matter available in the soils, although the hardwoods contribute more than the softwoods. The organic matter content in most of the soils is low to medium.

Plants provide a cover that helps to reduce erosion and stabilize the surface. Leaves, twigs, roots, and entire plants accumulate on the surface of forest soils and then decompose through the action of percolating water and of micro-organisms, earthworms, and other forms of life. The roots of plants widen cracks in the rocks, thus permitting more water to penetrate. Also, the uprooting of trees by wind influences the formation of soils through the mixing of soil layers and the loosening of underlying material.

Small animals, earthworms, insects, and micro-organisms influence the formation of soils by mixing organic matter into the soil and by accelerating the formation of organic matter by breaking down the remains of plants. Small animals burrow into the soil and mix the layers. Earthworms and other small invertebrates feed on the organic matter in the upper few inches. They slowly but continuously mix the soil material and, in places, alter it chemically. Bacteria, fungi, and other micro-organisms hasten the weathering of rocks and decomposition of organic matter.

Time

Generally, a long time is required for a soil to form (*6*). Most of the soils on the uplands in Chattooga, Floyd, and Polk Counties have been in place long enough for distinct horizons to develop, but some soils that formed in alluvium do not have distinct horizons.

Most soils in these counties have distinct horizons. The surface layer contains an accumulation of organic matter. Silicate clay minerals have formed and moved downward to produce horizons that are relatively high in clay. In such soils, oxidation or reduction of iron has had its effect, depending on natural drainage. Many of the soils have been drained well enough to have a red or dark red subsoil, and they contain highly oxidized iron. A few have impaired drainage, and consequently, have a gray subsoil that contains less iron. In addition, leaching of soluble calcium, magnesium, potassium, and other weatherable material has caused an increase in exchangeable hydrogen. Fullerton and Decatur soils are examples of old soils in Chattooga, Floyd, and Polk Counties.

Soils that have essentially the same parent material and drainage sometimes differ in degree of profile development, chiefly because of time. Examples are the Rome soils on stream terraces and the Toccoa soils on flood plains. These soils are similar in texture and occupy similar positions on the landscape. The Rome soils, however, have been in place long enough to have a distinct surface layer and a subsoil with an accumulation of clay. The Toccoa soils, on the other hand, have not been in place long enough for distinct horizons to form or for much clay to accumulate.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. (*5*) Readers interested in further details about the system should refer to "Soil taxonomy" (*8*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 14, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Haplaquents (*Hapl*, meaning simple horizons, plus *aquent*, the suborder of Entisols that have an aquic moisture regime).

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

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, mesic, Typic Haplaquents.

SERIES. The series consists of a group of soils that formed from a particular kind of parent material. They have genetic horizons that, except for texture of the surface layer, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, structure, reaction, consistence, and mineralogical and chemical composition.

New soil series must be established and the concepts of some established series, especially older ones that have been used little in recent years, must be revised in the course of the soil survey program across the county. A proposed new series has tentative status until review of the series concept at the national, state, and regional levels results in a judgment that the new series should be established. Most of the soil series described in this report were established prior to 1975. The Aragon, Cunningham, Euharlee, Lyerly, Rome, Shack, Subligna, Tidings, and Wax series were established during 1975.

General nature of the counties

This section describes the physiography and drainage, water supply, and climate of the counties. It also discusses farming and transportation.

Physiography and drainage

Chattooga, Floyd, and Polk Counties are in the Appalachian ridges and valleys, Sand Mountain, and the Southern Piedmont land resource areas of Georgia. The elevation ranges from 575 to 650 feet above sea level along the Coosa, Chattooga, Etowah, and Oostanaula Rivers; from 650 to 800 feet above sea level in the valleys; and from 800 to more than 1,500 feet above sea level on the ridges and mountains. These counties are made up of broad valleys, many narrow ridges oriented in a northeast-southwest direction, and a few mountains. These ridges and mountains are dissected by many drainageways. Slopes generally are gentle or sloping in the valleys and strongly sloping to very steep on the ridges and mountains. These areas have been subjected to geologic erosion, and the underlying igneous and metamorphic rocks generally are partially weathered.

The Chattooga, Coosa, Etowah, and Oostanaula Rivers; the east and middle forks of Little River; and Armuchee, Cedar, Dikes, Euharlee, Johns, Lake, and Spring Creeks are the major streams that drain these counties.

The northwestern part of Chattooga County is drained by the east and middle forks of Little River; the central part, by the Chattooga River, and the eastern part by the East Armuchee Creek. Floyd County is drained predominantly by the Etowah and Oostanaula Rivers which form the Coosa River at Rome. The Coosa River flows west into the backwater of Weiss Lake and into the State of Alabama. Cedar Creek drains the southwestern part of Floyd County. It flows into the backwater of Weiss Lake, joining Brushy Branch and the Coosa River.

The central and western parts of Polk County are drained by Cedar Creek. The eastern part is drained by Euharlee Creek, and the north central part is drained by Lake Creek.

Water supply

Cities and towns in these counties are supplied with water from Chattooga, Coosa, Etowah, and Oostanaula Rivers, and from Armuchee, Euharlee, and Cedar Creeks. Many springs and the smaller streams in the counties are additional sources of water. Water for domestic use on most farms is obtained from drilled wells that are about 100 to 300 feet deep. These wells generally are a dependable source of water throughout the year. A few wells that are 45 to 75 feet deep are also used for domestic purposes. A few cisterns are used if the wells dry up in the summer and early in fall. The large streams, branches, creeks, and farm ponds in these counties are the main sources of water for livestock. However, some of the small farm ponds and many of the branches and streams in the cherty limestone areas dry up during the summer and early in fall. The larger streams, lakes, and ponds in these counties are used for recreation and are suitable for fishing.

Climate

In Chattooga, Floyd, and Polk Counties during winter, valleys are very cool and are occasionally cold or warm. Upper slopes and mountaintops are generally cold. In summer, valleys are very warm and frequently hot, and mountains that are warm during the day become cool at night. Precipitation is heavy and evenly distributed throughout the year. Summer precipitation falls chiefly during thunderstorms. In winter, precipitation in valleys is chiefly rain and occasional snow and in the mountains it is chiefly snow, although rain is frequent. Snow cover does not persist except at the highest elevations.

Table 15 shows temperature and precipitation data for the period 1951 to 1973, recorded at Rome, Georgia, but representative of the entire soil survey area. Tables 16 and 17 show probable dates of the first and last freeze and the length of the growing season, respectively.

In winter, the average temperature is 41.9 degrees F. and the average daily minimum is 30.5 degrees F. The absolute lowest temperature during the entire climatic record was -5 F., observed at Rome on January 24, 1963. In the summer, the average temperature is 77.4 degrees F. and the average daily maximum is 89.3 degrees F. The absolute highest temperature was 106 degrees F., recorded on July 29, 1952.

Growing degree days, shown in table 15, are equivalent to "heat units." They accumulate, starting in spring by the amount that the average temperature each day exceeds the base temperature. The normal monthly accumulation is used to schedule single or successive plantings of a crop within the seasonal limits of the last freeze in spring and the first freeze in fall.

As shown in table 15 the total annual precipitation is about 52.14 inches. Of this total, 24.87 inches, or 48 percent, usually falls during the period April through September, which includes the growing season for most crops. Two years in ten, the April through September rainfall is less than 20.59 inches. The heaviest 1-day rainfall during the period of record was 6.35 inches at Rome on September 28, 1963. Thunderstorms number about 61 each year, 47 of which occur in summer.

Snowfall is rare. In 23 percent of the winters there is no measureable snowfall, and in 64 percent, the total snowfall is less than 2 inches.

The average relative humidity in midafternoon is, in spring, less than 50 percent, and during the rest of the year it is about 53 percent. Humidity is higher at night in all seasons, and the average at dawn is about 85 percent. The percent of possible sunshine is 65 in summer and 50 in winter. The prevailing direction of the wind is from the northwest. Average annual windspeed is 9.1 miles per hour. Average windspeed is highest, 11.1 miles per hour, in February.

Heavy rain from prolonged storms, at any time of the year, occasionally covers the entire county and adjacent counties and causes severe flooding in valleys.

Farming and transportation

In 1969, according to the U. S. Census of Agriculture, 46.6 percent of Chattooga County, or 94,454 acres; 45.1 percent of Floyd County, or 148,419 acres; and 39.3 percent of Polk County, or 78,493 acres, were in farms. The average farm was 200.9 acres in Chattooga County; 245.7 acres in Floyd County; and 162.8 acres in Polk County. Most of the farms were operated by the owner, but a few were worked by part owners or by tenants. Much of the acreage in farms was wooded or in pasture. Livestock and livestock products were the chief sources of farm income.

Local markets are available for farm products, although they are somewhat limited. Most markets are in the Rome area.

These counties are crossed by several major highways. Major railroads, motor freightlines, and buslines provide most of the shipping facilities and commercial transportation.

History and development

About 1670, the Cherokee Indians began to come in contact with the English settlers from South Carolina. Traders occasionally came among them, introducing iron cooking utensils; iron tools such as axes, saws, hoes, plows; and horses and cows. This was the beginning of larger scale patch farming. Settlement began in this part of the State about the year 1832.

Chattooga County was formed from parts of Floyd and Walker Counties in 1838. It was the 92nd county to be in Georgia. The county was named for the principal river that flows through the central part of the county. The origin of the name Summerville, the county seat, is not authenticated but it is believed to have been selected because of the town's picturesque setting in a beautiful valley in the mountains.

In the Summerville area, two Indian villages, Broom Town and Island Town, had chiefs who were important Cherokee leaders. Sequoia, (whose English name was George Guess), who invented the Cherokee alphabet, lived for a time near Alpine in Chattooga County. The great redwood trees of California were named the Sequoias in his honor.

Other towns in the county are Lyerly, Menlo, and Trion. Highways running through the county are U. S. 27 and Georgia 1, 48, 114, and 239.

Floyd County, a northwest border county, was formed from Cherokee County in 1832. It was the 82nd county to be formed in Georgia. It was named for General John Floyd, who fought in the War of 1812 and who later served in Congress. The county seat, Rome, was named for the Italian city that is located on seven hills. The county seat originally was Livingston.

Union General William T. Sherman captured Rome during the Civil War and burned its industries upon evacuation in the fall of 1864. The first monument ever erected honoring the women of the Confederacy was dedicated in Rome in 1910.

Until dams and levees were erected in this century, Rome was flooded many times by rising waters because it is located at the fork of the Etowah and Oostanaula Rivers where they flow into the Coosa River.

Other towns in the county are Armuchee, Cave Spring, Coosa, Lindale and Shannon. Highways running through the county are U. S. 27 and Georgia 53, 100, 101, and 140.

Polk County, a northwest border county, was formed from Floyd and Paulding Counties in 1851. It was the 95th county to be formed in Georgia. It was named for James K. Polk, 11th President of the United States.

Cedartown, the county seat, was the site of a Cherokee Indian village. Settlers were attracted because of its large spring that still furnishes the city all its water.

Others towns in the county are Aragon, Esom Hill, and Rockmart. Highways running through the county are U. S. 27 and 278 and Georgia 100, 101, and 113.

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Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

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

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

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

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

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

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

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

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

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

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

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

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

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

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

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

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

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

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

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

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

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 a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

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

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

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

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

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

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Low strength. Inadequate strength for supporting loads.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three single variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water of subsurface tunnels or pipelike cavities in the soil.

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

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

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and 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 described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock. Soil scientists regard as soil only the part of the regolith that is modified by organisms and other soil-building forces. Most engineers describe the whole regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.005 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of 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 characteristics of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but the limited geographic soil area does not justify creation of a new series.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

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

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

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

Illustrations

Figure 1.—Low quality hardwoods on Bodine very stony silt loam, 10 to 25 percent slopes.

Figure 2.—Picnic area on Decatur loam, 6 to 10 percent slopes. This soil has slight to moderate limitations for most recreational purposes.

Figure 3.—Harvesting bermudagrass in a field of Etowah loam, 2 to 6 percent slopes.

Figure 4.—Floodwater on Wolftever silt loam, 0 to 2 percent slopes. Hazard of flooding is severe for homes constructed on this soil.

Tables

TABLE 1.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Chattooga County	Floyd County	Polk County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Acres	Pct
AaB	Allen fine sandy loam, 2 to 6 percent slopes	2,360	1,820	50	4,230	0.6
AaC	Allen fine sandy loam, 6 to 10 percent slopes	3,180	2,540	160	5,880	0.8
AaD	Allen fine sandy loam, 10 to 15 percent slopes	2,455	3,955	720	7,130	1.0
AaE	Allen fine sandy loam, 15 to 25 percent slopes	3,795	5,580	95	9,470	1.3
ArB	Aragon fine sandy loam, 2 to 6 percent slopes	140	1,700	2,300	4,140	0.6
ArC	Aragon fine sandy loam, 6 to 10 percent slopes	190	2,095	3,250	5,535	0.8
ArD	Aragon fine sandy loam, 10 to 15 percent slopes	75	805	1,320	2,200	0.3
ArE	Aragon fine sandy loam, 15 to 25 percent slopes	35	550	440	1,025	0.1
BsE	Bodine very stony silt loam, 10 to 25 percent slopes	1,015	1,320	1,400	3,735	0.5
BsF	Bodine very stony silt loam, 25 to 60 percent slopes	11,265	6,445	2,235	19,945	2.7
Cb	Cedarbluff silt loam	1,075	4,845	840	6,760	0.9
Ck	Chewacla silt loam	8,725	16,280	10,320	35,325	4.8
CnB	Conasauga silt loam, 1 to 6 percent slopes	2,680	14,500	730	17,910	2.5
CnC	Conasauga silt loam, 6 to 10 percent slopes	1,070	3,720	375	5,165	0.7
CrC	Conasauga-Urban land complex, 2 to 10 percent slopes	0	820	0	820	0.1
CuB	Cunningham loam, 2 to 6 percent slopes	2,400	4,995	1,530	8,925	1.2
CuC	Cunningham loam, 6 to 10 percent slopes	1,745	3,315	1,260	6,320	0.9
CuD	Cunningham loam, 10 to 15 percent slopes	1,105	1,470	480	3,055	0.4
CuE	Cunningham loam, 15 to 25 percent slopes	460	1,960	425	2,845	0.4
CvB2	Cunningham silty clay loam, 2 to 6 percent slopes, eroded	165	140	575	880	0.1
CvD2	Cunningham silty clay loam, 6 to 15 percent slopes, eroded	940	1,370	560	2,870	0.4
DcB	Decatur loam, 2 to 6 percent slopes	1,830	4,070	3,460	9,360	1.3
DcC	Decatur loam, 6 to 10 percent slopes	1,955	5,290	4,070	11,315	1.5
DeD2	Decatur clay, 10 to 15 percent slopes, eroded	780	2,170	1,345	4,295	0.6
DeE2	Decatur clay, 15 to 25 percent slopes, eroded	2,195	6,620	2,885	11,700	1.6
DhB	Dewey silt loam, 2 to 6 percent slopes	780	1,280	2,505	4,565	0.6
DhC	Dewey silt loam, 6 to 10 percent slopes	700	865	975	2,540	0.3
DhD	Dewey silt loam, 10 to 15 percent slopes	265	520	355	1,140	0.2
Do	Dowellton silty clay loam	115	955	35	1,105	0.2
Em	Emory silt loam	780	2,015	2,210	5,005	0.7
En	Ennis cherty silt loam	910	840	895	2,645	0.4
EtA	Etowah loam, 0 to 2 percent slopes	455	710	1,065	2,230	0.3
EtB	Etowah loam, 2 to 6 percent slopes	1,360	6,745	3,625	11,730	1.6
EtC	Etowah loam, 6 to 10 percent slopes	230	4,030	880	5,140	0.7
EuC	Etowah-Urban land complex, 2 to 10 percent slopes	0	1,195	0	1,195	0.2
EvB	Euharlee silt loam, 2 to 6 percent slopes	40	955	945	1,940	0.3
EvC	Euharlee silt loam, 6 to 10 percent slopes	40	745	770	1,555	0.2
FuB	Fullerton cherty silt loam, 2 to 6 percent slopes	1,385	2,945	4,575	8,905	1.2
FuC	Fullerton cherty silt loam, 6 to 10 percent slopes	4,935	9,870	11,710	26,515	3.6
FuD	Fullerton cherty silt loam, 10 to 15 percent slopes	3,990	7,675	7,620	19,285	2.6
FuE	Fullerton cherty silt loam, 15 to 25 percent slopes	6,830	12,825	9,015	28,670	3.9
FuF	Fullerton cherty silt loam, 25 to 40 percent slopes	2,230	8,750	1,745	12,725	1.7
FvE2	Fullerton cherty silty clay loam, 10 to 25 percent slopes, eroded	780	2,225	3,030	6,035	0.8
GgB	Grover gravelly fine sandy loam, 2 to 6 percent slopes	0	0	840	840	0.1
GgC	Grover gravelly fine sandy loam, 6 to 10 percent slopes	0	0	585	585	0.1
GgE	Grover gravelly fine sandy loam, 10 to 25 percent slopes	0	0	1,090	1,090	0.1
GU	Guthrie Variant soils	230	810	515	1,555	0.2
HaB	Hartsells fine sandy loam, 2 to 6 percent slopes	2,400	50	65	2,515	0.3
HaC	Hartsells fine sandy loam, 6 to 10 percent slopes	4,450	110	90	4,650	0.6
HaD	Hartsells fine sandy loam, 10 to 15 percent slopes	2,240	135	20	2,395	0.3
HaE	Hartsells fine sandy loam, 15 to 25 percent slopes	1,635	1,285	10	2,930	0.4
HeD	Hector stony fine sandy loam, 6 to 15 percent slopes	2,035	125	0	2,160	0.3
HeF	Hector stony fine sandy loam, 15 to 40 percent slopes	8,310	8,045	5	16,360	2.2
HoB	Holston fine sandy loam, 2 to 6 percent slopes	1,690	3,535	240	5,465	0.7
HoC	Holston fine sandy loam, 6 to 10 percent slopes	935	2,615	95	3,645	0.5
HoD	Holston fine sandy loam, 10 to 25 percent slopes	1,065	1,895	70	3,030	0.4
LkC	Linker fine sandy loam, 6 to 10 percent slopes	1,710	105	5	1,820	0.2
LkE	Linker fine sandy loam, 10 to 25 percent slopes	1,650	150	120	1,920	0.3
LyA	Lyerly silt loam, 0 to 2 percent slopes	1,055	445	95	1,595	0.2
LyB	Lyerly silt loam, 2 to 6 percent slopes	2,610	570	75	3,255	0.4
LyC	Lyerly silt loam, 6 to 10 percent slopes	535	325	0	860	0.1
MgB2	Madison gravelly clay loam, 2 to 6 percent slopes, eroded	0	0	765	765	0.1
MgC2	Madison gravelly clay loam, 6 to 10 percent slopes, eroded	0	0	2,485	2,485	0.3

TABLE 1.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Chattooga County	Floyd County	Polk County	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Acres	Pct
MgD2	Madison gravelly clay loam, 10 to 15 percent slopes, eroded	0	0	3,515	3,515	0.5
MgE2	Madison gravelly clay loam, 15 to 35 percent slopes, eroded	0	0	1,950	1,950	0.3
Mo	Mine pits	135	410	1,290	1,835	0.3
MsD	Montevallo very shaly silt loam, 6 to 15 percent slopes	945	3,165	3,155	7,265	1.0
MsF	Montevallo very shaly silt loam, 15 to 45 percent slopes	7,150	12,070	10,200	29,420	4.0
NTF	Nella-Townley association, steep	17,195	12,455	2,015	31,665	4.4
Rn	Roanoke silt loam	1,735	5,415	1,760	8,910	1.2
RoA	Rome fine sandy loam, 0 to 2 percent slopes	1,400	4,505	2,495	8,400	1.1
RoB	Rome fine sandy loam, 2 to 6 percent slopes	2,010	4,750	2,990	9,745	1.3
ShB	Shack cherty silt loam, 2 to 6 percent slopes	1,170	1,395	2,555	5,120	0.7
ShC	Shack cherty silt loam, 6 to 10 percent slopes	5,380	4,915	7,280	17,575	2.4
ShD	Shack cherty silt loam, 10 to 15 percent slopes	5,810	5,325	7,940	19,075	2.6
ShE	Shack cherty silt loam, 15 to 25 percent slopes	14,314	8,175	6,806	29,109	4.0
St	Staser silt loam	5	510	0	515	0.1
SuB	Subligna gravelly loam, 1 to 6 percent slopes	1,285	2.020	425	3.730	0.5
TaE2	Tallapoosa gravelly fine sandy loam, 10 to 25 percent slopes, eroded	0	0	4,635	4,635	0.6
TaF	Tallapoosa gravelly fine sandy loam, 25 to 60 percent slopes	0	0	18,955	18,955	2.6
TdC	Tidings gravelly silt loam, 2 to 10 percent slopes	1,055	310	220	1,585	0.2
TdD	Tidings gravelly silt loam, 10 to 25 percent slopes	1,495	855	315	2,665	0.4
TdF	Tidings gravelly silt loam, 25 to 45 percent slopes	5,455	5,717	415	11,587	1.6
Tk	Toccoa fine sandy loam	3,275	5,760	1,465	10,500	1.4
TnC	Townley silt loam, 2 to 10 percent slopes	4,430	16,902	2,630	23,962	3.3
TnE	Townley silt loam, 10 to 25 percent slopes	3.376	11,578	2,985	17,939	2.6
TnF	Townley silt loam, 25 to 45 percent slopes	1,325	4,780	1,500	7,605	1.0
ToE	Townley-Urban land complex, 15 to 25 percent slopes	0	575	0	575	0.1
Tu	Tupelo silt loam, 0 to 3 percent slopes	150	915	40	1,105	0.2
Tv	Tupelo clay loam, frequently flooded	1,030	9,145	685	10,864	1.5
Ud	Udorthents	0	0	510	510	0.1
WaA	Wax loam, 0 to 2 percent slopes	2,925	4,570	4,450	11,945	1.6
WaB	Wax loam, 2 to 6 percent slopes	4,095	7,005	1,760	12,860	1.8
Wh	Whitwell silt loam	2,590	5,275	3,150	11,020	1.5
WoA	Wolftever silt loam, 0 to 2 percent slopes	1,215	2,265	825	4,305	0.6
WoB	Wolftever silt loam, 2 to 6 percent slopes	1,920	4,350	800	7,070	1.0
	Total	202,880	328,832	199,616	731,328	100.0

[1]Less than 0.1 percent.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE

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

Soil name and map symbol	Corn	Cotton lint	Grain sorghum	Soybeans	Pasture	Grass-legume hay
	Bu	Lb	Bu	Bu	AUM[1]	Ton
Allen:						
AaB	85	---	---	35	6.5	---
AaC	75	---	---	30	6.5	---
AaD	70	---	---	25	6.0	---
AaE	---	---	---	---	6.0	---
Aragon:						
ArB	70	800	55	35	---	4.0
ArC	60	725	45	30	---	3.0
ArD	50	500	40	25	---	3.0
ArE	---	---	---	---	---	2.0
Bodine:						
BsE	---	---	---	---	4	---
BsF	---	---	---	---	---	---
Cedarbluff:						
Cb	50	---	---	25	---	---
Chewacla:						
Ck	100	---	---	35	11	---
Conasauga:						
CnB	60	750	---	30	6.0	---
CnC	---	---	---	---	5.5	---
[2]CrC	---	---	---	---	---	---
Cunningham:						
CuB	65	500	40	30	---	3.5
CuC	60	475	40	30	---	3.5
CuD	50	400	30	25	---	3.0
CuE	---	---	---	---	---	---
CvB2	55	450	35	30	---	3.0
CvD2	---	---	---	---	---	2.5
Decatur:						
DcB	80	900	---	30	8.5	---
DcC	70	850	---	30	8.0	---
DeD2, DeE2	---	---	---	---	7.5	---
Dewey:						
DhB	80	---	---	---	7.0	---
DhC	70	---	---	---	6.5	---
DhD	60	---	---	---	6.0	---
Dowellton:						
Do	50	350	---	25	5.0	---

See footnotes at end of table.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Grain sorghum	Soybeans	Pasture	Grass-legume hay
	Bu	Lb	Bu	Bu	AUM[1]	Ton
Emory:						
Em	110	---	---	45	7.5	---
Ennis:						
En	75	650	---	25	---	---
Etowah:						
EtA	100	750	---	---	7.5	---
EtB	95	750	---	---	7.0	---
EtC	---	500	---	---	5.5	---
[2]EuC	---	---	---	---	---	---
Euharlee:						
EvB	80	700	50	30	---	4.0
EvC	75	650	45	25	---	3.5
Fullerton:						
FuB	68	500	---	---	6.0	---
FuC	62	450	---	---	5.5	---
FuD, FvE2	57	425	---	---	5.0	---
FuE	---	---	---	---	5.0	---
FuF	---	---	---	---	---	---
Grover:						
GgB	90	700	55	---	7.5	4.5
GgC	80	600	50	---	6.5	4.0
GgE	---	---	---	---	5.0	3.0
Guthrie Variant:						
GU	52	---	---	34	5.0	---
Hartsells:						
HaB	85	900	---	35	---	---
HaC	70	750	---	30	---	---
HaD	---	---	---	---	---	---
HaE	---	---	---	---	---	---
Hector:						
HeD	---	---	---	---	---	---
HeF	---	---	---	---	---	---
Holston:						
HoB	90	900	---	30	7.5	---
HoC	85	800	---	25	7.0	---
HoD	70	600	---	20	6.5	---
Linker:						
LkC	70	700	---	30	---	---
LkE	---	---	---	---	---	---
Lyerly:						
LyA, LyB	55	---	---	30	---	4.0
LyC	---	---	---	---	---	4.0

See footnotes at end of table.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Grain sorghum	Soybeans	Pasture	Grass-legume hay
	Bu	Lb	Bu	Bu	AUM[1]	Ton
Madison:						
MgB2	90	700	55	---	7.5	4.5
MgC2	80	600	50	---	6.5	3.9
MgD2	70	500	45	---	6.0	3.6
MgE2	---	---	---	---	---	---
Montevallo:						
MsD	---	---	---	---	---	---
MsF	---	---	---	---	---	---
Nella:						
[2]NTF:						
Nella part	---	---	---	---	---	---
Townley part	---	---	---	---	4.5	---
Roanoke:						
Rn	---	---	---	---	5.2	2.0
Rome:						
RoA	95	900	55	35	---	---
RoB	85	850	55	35	---	---
Shack:						
ShB	75	600	45	30	---	3.5
ShC	70	550	45	25	---	3.5
ShD	60	500	35	20	---	3.0
ShE	---	---	---	---	---	---
Staser:						
St	100	300	---	35	8.0	---
Subligna:						
SuB	65	600	45	30	---	3.0
Tallapoosa:						
TaE2, TaF	---	---	---	---	---	---
Tidings:						
TdC	50	450	35	30	---	3.5
TdD	---	---	---	---	---	3.0
TdF	---	---	---	---	---	---
Toccoa:						
Tk	90	900	65	---	---	4.0
Townley:						
TnC	---	450	45	---	5.0	---
TnE, TnF	---	---	---	---	4.5	---
[2]ToE	---	---	---	---	---	---
Tupelo:						
Tu	55	450	---	35	5.0	---
Tv	70	---	35	35	8.0	4.5
Udorthents:						
[2]Ud	---	---	---	---	---	---

See footnotes at end of table.

TABLE 2.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Grain sorghum	Soybeans	Pasture	Grass-legume hay
	Bu	Lb	Bu	Bu	AUM[1]	Ton
Wax:						
WaA	65	---	---	30	---	3.5
WaB	55	500	---	25	---	3.0
Whitewell:						
Wh	85	---	---	35	7.0	---
Wolftever:						
WoA	70	500	---	35	6.5	---
WoB	65	500	---	30	7.0	---

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

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

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY

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

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
Allen:								
AaB, AaC, AaD	3o	Slight	Slight	Slight	Slight	Yellow-poplar Shortleaf pine	87 72	Yellow-poplar, shortleaf pine.
AaE	3r	Moderate	Moderate	Slight	Slight	Virginia pine Southern red oak	73 71	Loblolly pine, black walnut.
Aragon:								
ArB, ArC, ArD	3o	Slight	Slight	Slight		Loblolly pine Virginia pine Shortleaf pine	80 73 66	Loblolly pine, Virginia pine.
ArE	3r	Moderate	Moderate	Slight		Loblolly pine Virginia pine Shortleaf pine	80 73 66	Loblolly pine, Virginia pine.
Bodine:								
BsE	3f	Slight	Slight	Slight	Slight	Shortleaf pine Yellow-poplar Southern red oak Black oak	60 90 70 70	Loblolly pine, shortleaf pine.
BsF	4f	Severe	Severe	Moderate	Slight	Virginia pine Chestnut oak Scarlet oak	50 55 55	Virginia pine, eastern red cedar.
Cedarbluff:								
Cb	2w	Slight	Moderate	Slight	Moderate	Loblolly pine Sweetgum Yellow-poplar	75 80 90	Yellow-poplar, loblolly pine.
Chewacla:								
Ck	1w	Slight	Moderate	Moderate		Loblolly pine Yellow-poplar American sycamore Sweetgum Water oak Eastern cottonwood Green ash Southern red oak	96 104 90 97 86 100 97 90	Loblolly pine, slash pine, American sycamore, yellow-poplar, sweetgum, eastern white pine, green ash.
Conasauga:								
CnB, CnC	3c	Slight	Slight	Moderate	Moderate	Shortleaf pine Virginia pine Loblolly pine Eastern redcedar	72 60 72 50	Loblolly pine.
[1]CrC:								
Conasauga part	3c	Slight	Slight	Moderate	Moderate	Shortleaf pine Virginia pine Loblolly pine Eastern redcedar	72 60 72 50	Loblolly pine.
Urban land part.								
Cunningham:								
CuB, CuC, CuD	3o	Slight	Slight	Slight		Shortleaf pine Loblolly pine Virginia pine	58 80 65	Loblolly pine, Virginia pine.

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
Cunningham:								
CuE	3r	Moderate	Moderate	Slight	---	Shortleaf pine	55	Loblolly pine, Virginia pine.
						Loblolly pine	76	
						Virginia pine	60	
CvB2, CvD2	3c	Severe	Moderate	Moderate	---	Shortleaf pine	55	Loblolly pine, Virginia pine.
						Loblolly pine	76	
						Virginia pine	60	
Decatur:								
DcB, DcC	3o	Slight	Slight	Slight	Slight	Shortleaf pine	80	Yellow-poplar, loblolly pine, eastern white pine.
						Yellow-poplar	90	
						Loblolly pine	80	
						Eastern white pine	80	
DeD2, DeE2	4c	Moderate	Moderate	Moderate	Moderate	Loblolly pine	70	Loblolly pine, eastern red cedar, white pine.
						Virginia pine	60	
						Eastern red cedar	40	
						White pine	70	
Dewey:								
DhB, DhC, DhD	3o	Slight	Slight	Slight	Slight	Yellow-poplar	90	Yellow-poplar, black walnut, loblolly pine, eastern white pine.
						White oak	70	
						Southern red oak	70	
						Shortleaf pine	73	
						Virginia pine	70	
						Loblolly pine	78	
Dowellton:								
Do	3w	Slight	Severe	Severe	Slight	Sweetgum	80	Loblolly pine, sweetgum.
						Loblolly pine	80	
						Water oak	90	
Emory:								
Em	2o	Slight	Slight	Slight	Slight	Yellow-poplar	104	Yellow-poplar, black walnut, loblolly pine.
						Northern red oak	80	
						Loblolly pine	90	
						Black walnut	---	
						White ash	---	
						Black cherry	---	
Ennis:								
En	2o	Slight	Slight	Slight	---	Yellow-poplar	100	Yellow-poplar, black walnut, loblolly pine.
						White oak	80	
						Loblolly pine	90	
						Black walnut	---	
Etowah:								
EtA, EtB, EtC	2o	Slight	Slight	Slight	Slight	Yellow-poplar	90	Yellow-poplar, black walnut.
						Southern red oak	80	
						Loblolly pine	90	
						Shortleaf pine	80	
						Black walnut	---	
[1]EuC:								
Etowah part	2o	Slight	Slight	Slight	Slight	Yellow-poplar	90	Yellow-poplar, black walnut.
						Southern red oak	80	
						Loblolly pine	90	
						Shortleaf pine	80	
						Black walnut	---	
Urban land part.								
Euharlee:								
EvB, EvC	3o	Slight	Slight	Slight	---	Loblolly pine	80	Loblolly pine, Virginia pine.
						Virginia pine	70	

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
Fullerton:								
FuB, FuC, FuD, FvE2	3o	Slight	Slight	Slight	Slight	Yellow-poplar	90	Shortleaf pine, loblolly pine, Virginia pine, eastern white pine.
						White oak	70	
						Southern red oak	70	
						Loblolly pine	74	
						Shortleaf pine	67	
						Virginia pine	68	
						Eastern redcedar	50	
FuE, FuF	3r	Moderate	Moderate	Slight	Slight	Yellow-poplar	90	Shortleaf pine, loblolly pine, Virginia pine, eastern white pine.
						White oak	70	
						Southern red oak	70	
						Loblolly pine	74	
						Shortleaf pine	67	
						Virginia pine	68	
						Eastern redcedar	50	
Grover:								
GgB, GgC	3o	Slight	Slight	Slight	---	Loblolly pine	80	Loblolly pine, slash pine, Virginia pine.
						White oak	---	
						Southern red oak	---	
GgE	3r	Moderate	Moderate	Slight	---	Loblolly pine	80	Loblolly pine, slash pine, Virginia pine.
						White oak	---	
						Southern red oak	---	
Guthrie Variant:								
GU	2w	Slight	Severe	Severe	Moderate	Yellow-poplar	100	Loblolly pine, sweetgum.
						Southern red oak	75	
						Loblolly pine	80	
						Willow oak	85	
						Sweetgum	90	
Hartsells:								
HaB, HaC, HaD, HaE	4o	Slight	Slight	Slight	Slight	Loblolly pine	70	Loblolly pine, shortleaf pine, Virginia pine.
						Shortleaf pine	60	
						Virginia pine	60	
Hector:								
HeD	5d	Slight	Moderate	Moderate	---	Shortleaf pine	50	Shortleaf pine, loblolly pine, eastern redcedar.
						Eastern redcedar	30	
HeF	5d	Severe	Severe	Severe	---	Shortleaf pine	50	Shortleaf pine, loblolly pine, eastern redcedar.
						Eastern redcedar	30	
Holston:								
HoB, HoC, HoD	3o	Slight	Slight	Slight	Slight	Yellow-poplar	86	Loblolly pine, shortleaf pine, Virginia pine.
						Northern red oak	78	
						Shortleaf pine	69	
						Loblolly pine	85	
						Virginia pine	73	
Linker:								
LkC, LkE	4o	Slight	Slight	Slight	---	Shortleaf pine	60	Shortleaf pine, loblolly pine, eastern red cedar.
						Southern red oak	50	
						White oak	50	
						Eastern red cedar	40	
						Loblolly pine	--	
Lyerly:								
LyA, LyB, LyC	4c	Slight	Moderate	Moderate	Moderate	Loblolly pine	65	Loblolly pine, eastern redcedar.
						Shortleaf pine	60	
						Eastern redcedar	47	
Madison:								
MgB2, MgC2, MgD2	3o	Slight	Slight	Slight	---	Loblolly pine	73	Loblolly pine, slash pine, longleaf pine, yellow-poplar.
						Longleaf pine	63	
						Shortleaf pine	66	
						Southern red oak	81	
						Yellow-poplar	96	

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
Madison:								
MgE2	3r	Moderate	Moderate	Slight	---	Loblolly pine	73	Loblolly pine, slash pine, longleaf pine, yellow-poplar.
						Longleaf pine	63	
						Shortleaf pine	66	
						Southern red oak	81	
						Yellow-poplar	96	
Montevallo:								
MsD	4d	Moderate	Slight	Moderate	Moderate	Loblolly pine	70	Loblolly pine, shortleaf pine, Virginia pine, eastern white pine.
						Shortleaf pine	60	
						Virginia pine	60	
MsF	5d	Severe	Moderate	Moderate	Moderate	Loblolly pine	60	Loblolly pine, Virginia pine.
						Shortleaf pine	50	
						Virginia pine	50	
Nella:								
[1]NTF:								
Nella part	3x	Slight	Moderate	Slight	Slight	Yellow-poplar	87	Yellow-poplar, shortleaf pine, Virginia pine, loblolly pine, black walnut.
						Shortleaf pine	71	
						Virginia pine	73	
						Northern red oak	71	
						Eastern redcedar	61	
						White ash	---	
						Black walnut	---	
Townley part	4r	Moderate	Moderate	Slight	Slight	Loblolly pine	70	Loblolly pine, Virginia pine.
						Virginia pine	65	
						Shortleaf pine	60	
Roanoke:								
Rn	2w	Slight	Severe	Severe	Slight	Pin oak	85	Loblolly pine.
						Loblolly pine	85	
						Virginia pine	65	
Rome:								
RoA, RoB	3o	Slight	Slight	Slight	Slight	Yellow-poplar	86	Yellow-poplar, loblolly pine, Virginia pine, black walnut.
						Loblolly pine	85	
						Shortleaf pine	69	
						Virginia pine	73	
Shack:								
ShB, ShC, ShD	3o	Slight	Slight	Slight	---	Yellow-poplar	89	Yellow-poplar, shortleaf pine, loblolly pine.
						Loblolly pine	80	
						Shortleaf pine	73	
ShE	3r	Moderate	Moderate	Slight	---	Yellow-poplar	89	Yellow-poplar, shortleaf pine, loblolly pine.
						Loblolly pine	80	
						Shortleaf pine	73	
Staser:								
St	2o	Slight	Slight	Slight	Slight	Yellow-poplar	100	Yellow-poplar, black walnut, loblolly pine.
						White oak	80	
						Loblolly pine	90	
						Black walnut	---	
Subligna:								
SuB	3o	Slight	Slight	Slight	---	Loblolly pine	85	Loblolly pine, shortleaf pine, northern red oak.
						Shortleaf pine	70	
						Yellow-poplar	90	
Tallapoosa:								
TaE2, TaF	4r	Moderate	Severe	Moderate	Moderate	Longleaf pine	65	Loblolly pine, Virginia pine, eastern redcedar, slash pine.
						Loblolly pine	70	
						Virginia pine	65	
						Shortleaf pine	60	

See footnote at end of table.

TABLE 3.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Important trees	Site index	
Tidings:								
TdC, TdD	3o	Slight	Slight	Slight	--------	Loblolly pine	80	Loblolly pine, shortleaf pine, northern red oak.
						Shortleaf pine	70	
						Virginia pine	70	
						Yellow-poplar	90	
						Northern red oak	70	
TdF	3r	Moderate	Moderate	Moderate	--------	Loblolly pine	80	Loblolly pine, shortleaf pine, northern red oak.
						Shortleaf pine	70	
						Virginia pine	70	
						Yellow-poplar	90	
						Northern red oak	70	
Toccoa:								
Tk	1o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine, yellow-poplar, American sycamore, cherrybark oak.
						Yellow-poplar	107	
						Sweetgum	100	
						Southern red oak	---	
Townley:								
TnC, TnE	4o	Slight	Slight	Slight	Slight	Loblolly pine	70	Loblolly pine, Virginia pine.
						Virginia pine	65	
						Shortleaf pine	60	
TnF	4r	Moderate	Moderate	Slight	Slight	Loblolly pine	70	Loblolly pine, Virginia pine.
						Virginia pine	65	
						Shortleaf pine	60	
[1]ToE:								
Townley part	4r	Moderate	Moderate	Slight	Slight	Loblolly pine	70	Loblolly pine, Virginia pine.
						Virginia pine	65	
						Shortleaf pine	60	
Urban land part.								
Tupelo:								
Tu, Tv	3w	Slight	Moderate	Moderate	Slight	Yellow-poplar	90	Loblolly pine.
						Loblolly pine	80	
						Sweetgum	80	
						White oak	70	
						Southern red oak	70	
Wax:								
WaA, WaB	3o	Slight	Slight	Slight	--------	Loblolly pine	80	Loblolly pine, yellow-poplar.
						Yellow-poplar	90	
						Shortleaf pine	70	
						Sweetgum	80	
Whitwell:								
Wh	2w	Slight	Moderate	Moderate	Slight	Yellow-poplar	95	Loblolly pine, eastern white pine, sweetgum.
						Northern red oak	75	
						Sweetgum	90	
						Loblolly pine	90	
						Eastern white pine	90	
Wolftever:								
WoA, WoB	3w	Slight	Moderate	Moderate	Slight	Yellow-poplar	90	Yellow-poplar, loblolly pine.
						White oak	70	
						Southern red oak	70	
						Willow oak	80	
						Sweetgum	80	
						Loblolly pine	80	

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

TABLE 4.--BUILDING SITE DEVELOPMENT

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

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Allen:					
AaB	Slight	Slight	Slight	Moderate: slope.	Slight.
AaC, AaD	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
AaE	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Aragon:					
ArB	Moderate: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
ArC, ArD	Moderate: too clayey.	Moderate: low strength.	Moderate: low strength.	Severe: slope, low strength.	Severe: slope, low strength.
ArE	Severe: slope, too clayey.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
Bodine:					
BsE, BsF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Cedarbluff:					
Cb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
Chewacla:					
Ck	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Conasauga:					
CnB	Moderate: depth to rock.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength, depth to rock.	Moderate: shrink-swell, low strength.	Severe: low strength.
CnC	Moderate: slope, depth to rock.	Moderate: shrink-swell, low strength, slope.	Moderate: shrink-swell, low strength, slope.	Severe: slope.	Severe: low strength.
[1]CrC:					
Conasauga part	Moderate: depth to rock.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength, depth to rock.	Moderate: shrink-swell, low strength, slope.	Severe: low strength.
Urban land part.					
Cunningham:					
CuB, CvB2	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength.
CuC, CuD, CvD2	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Severe: slope, low strength.	Moderate: low strength.

See footnote at end of table.

TABLE 4.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Cunningham:					
CuE	Severe: slope, too clayey.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
Decatur:					
DcB	Severe: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
DcC, DeD2	Severe: too clayey.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: low strength, slope.
DeE2	Severe: too clayey, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dewey:					
DhB	Severe: too clayey.	Slight	Slight	Moderate: slope, low strength.	Moderate: low strength.
DhC, DhD	Severe: too clayey.	Moderate: slope, low strength.	Moderate: low strength, slope.	Severe: slope.	Moderate: slope, low strength.
Dowellton:					
Do	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.
Emory:					
Em	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
Ennis:					
En	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Etowah:					
EtA	Slight	Slight	Slight	Slight	Slight.
EtB	Slight	Slight	Slight	Moderate: slope.	Slight.
EtC	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
[1]EuC:					
Etowah part	Slight	Slight	Slight	Moderate: slope.	Slight.
Urban land part.					
Euharlee:					
EvB	Moderate: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
EvC	Moderate: slope, too clayey.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.
Fullerton:					
FuB	Severe: too clayey, small stones.	Slight	Slight	Moderate: slope.	Moderate: low strength.

See footnote at end of table.

TABLE 4.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Fullerton:					
FuC, FuD	Severe: too clayey, small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
FuE, FuF, FvE2	Severe: too clayey, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Grover:					
GgB	Moderate: depth to rock.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
GgC	Moderate: slope, depth to rock.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.
GgE	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Guthrie Variant:					
GU	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness.
Hartsells:					
HaB	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.
HaC, HaD	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock.
HaE	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Severe: slope.	Severe: slope.
Hector:					
HeD	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, large stones.
HeF	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.
Holston:					
HoB	Moderate: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
HoC	Moderate: slope, too clayey.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.
HoD	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Linker:					
LkC	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: slope, depth to rock.
LkE	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.

See footnote at end of table.

TABLE 4.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Lyerly:					
LyA, LyB	Severe: too clayey, depth to rock.	Severe: shrink-swell, low strength.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
LyC	Severe: too clayey, depth to rock.	Severe: shrink-swell, low strength.	Severe: depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, low strength.
Madison:					
MgB2	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.
MgC2, MgD2	Moderate: too clayey.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength.
MgE2	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Montevallo:					
MsD	Moderate: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: depth to rock, slope.
MsF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nella:					
[1]NTF:					
Nella part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Townley part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Roanoke:					
Rn	Severe: floods, too clayey, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.
Rome:					
RoA	Moderate: floods.	Severe: floods.	Severe: floods.	Slight: floods.	Moderate: floods.
RoB	Slight	Slight	Slight	Moderate: slope.	Moderate: slope.
Shack:					
ShB	Moderate: small stones.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength.
ShC, ShD	Moderate: small stones, slope.	Moderate: slope.	Severe: wetness.	Severe: slope.	Moderate: slope, low strength.
ShE	Severe: slope.	Severe: slope.	Severe: wetness.	Severe: slope.	Severe: slope.
Staser:					
St.					
Subligna:					
SuB	Severe: small stones, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnote at end of table.

TABLE 4.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Tallapoosa:					
TaE2, TaF	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Tidings:					
TdC	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight.
TdD, TdF	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Toccoa:					
Tk	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Townley:					
TnC	Moderate: depth to rock.	Moderate: low strength.	Moderate: depth to rock.	Moderate: depth to rock, slope.	Slight.
TnE, TnF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
[1]ToE:					
Townley part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Urban land part.					
Tupelo:					
Tu, Tv	Severe: wetness.	Severe: shrink-swell, wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.
Udorthents:					
[1]Ud.					
Wax:					
WaA	Severe: floods.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods.
WaB	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength.
Whitwell:					
Wh	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength.
Wolftever:					
WoA	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
WoB	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: slope, wetness.	Moderate: shrink-swell.

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

TABLE 5.--SANITARY FACILITIES

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

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Allen:					
AaB	Slight	Moderate: slope, seepage.	Slight	Slight	Fair: too clayey.
AaC, AaD	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: too clayey.
AaE	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
Aragon:					
ArB	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
ArC, ArD	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.
ArE	Severe: slope, percs slowly.	Severe: slope.	Moderate: too clayey.	Severe: slope.	Poor: too clayey, slope.
Bodine:					
BsE	Severe: slope.	Severe: seepage, small stones.	Severe: seepage, slope.	Severe: slope.	Poor: small stones.
BsF	Severe: slope.	Severe: seepage, small stones.	Severe: slope.	Severe: slope.	Poor: small stones.
Cedarbluff:					
Cb	Severe: floods, percs slowly, wetness.	Slight	Severe: floods.	Severe: floods.	Good.
Chewacla:					
Ck	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Good.
Conasauga:					
CnB	Severe: percs slowly, depth to rock.	Moderate: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: thin layer, too clayey.
CnC	Severe: percs slowly, depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer, too clayey.
[1]CrC:					
Conasauga part	Severe: percs slowly, depth to rock.	Moderate: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: thin layer, too clayey.
Urban land part.					
Cunningham:					
CuB, CvB2	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
CuC, CuD, CvD2	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.

See footnote at end of table.

TABLE 5.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Cunningham:					
CuE	Severe: percs slowly.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: slope, too clayey.
Decatur:					
DcB	Slight	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: thin layer, too clayey, area reclaim.
DcC, DeD2	Moderate: slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: thin layer, too clayey, area reclaim.
DeE2	Severe: slope.	Severe: slope.	Severe: too clayey, slope.	Severe: slope.	Poor: thin layer, too clayey, area reclaim.
Dewey:					
DhB	Slight	Moderate: slope, seepage.	Severe: too clayey.	Slight	Poor: too clayey.
DhC, DhD	Moderate: slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
Dowellton:					
Do	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, depth to rock, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Emory:					
Em	Slight	Moderate: slope, seepage.	Severe: wetness.	Slight	Good.
Ennis:					
En	Moderate: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Fair: small stones.
Etowah:					
EtA	Slight	Moderate: seepage.	Slight	Slight	Fair: too clayey.
EtB	Slight	Moderate: slope, seepage.	Slight	Slight	Fair: too clayey.
EtC	Moderate:	Severe: seepage.	Slight	Moderate:	Fair:
Urban land part.					
Euharlee:					
EvB	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Good.
EvC	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 5.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fullerton:					
FuB	Slight	Moderate: slope, seepage.	Severe: too clayey.	Slight	Fair: small stones, too clayey.
FuC, FuD	Moderate: slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Fair: small stones, slope.
FuE, FvE2	Severe: slope.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: slope.
FuF	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: slope.
Grover:					
GgB	Moderate: depth to rock.	Moderate: slope, seepage.	Severe: depth to rock.	Slight	Fair: hard to pack.
GgC	Moderate: slope, depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, hard to pack.
GgE	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
Guthrie Variant:					
GU	Severe: percs slowly, wetness, floods.	Slight	Severe: wetness, floods.	Severe: wetness.	Poor: wetness.
Hartsells:					
HaB	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Fair: thin layer, area reclaim.
HaC, HaD	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Moderate: slope.	Fair: thin layer, area reclaim.
HaE	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Hector:					
HeD	Severe: depth to rock, large stones.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage, large stones.	Severe: seepage.	Poor: thin layer, large stones.
HeF	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, large stones.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
Holston:					
HoB	Slight	Moderate: slope, seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
HoC	Moderate: slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: slope, too clayey.
HoD	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 5.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Linker:					
LkC	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
LkE	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Lyerly:					
LyA, LyB	Severe: percs slowly, depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Slight	Poor: too clayey.
LyC	Severe: percs slowly, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: slope.	Poor: too clayey.
Madison:					
MgB2	Moderate: percs slowly.	Moderate: slope, seepage.	Severe: too clayey.	Slight	Fair: too clayey.
MgC2, MgD2	Moderate: slope, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Fair: too clayey.
MgE2	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Montevallo:					
MsD	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
MsF	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: slope.	Poor: thin layer.
Nella:					
[1]NTF:					
Nella part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Townley part	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Roanoke:					
Rn	Severe: floods, percs slowly, wetness.	Slight	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: hard to pack, too clayey, wetness.
Rome:					
RoA	Moderate: floods.	Moderate: seepage.	Moderate: floods.	Moderate: floods.	Good.
RoB	Slight	Moderate: seepage.	Slight	Slight	Good.
Shack:					
ShB	Severe: percs slowly, wetness.	Moderate: slope, small stones.	Moderate: small stones.	Moderate: wetness.	Fair: small stones.
ShC, ShD	Severe: percs slowly, wetness.	Severe: slope.	Moderate: small stones.	Moderate: slope.	Fair: slope, small stones.
ShE	Severe: percs slowly, wetness.	Severe: slope.	Moderate: small stones.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 5.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Staser:					
St	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
Subligna:					
SuB	Severe: floods.	Severe: seepage, floods.	Severe: small stones, seepage.	Severe: seepage.	Poor: small stones.
Tallapoosa:					
TaE2	Severe: slope, depth to rock.	Severe: slope.	Moderate: slope, depth to rock.	Severe: slope.	Poor: slope, thin layer.
TaF	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, thin layer.
Tidings:					
TdC	Severe: depth to rock.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock.	Slight	Fair: thin layer, slope.
TdD, TdF	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Toccoa:					
Tk	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Good.
Townley:					
TnC	Severe: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Slight	Fair: thin layer.
TnE	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Moderate: depth to rock, slope.	Severe: slope.	Poor: slope.
TnF	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Poor: slope.
[1]ToE:					
Townley part	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Urban land part.					
Tupelo:					
Tu, Tv	Severe: percs slowly, wetness.	Moderate: depth to rock.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Poor: too clayey.
Udorthents:					
[1]Ud.					
Wax:					
WaA	Severe: percs slowly, floods.	Severe: wetness, floods.	Severe: floods, wetness.	Severe: wetness.	Fair: thin layer, area reclaim.
WaB	Severe: percs slowly, floods.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: thin layer, area reclaim.

See footnote at end of table.

TABLE 5.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Whitwell: Wh	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Wolftever: WoA	Severe: floods, percs slowly.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Poor: too clayey, thin layer.
WoB	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Poor: too clayey, thin layer.

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

TABLE 6.--CONSTRUCTION MATERIALS

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

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Allen:				
AaB	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
AaC, AaD	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
AaE	Fair: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Aragon:				
ArB, ArC, ArD	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, small stones.
ArE	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, thin layer.
Bodine:				
BsE	Fair: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones.
BsF	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones.
Cedarbluff:				
Cb	Fair: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Chewacla:				
Ck	Poor: wetness, low strength.	Unsuited	Unsuited	Good.
Conasauga:				
CnB, CnC	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
[1]CrC:				
Conasauga part	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Urban land part.				
Cunningham:				
CuB, CuC, CuD, CuE, CvB2, CvD2	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Decatur:				
DcB	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
DcC, DeD2	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, area reclaim.
DeE2	Fair: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: area reclaim.

See footnote at end of table.

TABLE 6.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Dewey:				
DhB, DhC, DhD	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey.
Dowellton:				
Do	Poor: wetness, shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
Emory:				
Em	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Ennis:				
En	Fair: low strength.	Unsuited	Unsuited	Poor: small stones.
Etowah:				
EtA, EtB	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
EtC	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
[1]EuC:				
Etowah part	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land part.				
Euharlee:				
EvB, EvC	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Fullerton:				
FuB, FuC, FuD	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
FuE, FvE2	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
FuF	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
Grover:				
GgB, GgC	Fair: low strength.	Unsuited	Unsuited	Poor: thin layer.
GgE	Fair: slope, low strength.	Unsuited	Unsuited	Poor: thin layer.
Guthrie Variant:				
GU	Poor: wetness.	Unsuited	Unsuited	Poor: wetness.
Hartsells:				
HaB	Good	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey.
HaC, HaD	Good	Poor: excess fines.	Unsuited: excess fines.	Fair: slope, too clayey.

See footnote at end of table.

TABLE 6.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Hartsells:				
HaE	Fair: slope.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Hector:				
HeD	Poor: thin layer, large stones.	Poor	Poor	Poor: thin layer, large stones, area reclaim.
HeF	Poor: slope, thin layer, large stones.	Poor	Poor	Poor: slope, thin layer, large stones.
Holston:				
HoB	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
HoC	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, too clayey.
HoD	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Linker:				
LkC	Fair: low strength, thin layer.	Poor: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
LkE	Fair: low strength, thin layer.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Lyerly:				
LyA, LyB, LyC	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Madison:				
MgB2, MgC2, MgD2	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
MgE2	Poor: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, thin layer.
Montevallo:				
MsD, MsF	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Nella:				
[1]NTF:				
Nella part	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Townley part	Poor: low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
Roanoke:				
Rn	Poor: area reclaim, low strength, wetness.	Poor: excess fines.	Poor: excess fines.	Poor: area reclaim, thin layer, wetness.

See footnote at end of table.

TABLE 6.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Rome:				
RoA, RoB	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Shack:				
ShB, ShC, ShD	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
ShE	Fair: slope, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
Staser:				
St	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Subligna:				
SuB	Good	Unsuited: excess fines.	Fair: excess fines.	Poor: small stones.
Tallapoosa:				
TaE2	Fair: slope, low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, thin layer.
TaF	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, thin layer.
Tidings:				
TdC, TdD	Fair: slope, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
TdF	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
Toccoa:				
Tk	Good	Poor: excess fines.	Unsuited: excess fines.	Good.
Townley:				
TnC, TnE, TnF	Poor: low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
[1]ToE:				
Townley part	Poor: low strength, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, area reclaim.
Urban land part.				
Tupelo:				
Tu, Tv	Poor: shrink-swell, low strength.	Unsuited	Unsuited	Poor: thin layer, too clayey.
Udorthents:				
[1]Ud.				
Wax:				
WaA, WaB	Fair: low strength.	Unsuited: excess fines.	Poor: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 6.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Whitwell: Wh	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, small stones.
Wolftever: WoA, WoB	Fair: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.

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

TABLE 7.--WATER MANAGEMENT

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

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Allen:						
AaB	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
AaC	Moderate: seepage.	Slight	Not needed	Slope, erodes easily.	Favorable	Favorable.
AaD, AaE	Moderate: seepage.	Slight	Not needed	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Aragon:						
ArB	Slight	Moderate: low strength, hard to pack.	Not needed	Favorable	Percs slowly, complex slope.	Percs slowly, erodes easily.
ArC	Slight	Moderate: low strength, hard to pack.	Not needed	Slope, erodes easily.	Percs slowly, complex slope.	Percs slowly, erodes easily.
ArD, ArE	Slight	Moderate: low strength, hard to pack.	Not needed	Slope, erodes easily.	Slope, percs slowly.	Slope, percs slowly.
Bodine:						
BsE, BsF	Severe: seepage.	Slight	Not needed	Droughty, fast intake, slope.	Slope, small stones.	Slope, small stones.
Cedarbluff:						
Cb	Slight	Moderate: low strength.	Favorable, percs slowly.	Favorable, percs slowly.	Not needed	Not needed.
Chewacla:						
Ck	Moderate: seepage.	Moderate: piping.	Poor outlets, floods.	Wetness, floods.	Not needed	Not needed.
Conasauga:						
CnB	Moderate: depth to rock.	Severe: thin layer.	Not needed	Slope, slow intake.	Depth to rock	Droughty.
CnC	Moderate: depth to rock.	Severe: thin layer.	Not needed	Slope, slow intake.	Slope, depth to rock.	Droughty.
[1]CrC:						
Conasauga part	Moderate: depth to rock.	Severe: thin layer.	Not needed	Slope, slow intake.	Depth to rock	Droughty.
Urban land part.						
Cunningham:						
CuB, CvB2	Slight	Moderate: low strength, hard to pack.	Not needed	Percs slowly	Erodes easily	Erodes easily.
CuC	Slight	Moderate: low strength, hard to pack.	Not needed	Percs slowly, complex slope, erodes easily.	Erodes easily	Erodes easily.
CuD, CuE, CvD2	Slight	Moderate: low strength, hard to pack.	Not needed	Percs slowly, complex slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Decatur:						
DcB, DcC	Severe: seepage.	Moderate: hard to pack, piping.	Not needed	Slope	Favorable	Favorable.

See footnote at end of table.

TABLE 7.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Decatur:						
DeD2	Severe: seepage.	Moderate: hard to pack, piping.	Not needed	Slope	Slope	Favorable.
DeE2	Severe: seepage.	Moderate: hard to pack, piping.	Not needed	Slope	Slope	Slope.
Dewey:						
DhB, DhC, DhD	Moderate: seepage.	Severe: compressible.	Not needed	Complex slope, erodes easily.	Complex slope, erodes easily.	Erodes easily, slope.
Dowellton:						
Do	Moderate: depth to rock, seepage.	Severe: shrink-swell, compressible.	Percs slowly, wetness.	Wetness, percs slowly.	Not needed	Wetness, percs slowly.
Emory:						
Em	Moderate: seepage.	Moderate: compressible.	Not needed	Favorable	Favorable	Favorable.
Ennis:						
En	Seepage, floods.	Unstable fill, compressible, piping.	Floods	Floods, seepage.	Floods	Favorable.
Etowah:						
EtA, EtB	Moderate: seepage.	Moderate: seepage, erodes easily, compressible.	Not needed	Favorable	Favorable	Favorable.
EtC	Moderate: seepage.	Moderate: seepage, erodes easily, compressible.	Not needed	Slope	Slope	Slope.
[1]EuC:						
Etowah part	Moderate: seepage.	Moderate: seepage, erodes easily, compressible.	Not needed	Favorable	Favorable	Favorable.
Urban land part.						
Euharlee:						
EvB	Moderate: seepage.	Moderate: low strength.	Not needed	Favorable	Favorable	Favorable.
EvC	Moderate: seepage.	Moderate: low strength.	Not needed	Slope, erodes easily.	Favorable	Favorable.
Fullerton:						
FuB, FuC, FuD, FuE, FuF, FvE2	Moderate: seepage.	Moderate: compressible.	Not needed	Complex slope	Slope	Favorable.
Grover:						
GgB	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed	Favorable	Favorable	Favorable.
GgC, GgE	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed	Slope	Slope	Slope.
Guthrie Variant:						
GU	Slight	Moderate: piping.	Percs slowly, poor outlets.	Wetness	Not needed	Not needed.

See footnote at end of table.

TABLE 7.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Hartsells:						
HaB	Severe: depth to rock.	Moderate: low strength.	Not needed	Favorable	Favorable	Favorable.
HaC	Severe: depth to rock.	Moderate: low strength.	Not needed	Slope	Favorable	Favorable.
HaD, HaE	Severe: depth to rock.	Moderate: low strength.	Not needed	Slope	Slope	Slope.
Hector:						
HeD, HeF	Severe: depth to rock, seepage.	Severe: thin layer, large stones.	Not needed	Slope, droughty, seepage.	Slope, depth to rock, large stones.	Droughty, large stones, slope.
Holston:						
HoB	Moderate: seepage.	Slight	Not needed	Favorable	Favorable	Favorable.
HoC, HoD	Moderate: seepage.	Slight	Not needed	Slope	Slope	Slope.
Linker:						
LkC, LkE	Severe: depth to rock.	Moderate: thin layer, compressible.	Not needed	Slope, erodes easily.	Slope, depth to rock, erodes easily.	Erodes easily, slope.
Lyerly:						
LyA, LyB	Severe: depth to rock.	Moderate: low strength, compressible, hard to pack.	Not needed	Slow intake, percs slowly.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
LyC	Severe: depth to rock.	Moderate: low strength, compressible, hard to pack.	Not needed	Slope, slow intake, erodes easily.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
Madison:						
MgB2	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed	Favorable	Favorable	Favorable.
MgC2, MgD2, MgE2	Moderate: seepage.	Moderate: hard to pack, piping.	Not needed	Slope, erodes easily.	Erodes easily, slope.	Slope.
Montevallo:						
MsD, MsF	Moderate: seepage, depth to rock.	Severe: thin layer.	Not needed	Droughty, rooting depth, slope.	Depth to rock	Droughty, rooting depth, slope.
Nella:						
[1]NTF:						
Nella part	Moderate: seepage.	Slight	Not needed	Slope	Slope	Slope.
Townley part	Moderate: depth to rock.	Moderate: thin layer.	Not needed	Droughty, slope.	Depth to rock, rooting depth, slope.	Droughty, rooting depth, slope.
Roanoke:						
Rn	Favorable	Moderate: compressible, hard to pack, low strength.	Floods, percs slowly, poor outlets.	Slow intake, wetness, percs slowly.	Not needed	Not needed.
Rome:						
RoA	Moderate: seepage.	Moderate: piping, low strength.	Not needed	Favorable	Not needed	Favorable.

See footnote at end of table.

TABLE 7.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Rome:						
RoB	Moderate: seepage.	Moderate: piping, low strength.	Not needed	Favorable	Favorable	Favorable.
Shack:						
ShB	Moderate: seepage.	Moderate: low strength.	Not needed	Percs slowly, complex slope.	Complex slope, percs slowly.	Percs slowly.
ShC	Moderate: seepage.	Moderate: low strength.	Not needed	Slope	Complex slope, percs slowly.	Percs slowly.
ShD, ShE	Moderate: seepage.	Moderate: low strength.	Not needed	Slope	Slope	Slope.
Staser:						
St	Moderate: seepage.	Moderate: piping, compressible.	Not needed	Floods	Favorable	Favorable.
Subligna:						
SuB	Severe: seepage.	Moderate: seepage.	Not needed	Seepage, floods.	Not needed	Favorable.
Tallapoosa:						
TaE2, TaF	Severe: depth to rock.	Severe: thin layer.	Not needed	Slope, rooting depth.	Slope, depth to rock.	Slope, rooting depth.
Tidings:						
TdC	Moderate: seepage, depth to rock.	Moderate: thin layer.	Not needed	Erodes easily, slope.	Complex slope, erodes easily.	Erodes easily.
TdD, TdF	Moderate: seepage, depth to rock.	Moderate: thin layer.	Not needed	Erodes easily, slope.	Slope	Slope.
Toccoa:						
Tk	Severe: seepage.	Moderate: piping.	Not needed	Floods, seepage.	Not needed	Not needed.
Townley:						
TnC, TnE, TnF	Moderate: depth to rock.	Moderate: thin layer.	Not needed	Droughty, slope.	Depth to rock, rooting depth, slope.	Droughty, rooting depth, slope.
[1]ToE:						
Townley part	Moderate: depth to rock.	Moderate: thin layer.	Not needed	Droughty, slope.	Depth to rock, rooting depth, slope.	Droughty, rooting depth, slope.
Urban land part.						
Tupelo:						
Tu, Tv	Moderate: depth to rock.	Moderate: compressible, low strength.	Percs slowly, wetness.	Wetness, slow intake.	Wetness, percs slowly.	Wetness, percs slowly.
Udorthents:						
[1]Ud.						
Wax:						
WaA	Slight	Moderate: seepage.	Floods	Floods	Not needed	Erodes easily.
WaB	Slight	Moderate: seepage.	Percs slowly	Rooting depth	Erodes easily, rooting depth.	Erodes easily.

See footnote at end of table.

TABLE 7.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Whitwell:						
Wh	Moderate: seepage.	Slight	Favorable	Favorable	Favorable	Favorable.
Wolftever:						
WoA	Moderate: seepage.	Moderate: compressible.	Floods, wetness, percs slowly.	Floods, wetness, percs slowly.	Wetness	Slope, wetness.
WoB	Moderate: seepage.	Moderate: compressible.	Wetness, percs slowly.	Slope, percs slowly.	Slope	Slope, wetness.

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

TABLE 8.--RECREATIONAL DEVELOPMENT

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

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Allen:				
AaB	Slight	Slight	Moderate: slope.	Slight.
AaC, AaD	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
AaE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Aragon:				
ArB	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight.
ArC, ArD	Moderate: percs slowly.	Moderate: slope.	Severe: slope, percs slowly.	Slight.
ArE	Severe: slope, percs slowly.	Severe: slope.	Severe: slope, percs slowly.	Moderate: slope.
Bodine:				
BsE	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: small stones, slope.
BsF	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Cedarbluff:				
Cb	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: wetness, percs slowly.	Moderate: wetness.
Chewacla:				
Ck	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Moderate: wetness, floods.
Conasauga:				
CnB	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly, slope.	Slight.
CnC	Moderate: wetness, percs slowly, slope.	Moderate: wetness, slope.	Severe: slope.	Slight.
[1]CrC:				
Conasauga part	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: slope.	Slight.
Urban land part.				
Cunningham:				
CuB	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight.
CuC, CuD	Moderate: percs slowly.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Cunningham:				
CuE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
CvB2	Moderate: percs slowly, too clayey.	Moderate: too clayey.	Moderate: percs slowly, too clayey.	Moderate: too clayey.
CvD2	Moderate: percs slowly, too clayey.	Moderate: slope, too clayey.	Severe: slope.	Moderate: too clayey.
Decatur:				
DcB	Slight	Slight	Moderate: slope.	Slight.
DcC, DeD2	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
DeE2	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Dewey:				
DhB	Slight	Slight	Moderate: slope.	Slight.
DhC, DhD	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Dowellton:				
Do	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Emory:				
Em	Slight	Slight	Moderate: slope.	Slight.
Ennis:				
En	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.
Etowah:				
EtA	Slight	Slight	Slight	Slight.
EtB	Slight	Slight	Moderate: slope.	Slight.
EtC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
[1]EuC:				
Etowah part	Slight	Slight	Severe: slope.	Slight.
Urban land part.				
Euharlee:				
EvB	Slight	Slight	Moderate: slope.	Slight.
EvC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Fullerton:				
FuB	Moderate: small stones.	Moderate: small stones.	Moderate: slope, small stones.	Moderate: small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Fullerton:				
FuC, FuD	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope.	Moderate: small stones.
FuE, FvE2	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, small stones.
FuF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Grover:				
GgB	Slight	Slight	Moderate: slope.	Slight.
GgC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
GgE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Guthrie Variant:				
GU	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Hartsells:				
HaB	Slight	Slight	Moderate: slope.	Slight.
HaC, HaD	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
HaE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Hector:				
HeD	Severe: large stones.	Severe: large stones.	Severe: slope, large stones, depth to rock.	Severe: large stones.
HeF	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones.
Holston:				
HoB	Slight	Slight	Moderate: slope.	Slight.
HoC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
HoD	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Linker:				
LkC	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
LkE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Lyerly:				
LyA, LyB	Severe: percs slowly.	Slight	Severe: percs slowly.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Lyerly:				
LyC	Severe: percs slowly.	Moderate: slope.	Severe: slope, percs slowly.	Slight.
Madison:				
MgB2	Slight	Slight	Moderate: slope.	Slight.
MgC2, MgD2	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
MgE2	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Montevallo:				
MsD	Moderate: small stones.	Moderate: small stones.	Severe: depth to rock, slope, small stones.	Moderate: small stones.
MsF	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, small stones.	Severe: slope.
Nella:				
[1]NTF:				
Nella part	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Townley part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Roanoke:				
Rn	Severe: floods, wetness, percs slowly.	Severe: wetness.	Severe: floods, wetness, percs slowly.	Severe: wetness.
Rome:				
RoA	Moderate: floods.	Moderate: floods.	Slight	Slight.
RoB	Slight	Slight	Moderate: slope.	Slight.
Shack:				
ShB	Moderate: percs slowly, small stones.	Moderate: small stones.	Moderate: slope, wetness.	Moderate: small stones.
ShC, ShD	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.
ShE	Severe: slope.	Moderate: slope.	Severe: slope, small stones.	Moderate: small stones, slope.
Staser:				
St	Severe: floods.	Severe: floods.	Severe: floods.	Slight.
Subligna:				
SuB	Severe: floods, small stones.	Moderate: floods, small stones.	Severe: small stones.	Moderate: small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Tallapoosa:				
TaE2	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
TaF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tidings:				
TdC	Slight	Slight	Severe: slope, small stones.	Slight.
TdD, TdF	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Toccoa:				
Tk	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight.
Townley:				
TnC	Moderate: percs slowly.	Slight	Severe: slope.	Slight.
TnE	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
TnF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
[1]ToE:				
Townley part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Urban land part.				
Tupelo:				
Tu, Tv	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Udorthents:				
[1]Ud.				
Wax:				
WaA	Moderate: wetness, percs slowly.	Slight	Moderate: percs slowly.	Slight.
WaB	Moderate: wetness, percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
Whitwell:				
Wh	Slight	Slight	Slight	Slight.
Wolftever:				
WoA	Severe: floods.	Moderate: floods.	Moderate: floods, wetness.	Slight.
WoB	Moderate: wetness, percs slowly.	Moderate: too clayey.	Moderate: slope, percs slowly.	Slight.

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

TABLE 9.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Allen:												
AaB	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	---
AaC	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
AaD	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
AaE	Very poor.	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
Aragon:												
ArB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
ArC, ArD	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
ArE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Bodine:												
BsE	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	---
BsF	Very poor.	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Cedarbluff:												
Cb	Poor	Fair	Fair	Good	Good	---	Fair	Fair	Fair	Good	Fair	---
Chewacla:												
Ck.												
Conasauga:												
CnB	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
CnC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
[1]CrC:												
Conasauga part	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Urban land part.												
Cunningham:												
CuB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
CuC, CuD	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
CuE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
CvB2	Fair	Fair	Fair	Fair	Good	---	Poor	Very poor.	Fair	Fair	Very poor.	---
CvD2	Poor	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Decatur:												
DcB, DcC, DeD2, DeE2	Good	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Dewey:												
DhB	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	---
DhC, DhD	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
Dowellton:												
Do	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair	---
Emory:												
Em	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	---
Ennis:												
En	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor	---
Etowah:												
EtA, EtB	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	---
EtC	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
[1]EuC:												
Etowah part	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
Urban land part.												
Euharlee:												
EvB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
EvC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Fullerton:												
FuB	Good	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
FuC	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
FuD, FvE2	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
FuE	Very poor.	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
FuF	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	---
Grover:												
GgB	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
GgC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
GgE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Guthrie Variant:												
GU	Poor	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good	---
Hartsells:												
HaB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
HaC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
HaD	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
HaE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Hector:												
HeD, HeF	Very poor.	Very poor.	Poor	Poor	Very poor.	---	Very poor.	Very poor.	Very poor.	Poor	Very poor.	---
Holston:												
HoB	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	---
HoC	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.	---
HoD	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
Linker:												
LkC	Fair	Good	Good	Fair	Fair	---	Very poor.	Very poor.	Good	Good	Very poor.	---
LkE	Poor	Fair	Good	Fair	Fair	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Lyerly:												
LyA, LyB	Fair	Good	Good	Fair	Fair	---	Poor	Poor	Good	Fair	Poor	---
LyC	Fair	Good	Good	Fair	Fair	---	Very poor.	Very poor.	Good	Fair	Very poor.	---
Madison:												
MgB2	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
MgC2, MgD2	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
MgE2	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
Montevallo:												
MsD	Poor	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
MsF	Very poor.	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
Nella:												
[1]NTF:												
Nella part	Very poor.	Poor	Good	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	---
Townley part	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Roanoke:												
Rn	Poor	Poor	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	---
Rome:												
RoA	Good	Good	Good	Good	Good	---	Good	Fair	Good	Good	Fair	---
RoB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Shack:												
ShB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
ShC, ShD	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
ShE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Staser:												
St.												
Subligna:												
SuB	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Tallapoosa:												
TaE2, TaF	Poor	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
Tidings:												
TdC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
TdD	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
TdF	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
Toccoa:												
Tk.												
Townley:												
TnC	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
TnE	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
TnF	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
[1]ToE:												
Townley part	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Urban land part.												
Tupelo:												
Tu, Tv	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair	---
Udorthents:												
[1]Ud.												
Wax:												
WaA, WaB	Fair	Good	Good	Fair	Fair	---	Poor	Poor	Good	Poor	Poor	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Whitwell:												
Wh	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	---
Wolftever:												
WoA, WoB	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor	---

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

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Allen:											
AaB, AaC, AaD, AaE	0-8	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	0-5	90-100	75-100	65-98	40-80	14-26	2-7
	8-52	Clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6, A-7-6	0-10	85-100	75-100	65-98	50-80	22-43	5-19
	52-70	Clay loam, sandy clay loam.	CL-ML, CL, SC, SM-SC	A-4, A-6, A-7-6	0-10	85-100	70-95	60-95	45-80	22-48	6-22
Aragon:											
ArB, ArC, ArD, ArE	0-6	Fine sandy loam	ML, CL-ML	A-4	0-2	98-100	85-100	70-90	50-70	<30	NP-7
	6-15	Clay loam, loam, sandy clay loam.	ML, CL, CL-ML	A-4, A-6	0-4	96-100	85-100	75-90	55-75	15-35	3-12
	15-42	Clay, silty clay	CH, MH	A-7	0-4	96-100	85-100	80-100	70-90	50-70	15-35
	42-52	Silty clay, sandy clay loam, clay.	ML, CL, MH, CH	A-6, A-7	0-6	94-100	85-100	75-95	60-90	35-60	11-30
	52-65	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Bodine:											
BsE, BsF	0-6	Very stony silt loam.	SM, SM-SC, GM, GM-GC	A-4, A-2, A-1	15-40	30-80	20-75	20-65	20-45	<30	NP-7
	6-18	Cherty silt loam, cherty silty clay loam, stony silt loam.	GM-GC, GC, SC, SM-SC	A-1, A-2, A-4, A-6	20-45	30-70	20-65	20-55	15-45	20-38	3-15
	18-60	Stony silty clay loam, stony clay loam.	GC, SC, GM-GC	A-1, A-2, A-4, A-6	25-50	15-70	15-65	15-50	12-45	25-35	10-15
Cedarbluff:											
Cb	0-8	Silt loam	ML	A-4	0	100	100	85-90	40-65	---	NP
	8-12	Clay loam, loam, silty clay loam.	CL-ML, ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	12-53	Clay loam, loam	CL	A-6	0	100	100	70-97	65-85	25-40	11-25
	53-62	Clay	CL, CH,	A-7	0	100	100	90-100	75-95	45-60	20-35

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Chewacla:											
Ck	0-30	Silt loam	ML, CL	A-4, A-5, A-6, A-7	0	98-100	95-100	70-100	55-90	36-50	4-20
	30-62	Loam, sandy loam.	SM, CL-ML, SM-SC, ML	A-4	0	96-100	95-100	60-80	36-70	<35	NP-7
Conasauga:											
CnB, CnC	0-5	Silt loam	CL-ML, ML, CL	A-4	0	90-100	85-100	75-95	65-85	<30	NP-8
	5-10	Silt loam, silty clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-100	75-85	65-80	22-40	4-15
	10-35	Silty clay, clay.	CL, CH	A-7	0	90-100	85-100	85-95	80-90	41-60	18-35
	35-46	Clay, silty clay	CL, CH, MH	A-7	0	90-100	85-100	85-95	80-90	48-70	25-40
[1]CrC:											
Conasauga part--	0-5	Silt loam	CL-ML, ML, CL	A-4	0	90-100	85-100	75-95	65-85	<30	NP-8
	5-10	Silt loam, silty clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-100	75-85	65-80	22-40	4-15
	10-35	Silty clay, clay.	CL, CH	A-7	0	90-100	85-100	85-95	80-90	41-60	18-35
	35-46	Clay, silty clay	CL, CH, MH	A-7	0	90-100	85-100	85-95	80-90	48-70	25-40
Urban land part.											
Cunningham:											
CuB, CuC, CuD, CuE	0-5	Loam	CL, CL-ML	A-4	0	100	95-100	80-97	51-80	20-35	4-10
	5-36	Clay, silty clay, clay loam.	CL, CH	A-7-5, A-7-6	0	100	98-100	95-100	75-95	41-65	20-35
	36-60	Variable	---	---	---	---	---	---	---	---	---
CvB2, CvD2	0-5	Silty clay loam	CL, CH, MH	A-6, A-7-5, A-7-6	0	100	95-100	85-100	65-90	30-55	11-24
	5-36	Clay, silty clay, clay loam.	CL, CH	A-7-5, A-7-6	0	100	98-100	95-100	75-95	41-65	20-35
	36-60	Variable	---	---	---	---	---	---	---	---	---
Decatur:											
DcB, DcC	0-9	Loam	CL, ML, CL-ML	A-4, A-6	0-3	90-100	90-98	85-98	65-75	20-32	5-12
	9-17	Silty clay loam, silty clay, clay.	ML, CL	A-5, A-7	0-3	90-100	90-100	88-99	78-92	42-49	8-22
	17-78	Clay	CL, ML	A-7	0-3	90-100	90-100	88-98	75-90	44-49	11-25
DeD2, DeE2	0-9	Clay	CL, ML	A-7	0-3	90-100	90-100	88-99	78-92	42-49	11-22
	9-17	Silty clay loam, silty clay, clay.	ML, CL	A-5, A-7	0-3	90-100	90-100	88-99	78-92	42-49	8-22
	17-78	Clay	CL, ML	A-7	0-3	90-100	90-100	88-98	75-90	44-49	11-25

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Dewey:											
DhB, DhC, DhD-----	0-6	Silt loam-------	CL-ML, CL	A-4, A-6	0	90-100	80-100	75-95	65-80	24-30	5-11
	6-41	Clay, silty clay, silty clay loam.	CL	A-6	0	90-100	80-100	75-95	70-85	27-40	12-20
	41-71	Clay, silty clay	CH, CL, MH, ML	A-6, A-7	0-5	85-100	75-100	70-95	65-85	38-68	12-34
Dowellton:											
Do----------	0-10	Silty clay loam	CL-ML, CL	A-4, A-6	0	100	95-100	90-100	85-96	25-40	6-20
	10-19	Silty clay, clay	CL, CH	A-7	0	100	95-100	90-100	85-96	48-65	25-38
	19-48	Clay----------	CH, MH	A-7	0	100	95-100	90-100	85-96	55-70	28-40
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Emory:											
Em----------	0-45	Silt loam, silty clay loam.	CL, ML, CL-ML	A-4, A-6	0-2	95-100	90-100	85-100	80-95	25-40	4-15
	45-65	Silty clay loam, clay loam,	CL	A-4, A-6,	0-2	90-100	75-100	70-100	65-95	25-40	9-20
Ennis:											
En----------	0-62	Cherty silt loam cherty clay loam, cherty clay loam, very cherty loam.	CL, SC, GC, CL-ML	A-4, A-6, A-2	0-5	55-85	40-85	40-80	35-70	20-35	4-15
Etowah:											
EtA, EtB, EtC-----	0-13	Loam----------	ML, CL, SM-SC, CL-ML	A-4	0	80-100	75-100	70-95	45-70	20-30	3-10
	13-74	Silty clay loam, clay loam, clay.	CL, ML, MH	A-6, A-7	0	80-100	75-100	70-95	65-85	39-60	15-25
[1]EuC:											
Etowah part-----	0-13	Loam----------	ML, CL, SM-SC, CL-ML	A-4	0	80-100	75-100	70-95	45-70	20-30	3-10
	13-74	Silty clay loam, clay loam, clay.	CL, ML, MH	A-6, A-7	0	80-100	75-100	70-95	65-85	39-60	15-25
Urban land part.											
Euharlee:											
EvB, EvC----------	0-6	Silt loam-------	ML, CL-ML	A-4	0	90-100	80-95	75-92	50-80	20-30	3-7
	6-16	Silt loam, clay loam, loam.	CL	A-4, A-6	0	90-98	80-97	75-90	70-85	25-35	8-12
	16-43	Clay loam, loam, silty clay loam.	CL	A-4, A-6	0-3	90-98	80-95	75-90	70-85	25-40	10-15
	43-57	Cherty clay, cherty silty clay, cherty silty clay loam.	CL, SC	A-6, A-7	0-5	60-90	50-80	45-75	40-70	35-49	15-23
	57-67	Variable--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Fullerton:											
FuB, FuC, FuD, FuE, FuF, FvE2----	0-17	Cherty silt loam, cherty silty clay loam.	ML, CL-ML, CL, GM	A-2, A-4, A-6	2-15	60-94	50-88	40-80	30-70	16-40	3-10
	17-24	Cherty silty clay loam, cherty silt loam.	CL, GC, SC, ML	A-2, A-6, A-7	2-18	60-90	50-85	40-75	30-70	29-42	11-17
	24-88	Cherty clay, cherty silty clay.	MH, ML, GC, SC	A-2, A-7	2-18	60-90	50-85	40-75	30-75	48-78	20-42
Grover:											
GgB, GgC, GgE-----	0-8	Gravelly fine sandy loam.	SM, SM-SC, SC	A-4, A-5	0-10	80-100	65-100	50-75	36-50	33-48	NP-10
	8-50	Sandy clay loam, clay loam.	SC, CL	A-6, A-7	0-5	95-100	90-100	70-85	40-70	35-50	12-25
	50-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Guthrie Variant:											
GU----------	0-7	Silt loam-------	ML, CL-ML	A-4	0	90-100	85-100	80-95	75-90	18-28	2-7
	7-24	Cherty silty clay loam, cherty silt loam.	CL, ML	A-2, A-7	0-5	60-90	50-85	40-75	30-70	20-50	11-25
	24-62	Very cherty silty clay, very cherty clay, cherty silty clay loam	CL, MH, CH, SC.	A-2, A-7	5-15	50-85	45-80	40-75	30-75	45-75	20-40
Hartsells:											
HaB, HaC, HaD, HaE	0-7	Fine sandy loam	SM, ML, SM-SC, CL-ML	A-4	0-5	85-100	75-100	70-95	36-75	<30	NP-7
	7-40	Clay loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	0-5	85-100	75-100	60-100	40-75	<35	NP-15
	40-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Hector:											
HeD, HeF----------	0-5	Stony fine sandy loam.	GM, GM-GC	A-2	15-40	40-50	35-45	30-40	20-30	<30	NP-6
	5-15	Stony fine sandy loam, stony sandy loam,	SM, ML, GM, GM-GC	A-4, A-2	0-20	55-100	55-100	45-100	30-65	<30	NP-6
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Holston:											
HoB, HoC, HoD-----	0-8	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4, A-2	0-5	80-100	75-100	65-100	30-75	<22	NP-6
	8-51	Clay loam-------	ML, CL-ML, SM-SC	A-4	0-5	80-100	75-100	50-100	40-80	21-35	5-10
	51-64	Clay----------	CL, CH, MH	A-7	0-3	90-100	85-100	85-95	80-90	48-70	25-40

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Linker:											
LkC, LkE----------	0-7	Fine sandy loam	SM, ML, GM	A-2, A-4	0-5	65-100	60-100	55-100	25-70	<30	NP-7
	7-38	Sandy clay loam, loam, clay loam.	CL, SC, SM, ML	A-4, A-6	0-10	90-100	80-100	70-100	40-80	<40	NP-18
	38-45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lyerly:											
LyA, LyB, LyC-----	0-6	Silt loam-------	CL	A-4, A-6	0	92-100	90-100	80-100	65-90	25-35	7-15
	6-22	Clay------------	CH	A-7-6	0	95-100	90-100	85-100	75-97	50-80	30-60
	22-32	Clay------------	CH	A-7-6	0	98-100	95-100	85-100	80-100	60-80	40-60
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Madison:											
MgB2, MgC2, MgD2, MgE2--------------	0-6	Gravelly clay loam.	SC, SM-SC, SM	A-2, A-4	0-3	75-90	60-90	50-90	30-45	<37	NP-10
	6-30	Clay, clay loam	MH	A-7	0-3	90-100	85-100	75-97	57-85	43-82	12-43
	30-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Montevallo:											
MsD, MsF----------	0-4	Very shaly silt loam.	SM, SC GM, SM-SC	A-2, A-4	0-5	40-70	35-60	25-55	20-45	<40	NP-10
	4-14	Very shaly silt loam, very shaly loam, Very shaly silty clay loam	SM, GC, SC, SM-SC	A-2, A-4, A-6	0-5	35-70	25-60	15-55	15-45	20-40	5-15
	14-48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Nella:											
[1]NTF:											
Nella part------	0-3	Cobbly loam-----	ML, CL, SM, SC	A-4	10-25	90-100	85-90	65-75	36-55	<30	NP-8
	3-70	Cobbly clay loam, gravelly clay loam, cobbly sandy clay loam.	CL, SC, CL-ML, SM-SC	A-4, A-6, A-2	0-30	75-95	60-90	45-70	30-60	25-40	6-20
Townley part----	0-5	Silt loam-------	ML, CL	A-4	0-2	80-98	70-95	65-90	50-65	<35	NP-10
	5-20	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-2	80-100	80-100	75-99	70-95	30-55	12-30
	20-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roanoke:											
Rn----------	0-11	Silt loam, loam.	ML, CL-ML, CL, SM	A-6, A-4	0	95-100	85-100	60-100	35-90	25-40	5-16
	11-60	Clay, silty clay, clay loam.	CH, MH, CL	A-7	0	90-100	85-100	85-100	65-95	45-60	22-36

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Rome:											
RoA, RoB	0-9	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	98-100	95-100	70-98	40-80	<25	NP-7
	9-53	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-99	55-90	20-40	7-15
	53-66	Clay loam, sandy clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	0	95-100	90-100	65-99	40-65	20-40	5-15
Shack:											
ShB, ShC, ShD, ShE	0-10	Cherty silt loam	SM, SM-SC, ML, GM	A-4	0	55-80	50-75	45-70	36-60	<30	NP-7
	10-31	Cherty clay loam, cherty silty clay loam, cherty loam.	CL, SC	A-6	0	60-80	50-80	40-75	36-75	30-40	11-14
	31-46	Cherty clay loam, cherty silty clay loam, cherty loam.	CL, SC	A-6, A-7-6	0-2	60-80	50-80	45-75	40-70	30-45	11-16
	46-67	Cherty clay loam, cherty clay.	CL, SC	A-6, A-7-6	0-5	60-80	50-80	45-80	40-75	35-49	15-25
Staser:											
St	0-36	Silt loam	CL, CL-ML, ML	A-4, A-6	0	90-100	80-100	60-85	55-80	20-35	3-15
	36-52	Silt loam, silty clay loam.	CL, ML, CL-ML, SC,	A-4, A-6	0-5	95-100	90-100	85-95	40-90	25-40	4-15
Subligna:											
SuB	0-5	Gravelly loam	SM, SM-SC,	A-2, A-4	0-20	50-75	50-60	40-55	30-49	<25	NP-7
	5-62	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	SM, SC	A-2, A-4, A-6	0-20	50-75	20-60	20-50	15-40	25-40	7-12
Tallapoosa:											
TaE2, TaF	0-4	Gravelly fine sandy loam.	SM, SM-SC, SC	A-2, A-4, A-5	0-10	80-85	65-75	55-65	35-50	38-48	1-9
	4-10	Gravelly silty loam, gravelly loam.	ML, CL, SM, SC	A-4, A-6	0-10	00-95	50-75	45-70	40-65	30-39	8-14
	10-40	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Tidings:											
TdC, TdD, TdF-----	0-4	Gravelly silt loam.	SM, SM-SC, ML, CL-ML	A-4	0	70-95	50-77	45-75	40-70	<30	NP-7
	4-16	Gravelly silt loam, gravelly loam, gravelly silty clay loam.	SC, CL, CL-ML, SM-SC	A-4	0	70-90	50-77	45-75	40-70	<30	4-10
	16-36	Gravelly loam, gravelly silty clay loam, gravelly clay loam.	SC, CL	A-6, A-7-6	0	70-95	50-77	45-75	40-70	30-50	11-35
	36-50	Variable--------	---	---	---	---	---	---	---	---	---
Toccoa:											
Tk----------	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	98-100	95-100	85-100	25-60	<30	NP-4
	9-60	Sandy loam, loam, fine sandy loam.	SM, ML	A-2, A-4	0	95-100	90-100	60-100	30-55	<30	NP-4
Townley:											
TnC, TnE, TnF-----	0-5	Silt loam-------	ML, CL	A-4	0-2	80-98	70-95	65-90	50-65	<35	NP-10
	5-20	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-2	80-100	80-100	75-99	70-95	30-55	12-30
	20-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---
[1]ToE:											
Townley part----	0-5	Silt loam-------	ML, CL	A-4	0-2	80-98	70-95	65-90	50-65	<35	NP-10
	5-20	Silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-2	80-100	80-100	75-99	70-95	30-55	12-30
	20-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Urban land part.											
Tupelo:											
Tu, Tv----------	0-12	Silt loam, clay loam.	CL-ML, ML	A-4, A-6	0	90-100	85-100	95-100	65-90	20-40	6-10
	12-19	Silty clay loam, silty clay, silt loam.	CL, CH	A-6, A-7	0	100	95-100	90-100	85-95	35-55	15-30
	19-46	Clay, silty clay	CH, MH, CL	A-7	0	95-100	95-100	90-100	75-95	48-70	25-40
Udorthents:											
[1]Ud.											
Wax:											
WaA, WaB----------	0-10	Loam----------	SM, SM-SC, ML, CL-ML	A-4	0	95-98	80-97	60-80	45-70	<30	NP-7
	10-30	Clay loam, loam, silty clay loam.	CL	A-6	0	95-98	80-97	65-85	60-75	25-35	8-20
	30-60	Very cherty clay loam, very cherty loam, very cherty sandy loam.	GM-GC, SM-SC	A-2-4, A-4	0-5	25-75	15-70	15-55	12-45	20-30	4-7

See footnote at end of table.

TABLE 10.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Whitwell:											
Wh	0-8	Silt loam	ML, CL-ML, CL	A-4	0-3	80-100	75-100	70-100	55-95	15-28	3-10
	8-60	Clay loam, loam, silty clay loam	CL, CL-ML, ML, SC	A-4, A-6	0-3	80-100	75-100	60-90	40-80	15-35	3-15
Wolftever:											
WoA, WoB	0-6	Silt loam	CL-ML, CL, ML	A-4, A-6	0	100	95-100	90-100	80-95	25-35	3-12
	6-12	Silty clay, silty clay loam, silt loam.	ML, CL	A-4, A-6	0	100	95-100	90-100	80-95	30-40	7-15
	12-58	Silty clay, silty clay loam, clay.	ML, MH	A-6, A-7	0	100	95-100	90-100	75-95	40-55	11-20

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

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion	
							Uncoated steel	Concrete
	In	In/hr	In/in	pH	Mmhos/cm			
Allen:								
AaB, AaC, AaD, AaE	0-8	0.6-2.0	0.14-0.19	4.5-5.5	<2	Low	Low	Moderate.
	8-52	0.6-2.0	0.15-0.18	4.5-5.5	<2	Low	Low	Moderate.
	52-70	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low	Low	Moderate.
Aragon:								
ArB, ArC, ArD, ArE	0-6	0.6-2.0	0.16-0.20	4.5-5.5	<2	Low	Moderate	High.
	6-15	0.6-2.0	0.12-0.17	3.6-5.5	<2	Low	Moderate	High.
	15-42	0.06-0.2	0.12-0.17	3.6-5.5	<2	Moderate	High	High.
	42-52	0.2-0.6	0.10-0.15	3.6-5.5	<2	Low	High	High.
	52-65	---	---	---	---	---	---	---
Bodine:								
BsE, BsF	0-6	2.0-6.0	0.06-0.11	3.6-5.5	<2	Low	Low	High.
	6-18	2.0-6.0	0.05-0.10	3.6-5.5	<2	Low	Low	High.
		2.0-6.0	0.05-0.10	3.6-5.5	<2	Low	Low	High.
	18-60	2.0-6.0	0.05-0.10	3.6-5.5	<2	Low	Low	High.
Cedarbluff:								
Cb	0-8	0.6-2.0	0.11-0.20	5.1-6.0	<2	Low	High	Moderate.
	8-12	0.6-2.0	0.18-0.20	5.1-6.0	<2	Low	High	Moderate.
	12-53	0.06-0.2	0.12-0.14	5.1-5.5	<2	Moderate	High	Moderate.
	53-62	0.06-0.2	0.08-0.10	5.1-5.5	<2	Moderate	High	Moderate.
Chewacla:								
Ck	0-30	0.6-2.0	0.15-0.24	5.1-6.5	<2	Low	High	Moderate.
	30-62	0.6-2.0	0.12-0.20	5.1-6.5	<2	Low	High	Moderate.
Conasauga:								
CnB, CnC	0-5	0.6-2.0	0.16-0.20	3.6-5.5	<2	Low	High	High.
	5-10	0.06-0.2	0.12-0.18	3.6-5.5	<2	Moderate	High	High.
	10-35	0.06-0.2	0.12-0.18	3.6-5.5	<2	Moderate	High	High.
	35-46	0.06-0.2	0.08-0.15	3.6-6.5	<2	Moderate	High	High.
[1]CrC:								
Conasauga part--	0-5	0.6-2.0	0.16-0.20	3.6-5.5	<2	Low	High	High.
	5-10	0.06-0.2	0.12-0.18	3.6-5.5	<2	Moderate	High	High.
	10-35	0.06-0.2	0.12-0.18	3.6-5.5	<2	Moderate	High	High.
	35-46	0.06-0.2	0.08-0.15	3.6-6.5	<2	Moderate	High	High.
Urban land part.								
Cunningham:								
CuB, CuC, CuD, CuE	0-5	0.6-2.0	0.15-0.22	4.5-6.0	<2	Low	Moderate	Moderate.
	5-36	0.06-0.2	0.12-0.18	4.5-5.5	<2	Moderate	High	High.
	36-60	0.06-0.2	0.05-0.08	4.5-5.5	<2	Low	Moderate	High.
CvB2, CvD2	0-5	0.2-0.6	0.12-0.20	4.5-6.0	<2	Low	High	Moderate.
	5-36	0.06-0.2	0.12-0.18	4.5-5.5	<2	Moderate	High	High.
	36-60	0.06-0.2	0.05-0.08	4.5-5.5	<2	Low	Moderate	High.
Decatur:								
DcB, DcC, DeD2, DeE2	0-9	0.6-2.0	0.18-0.20	4.5-6.0	<2	Low	High	Moderate.
	9-17	0.6-2.0	0.14-0.17	4.5-5.5	<2	Moderate	High	Moderate.
	17-78	0.6-2.0	0.12-0.16	4.5-5.5	<2	Moderate	High	Moderate.

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In	In/hr	In/in	pH	Mmhos/cm			
Dewey:								
DhB, DhC, DhD-----	0-6	0.6-2.0	0.18-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
	6-41	0.6-2.0	0.12-0.18	4.5-5.5	<2	Moderate	High---------	Moderate.
	41-71	0.6-2.0	0.12-0.17	4.5-5.5	<2	Moderate	High---------	Moderate.
Dowellton:								
Do----------	0-10	0.6-2.0	0.16-0.20	5.1-7.3	<2	Low-------	High---------	Moderate.
	10-19	0.06-0.2	0.12-0.16	5.1-7.3	<2	High------	High---------	Low.
	19-48	0.06-0.2	0.12-0.15	5.1-7.8	<2	High------	High---------	Low.
	48	---	---	---	---	----------	----------	---
Emory:								
Em----------	0-45	0.6-2.0	0.17-0.21	5.1-6.0	<2	Low-------	Low----------	Moderate.
	45-65	0.6-2.0	0.16-0.20	5.1-6.0	<2	Low-------	Moderate-----	Moderate.
Ennis:								
En----------	0-62	2.0-6.0	0.10-0.15	4.5-6.0	<2	Low-------	Low----------	Moderate.
Etowah:								
EtA, EtB, EtC-----	0-13	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
		0.6-2.0	0.16-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
	13-74	0.6-2.0	0.16-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
[1]EuC:								
Etowah part-----	0-13	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
		0.6-2.0	0.16-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
	13-74	0.6-2.0	0.16-0.20	4.5-5.5	<2	Low-------	Low----------	Moderate.
Urban land part.								
Euharlee:								
EvB, EvC----------	0-6	0.6-2.0	0.14-0.20	4.5-6.0	<2	Low-------	Moderate-----	High.
	6-16	0.6-2.0	0.15-0.21	4.5-5.5	<2	Low-------	Moderate-----	High.
	16-43	0.6-2.0	0.12-0.18	4.5-5.5	<2	Low-------	Moderate-----	High.
	43-57	0.2-0.6	0.10-0.14	4.5-5.5	<2	Low-------	Moderate-----	High.
	57-67	---	---	---	---	----------	----------	---
Fullerton:								
FuB, FuC, FuD,								
FuE, FuF, FvE2----	0-17	0.6-2.0	0.10-0.16	4.5-5.5	<2	Low-------	Low----------	Moderate.
	17-24	0.6-2.0	0.10-0.15	4.5-5.5	<2	Low-------	Moderate-----	Moderate.
	24-88	0.6-2.0	0.10-0.14	4.5-5.5	<2	Moderate	High---------	Moderate.
Grover:								
GgB, GgC, GgE-----	0-8	2.0-6.0	0.07-0.10	4.5-6.5	<2	Low-------	Moderate-----	Moderate.
	8-50	0.6-2.0	0.12-0.14	4.5-5.5	<2	Low-------	Moderate-----	Moderate.
	50-60	---	---	---	---	----------	----------	---
Guthrie Variant:								
GU----------	0-7	0.6-2.0	0.20-0.22	4.5-5.0	<2	Low-------	High---------	High.
	7-24	0.6-2.0	0.18-0.20	4.5-5.5	<2	Low-------	High---------	High.
	24-62	0.06-0.2	0.03-0.05	4.5-5.5	<2	Low-------	High---------	High.
Hartsells:								
HaB, HaC, HaD, HaE	0-7	2.0-6.0	0.12-0.18	3.6-5.5	<2	Low-------	Moderate-----	High.
	7-40	0.6-2.0	0.13-0.18	3.6-5.5	<2	Low-------	Moderate-----	High.
	40	---	---	---	---	----------	----------	---
Hector:								
HeD, HeF----------	0-5	2.0-6.0	0.05-0.10	5.1-6.5	<2	Low-------	Low----------	Moderate.
	5-15	2.0-6.0	0.08-0.15	4.5-5.5	<2	Low-------	Low----------	Moderate.
	15	---	---	---	---	----------	----------	---
Holston:								
HoB, HoC, HoD-----	0-8	0.6-2.0	0.15-0.20	4.5-5.5	<2	Low-------	Low----------	High.
	8-51	0.6-2.0	0.13-0.20	4.5-5.5	<2	Low-------	Moderate-----	High.
	51-64	0.2-0.6	0.10-0.13	4.5-5.5	<2	Low-------	Moderate-----	High.

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion	
							Uncoated steel	Concrete
	In	In/hr	In/in	pH	Mmhos/cm			
Linker:								
LkC, LkE	0-7	0.6-2.0	0.11-0.17	3.6-5.5	<2	Low	Low	High.
	7-38	0.6-2.0	0.11-0.20	3.6-5.5	<2	Low	Low	High.
	38-45	---	---	---	---	---	---	---
Lyerly:								
LyA, LyB, LyC	0-6	0.2-2.0	0.16-0.24	4.5-6.5	<2	Moderate	High	Moderate.
	6-22	<0.06	0.10-0.16	4.5-6.5	<2	High	High	Moderate.
	22-32	<0.06	0.10-0.14	5.1-7.3	<2	High	High	Low.
	32	---	---	---	---	---	---	---
Madison:								
MgB2, MgC2, MgD2, MgE2	0-6	2.0-6.0	0.11-0.15	4.5-6.0	<2	Low	High	Moderate.
	6-30	0.6-2.0	0.13-0.18	4.5-5.5	<2	Low	High	Moderate.
	30-60	---	---	---	---	---	---	---
Montevallo:								
MsD, MsF	0-4	0.6-2.0	0.09-0.18	4.5-6.0	<2	Low	Moderate	Moderate.
	4-14	0.6-2.0	0.02-0.12	4.5-6.0	<2	Low	Moderate	Moderate.
	14-48	---	---	---	---	---	---	---
Nella:								
[1]NTF:								
Nella part	0-3	0.6-2.0	0.08-0.15	4.5-5.5	<2	Low	Low	Moderate.
	3-70	0.6-2.0	0.07-0.14	4.5-5.5	<2	Low	Moderate	Moderate.
Townley part	0-5	0.6-2.0	0.12-0.14	4.2-5.5	<2	Low	Moderate	High.
	5-20	0.06-0.2	0.12-0.18	4.2-5.5	<2	Moderate	Moderate	High.
	20-60	---	---	---	---	---	---	---
Roanoke:								
Rn	0-11	0.6-2.0	0.14-0.20	4.5-5.5	<2	Low	High	High.
	11-60	0.06-0.2	0.10-0.19	4.5-5.5	<2	Moderate	High	High.
Rome:								
RoA, RoB	0-9	0.6-2.0	0.12-0.22	4.5-6.0	<2	Low	Low	Moderate.
	9-53	0.6-2.0	0.14-0.20	4.5-5.5	<2	Low	Low	High.
	53-66	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low	Low	High.
Shack:								
ShB, ShC, ShD, ShE	0-10	0.6-2.0	0.10-0.18	4.5-6.0	<2	Low	Low	High.
	10-31	0.6-2.0	0.12-0.16	4.5-5.5	<2	Low	Moderate	High.
	31-46	0.2-0.6	0.10-0.14	4.5-5.5	<2	Low	Moderate	High.
	46-67	0.6-2.0	0.12-0.18	4.5-5.5	<2	Low	Moderate	High.
Staser:								
St	0-36	0.6-2.0	0.15-0.22	5.6-7.3	<2	Low	Low	Low.
	36-52	0.6-6.0	0.07-0.18	5.6-7.3	<2	Low	Low	Low.
Subligna:								
SuB	0-5	2.0-6.0	0.05-0.10	4.5-6.0	<2	Low	Low	High.
	5-62	6.0-20	0.07-0.13	4.5-5.5	<2	Low	Low	High.
Tallapoosa:								
TaE2, TaF	0-4	0.6-2.0	0.15-0.20	4.5-5.0	<2	Low	Low	High.
	4-10	0.6-2.0	0.18-0.22	4.5-5.0	<2	Low	Low	High.
	10-40	---	---	---	---	---	---	---
Tidings:								
TdC, TdD, TdF	0-4	0.6-2.0	0.14-0.18	4.5-6.0	<2	Low	Low	High.
	4-16	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low	Low	High.
	16-36	0.6-2.0	0.12-0.17	4.5-5.5	<2	Low	Low	High.
	36-50	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion	
							Uncoated steel	Concrete
	In	In/hr	In/in	pH	Mmhos/cm			
Toccoa:								
Tk	0-9	2.0-6.0	0.09-0.12	5.1-6.5	<2	Low	Low	Moderate.
	9-60	2.0-6.0	0.06-0.12	5.1-6.5	<2	Low	Low	Moderate.
Townley:								
TnC, TnE, TnF	0-5	0.6-2.0	0.12-0.14	4.2-5.5	<2	Low	Moderate	High.
	5-20	0.06-0.2	0.12-0.18	4.2-5.5	<2	Moderate	Moderate	High.
	20-60	---	---	---	---	---	---	---
[1]ToE:								
Townley part	0-5	0.6-2.0	0.12-0.14	4.2-5.5	<2	Low	Moderate	High.
	5-20	0.06-0.2	0.12-0.18	4.2-5.5	<2	Moderate	Moderate	High.
	20-60	---	---	---	---	---	---	---
Urban land part.								
Tupelo:								
Tu, Tv	0-12	0.6-2.0	0.18-0.22	5.1-6.0	<2	Low	High	Low.
	12-19	0.6-2.0	0.17-0.21	5.1-6.0	---	Moderate	High	Low.
	19-46	0.06-0.2	0.12-0.16	5.6-7.8	---	High	High	Low.
Udorthents:								
[1]Ud.								
Wax:								
WaA, WaB	0-10	0.6-2.0	0.12-0.16	4.5-6.0	<2	Low	Moderate	Moderate.
	10-30	0.6-2.0	0.14-0.18	4.5-5.5	<2	Low	Moderate	Moderate.
	30-60	0.06-0.2	0.02-0.05	4.5-5.5	<2	Low	Moderate	Moderate.
Whitwell:								
Wh	0-8	0.6-2.0	0.15-0.20	4.5-6.0	<2	Low	Moderate	Moderate.
	8-60	0.6-2.0	0.14-0.20	4.5-5.5	<2	Low	Moderate	Moderate.
Wolftever:								
WoA, WoB	0-6	0.6-2.0	0.17-0.20	4.5-5.5	<2	Low	High	High.
	6-12	0.2-0.6	0.15-0.18	4.5-5.5	<2	Low	High	High.
	12-58	0.2-0.6	0.13-0.17	4.5-5.5	<2	Moderate	High	High.

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

TABLE 12.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness
					Ft			In		In	
Allen: AaB, AaC, AaD, AaE	B	None	---	---	>6.0	---	---	>60	---	---	---
Aragon: ArB, ArC, ArD, ArE	C	None	---	---	>6.0	---	---	>60	---	---	---
Bodine: BsE, BsF	B	None	---	---	>6.0	---	---	>60	---	---	---
Cedarbluff: Cb	C	Frequent	Brief	Nov-Apr	0.5-1.0	Apparent	Nov-Mar	>60	---	---	---
Chewacla: Ck	C	Common	Brief	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	---	---
Conasauga: CnB, CnC	C	None	---	---	>6.0	---	---	20-40	Rippable	---	---
[1]CrC: Conasauga part	C	None	---	---	>6.0	---	---	20-40	Rippable	---	---
Urban land part.											
Cunningham: CuB, CuC, CuD, CuE, CvB2, CvD2	C	None	---	---	>6.0	---	---	40-60	Rippable	---	---
Decatur: DcB, DcC, DeD2, DeE2	B	None	---	---	>6.0	---	---	>60	---	---	---
Dewey: DhB, DhC, DhD	B	None	---	---	>6.0	---	---	>60	---	---	---
Dowellton: Do	D	None	---	---	0.5-1.0	Perched	Dec-Mar	40-60	Hard	---	---
Emory: Em	B	None to common.	Very brief	Dec-Mar	5.0-6.0	Apparent	Dec-Mar	>60	---	---	---
Ennis: En	B	Rare to occasional.	Very brief	Dec-Mar	>6.0	---	---	>60	---	---	---
Etowah: EtA, EtB, EtC	B	None	---	---	>6.0	---	---	>60	---	---	---
[1]EuC: Etowah part	B	None	---	---	>6.0	---	---	>60	---	---	---
Urban land part.											
Euharlee: EvB, EvC	C	None	---	---	>6.0	---	---	>60	---	---	---

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness
					Ft			In		In	
Fullerton: FuB, FuC, FuD, FuE, FuF, FvE2	B	None	---	---	>6.0	---	---	>60	---	---	---
Grover: GgB, GgC, GgE	B	None	---	---	>6.0	---	---	>60	---	---	---
Guthrie Variant: GU	D	Rare to common.	Brief	Jan-Apr	0.5-1.0	Perched	Jan-Apr	>60	---	---	---
Hartsells: HaB, HaC, HaD, HaE	B	None	---	---	>6.0	---	---	20-40	Hard	---	---
Hector: HeD, HeF	D	None	---	---	>6.0	---	---	10-20	Hard	---	---
Holston: HoB, HoC, HoD	B	None	---	---	>6.0	---	---	>60	---	---	---
Linker: LkC, LkE	B	None	---	---	>6.0	---	---	20-40	Hard	---	---
Lyerly: LyA, LyB, LyC	D	None	---	---	>6.0	---	---	20-40	Hard	---	---
Madison: MgB2, MgC2, MgD2, MgE2	B	None	---	---	>6.0	---	---	>60	---	---	---
Montevallo: MsD, MsF	D	None	---	---	>6.0	---	---	10-20	Rippable	---	---
Nella: [1]NTF:											
Nella part	B	None	---	---	>6.0	---	---	>60	---	---	---
Townley part	C	None	---	---	>6.0	---	---	20-40	Rippable	---	---
Roanoke: Rn	D	Frequent	Brief	Nov-Jun	0-1.0	Apparent	Nov-May	>60	---	---	---
Rome: RoA, RoB	B	None to rare	---	---	>6.0	---	---	>60	---	---	---
Shack: ShB, ShC, ShD, ShE	B	None	---	---	2.0-4.0	Perched	Jan-Mar	>60	---	---	---
Staser: St	B	Occasional	Very brief	Dec-Mar	3.0-4.0	Apparent	Dec-Mar	>60	---	---	---
Subligna: SuB	B	Rare to occasional.	Very brief	Jan-Mar	>6.0	---	---	>60	---	---	---
Tallapoosa: TaE2, TaF	C	None	---	---	>6.0	---	---	10-20	Rippable	---	---
Tidings: TdC, TdD, TdF	B	None	---	---	>6.0	---	---	40-60	Hard	---	---
Toccoa: Tk	B	Common	Brief	Jan-Dec	2.5-5.0	Apparent	Dec-Apr	>60	---	---	---

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness
					Ft			In		In	
Townley: TnC, TnE, TnF	C	None	---	---	>6.0	---	---	20-40	Rippable	---	---
[1]ToE: Townley part	C	None	---	---	>6.0	---	---	20-40	Rippable	---	---
Urban land part.											
Tupelo: Tu, Tv	D	None	---	---	1.0-2.0	---	Nov-Mar	40-70	Hard	---	---
Udorthents: [1]Ud											
Wax: WaA, WaB	C	Common	Very brief	Jan-Apr	1.5-3.0	Perched	Dec-Apr	>60	---	---	---
Whitwell: Wh	C	None to common.	Very brief	Dec-Mar	2.0-3.0	Apparent	Dec-Mar	>60	---	---	---
Wolftever: WoA, WoB	C	None to common.	Very brief	Dec-Mar	3.0-4.0	Apparent	Dec-Mar	>60	---	---	---

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

TABLE 13.--ENGINEERING TEST DATA

[Test performed by State Highway Department of Georgia in accordance with standard procedures of the American Association of State Highway Officials (AASHTO)(1)]

Soil name	Report No.	Depth	Maximum dry density[1]	Optimum moisture	Volume change in percent			Mechanical analyses[2]								Liquid limit	Plasticity index	Classification	
								Percentage passing sieve				Percentage smaller than							
					Shrinkage	Swell	Total volume change	No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO[3]	Unified[4]
CHATTOOGA COUNTY																			
Allen, fine sandy loam, .5 mile west of Melo at railroad crossing and Georgia Highway 48, and .8 mile north of dirt road. (modal)	S70-Ga	-27-																	
	12-1	0-8	115	11	1.0	4.1	5.1	98	96	93	54	43	35	14	9	SIC	[5]NP	A-4(0)	ML
	12-3	11-84	99	19	4.2	1.4	5.6	92	84	83	60	54	50	41	36	38	12	A-6(4)	ML
Allen, fine sandy loam, 2 miles west of Crystal Spring, .25 mile north of dirt road intersection, east side of dirt road. (more fines in 52-70 inch layer than modal)	15-1	0-8	121	11	0.4	2.1	2.5	92	87	85	41	34	29	16	12	SIC	NP	A-4(0)	SM
	15-3	18-52	107	18	3.0	1.8	4.8	97	95	94	59	52	49	34	28	31	10	A-4(4)	CL
	15-4	52-70	98	23	4.0	0.9	4.9	100	100	95	64	60	55	43	38	43	11	A-7-5(6)	ML
Hartsells, fine sandy loam, 1,200 feet south of Walker County line and 2-1/4 miles straight east of Alabama state line. (modal)	S69-Ga	-27-																	
	4-1	0-3	87	23	2.3	9.9	12.2	100	99	95	43	35	24	10	6	SIC	NP	A-4(0)	SM
	4-2	3-14	112	13	1.7	1.4	3.1	100	100	97	55	47	41	25	17	SIC	NP	A-4(0)	ML
	4-3	14-24	108	15	5.2	8.1	13.2	100	100	98	57	52	47	30	23	SIC	NP	A-4(0)	ML
Hartsells, fine sandy loam, 500 feet north of Georgia and Alabama state line on Highway 58. (coarser textured throughout than modal)	7-1	0-2	92	21	1.2	7.1	8.3	95	93	90	41	32	21	10	5	SIC	NP	A-4(0)	SM
	7-3	2-20	109	14	1.2	4.4	5.6	96	92	90	45	38	30	15	9	SIC	NP	A-4(0)	SM
	7-4	20-24	106	17	1.7	10.9	12.6	96	94	93	35	44	41	23	18	SIC	NP	A-4(0)	ML
Hartsells, fine sandy loam, 1 mile west of Cloudland, Georgia, 500 feet east of Alabama-Georgia state line. (coarser textured in 11 to 27 inch layer than modal)	9-2	2-7	110	15	0.4	4.4	4.8	96	91	90	44	37	33	16	10	SIC	NP	A-4(0)	SM
	9-4	11-27	115	14	1.2	2.4	3.6	95	91	89	49	43	29	24	17	SIC	NP	A-4(0)	SM
Hector, stony fine sandy loam 500 feet northeast of Georgia and Alabama state line on Highway 58, 3.12 miles northeast on paved county road, .12 mile west on dirt road, 75 feet north of dirt road. (Modal)	8-2	1-5	96	20	2.2	6.7	8.9	96	91	89	42	38	35	17	12	SIC	NP	A-4(0)	SM
	8-3	5-15	106	16	1.7	4.1	5.8	84	82	79	41	38	37	22	16	SIC	NP	A-4(0)	SM

See footnotes at end of table.

TABLE 13.--ENGINEERING TEST DATA--Continued

Soil name	Report No.	Depth	Maximum dry density[1]	Optimum moisture	Volume change in percent			Mechanical analyses[2]								Liquid limit	Plasticity index	Classification	
								Percentage passing sieve				Percentage smaller than							
					Shrinkage	Swell	Total volume change	No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO[3]	Unified[4]
FLOYD COUNTY																			
Whitwell, silt loam, Floyd County, Georgia, 3.4 miles, south of intersection of Turner Road with Mays Bridge Road, 200 yards north of Coosa River. (modal)	S68-Ga-57-																		
	18-1	0-8	101	19	8.3	14.9	23.2	100	100	99	82	78	65	35	24	29	6	A-4(4)	ML
	18-4	23-36	105	18	5.5	14.1	17.6	100	100	99	75	72	60	41	34	35	11	A-6(8)	CL
	18-6	48-55	114	24	3.2	12.7	15.9	96	93	92	56	54	63	30	24	28	8	A-4(2)	CL
Wolftever, silty clay loam, Floyd County, Georgia, .8 mile south of Georgia Highway 100 from Coosa, Georgia Post Office, 3.7 miles west southwest on Mortons Bend Road. (modal)	S66-Ga-57-																		
	5-1	0-8	99	21	7.2	19.8	27.0	100	100	100	89	86	74	43	29	33	8	A-4(8)	ML
	5-3	15-23	98	23	9.0	8.5	17.5	100	100	100	93	92	82	56	43	46	17	A-7-6(18)	ML
	5-5	38-55	100	22	9.2	13.3	22.5	100	100	100	88	86	72	46	34	35	11	A-6(10)	CL
POLK COUNTY																			
Shack, cherty silt loam, 1.0 mile east on Highway 6 from Northview Cemetery then south on dirt road 1.5 miles then east 0.2 mile.	S69-Ga-115-																		
	7-1	0-4	113	13	0.7	5.5	6.2	57	52	48	42	38	34	18	8	SIC	NP	A-4(0)	SM
	7-3	8-19	104	20	1.1	1.9	3.0	74	71	67	63	62	58	44	31	39	14	A-6(7)	CL
	7-6	40-62	96	24	2.7	4.3	7.0	78	73	70	66	65	63	54	38	49	17	A-7-5(12)	ML

[1]Based on AASHTO Designation T 99-70, Method A.

[2]Mechanical analyses according to the AASHTO Designation T88-70. Results by this procedure frequently 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-size fractions are calculated on the basis of all the material, including the coarser than 2mm. in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and that material coarser than 2mm. in diameter is excluded from calculations of grain-size 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-145-66.

[4]Based on the Unified Soil Classification System (2).

[5]NP=nonplastic.

TABLE 14.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Allen	Fine-loamy, siliceous, thermic Typic Paleudults
Aragon	Clayey, kaolinitic, thermic Typic Hapludults
Bodine	Loamy-skeletal, siliceous, thermic Typic Paleudults
Cedarbluff	Fine-loamy, siliceous, thermic Fragiaquic Paleudults
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Conasauga	Fine, mixed, thermic Typic Hapludalfs
Cunningham	Clayey, mixed, thermic Typic Hapludults
Decatur	Clayey, kaolinitic, thermic Rhodic Paleudults
Dewey	Clayey, kaolinitic, thermic Typic Paleudults
Dowellton	Very-fine, mixed, thermic Vertic Ochraqualfs
Emory	Fine-silty, siliceous, thermic Fluventic Umbric Dystrochrepts
Ennis	Fine-loamy, siliceous, thermic Fluventic Dystrochrepts
Etowah	Fine-loamy, siliceous, thermic Typic Paleudults
Euharlee	Fine-loamy, siliceous, thermic Typic Hapludults
Fullerton	Clayey, kaolinitic, thermic Typic Paleudults
Grover	Fine-loamy, micaceous, thermic Typic Hapludults
Guthrie Variant	Clayey-skeletal, kaolinitic, thermic Typic Paleaquults
Hartsells	Fine-loamy, siliceous, thermic Typic Hapludults
Hector	Loamy, siliceous, thermic Lithic Dystrochrepts
Holston	Fine-loamy, siliceous, thermic Typic Paleudults
Linker	Fine-loamy, siliceous, thermic Typic Hapludults
Lyerly	Very-fine, mixed, thermic Vertic Hapludalfs
Madison	Clayey, kaolinitic, thermic Typic Hapludults
Montevallo	Loamy-skeletal, mixed, thermic, shallow Typic Dystrochrepts
Nella	Fine-loamy, siliceous, thermic Typic Paleudults
Roanoke	Clayey, mixed, thermic Typic Ochraquults
Rome	Fine-loamy, mixed, thermic Typic Hapludults
Shack	Fine-loamy, siliceous, thermic Fragic Paleudults
Staser	Fine-loamy, mixed, thermic Cumulic Hapludolls
Subligna	Loamy-skeletal, siliceous, thermic Typic Hapludults
Tallapoosa	Loamy, micaceous, thermic, shallow Ochreptic Hapludults
Tidings	Fine-loamy, mixed, thermic Typic Hapludults
Toccoa	Coarse-loamy, mixed, nonacid, thermic Typic Udifluvents
Townley	Clayey, mixed, thermic Typic Hapludults
Tupelo	Fine, mixed, thermic Aquic Hapludalfs
Udorthents	Udorthents
Wax	Fine-loamy, siliceous, thermic Typic Fragiudults
Whitwell	Fine-loamy, siliceous, thermic Aquic Hapludults
Wolftever	Clayey, mixed, thermic Aquic Hapludults

TABLE 15.--TEMPERATURE AND PRECIPITATION DATA

[Weather station at Rome, Georgia. Period of record, 1951-1973]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	F	F	F	F	F		In	In	In		In
January----	51.1	29.0	40.1	73	5	17	4.87	3.15	6.43	8	.7
February---	55.2	31.1	43.2	75	9	46	4.80	2.90	6.49	8	.6
March------	62.9	37.4	50.1	83	18	121	6.15	3.83	8.24	8	.4
April------	74.2	46.6	60.4	89	28	316	4.99	3.42	6.43	7	.0
May--------	81.5	54.5	68.0	93	36	558	4.23	1.87	6.14	6	.0
June-------	87.9	63.1	75.5	100	47	765	3.70	2.12	4.99	6	.0
July-------	90.1	67.1	78.6	99	54	887	4.79	2.72	6.48	8	.0
August-----	90.0	66.1	78.1	98	54	871	3.11	1.33	4.55	6	.0
September--	84.7	60.1	72.4	97	41	672	4.04	1.93	5.76	5	.0
October----	74.2	47.1	60.6	90	26	335	2.75	1.08	4.12	5	.0
November---	62.4	36.0	49.2	81	17	63	3.38	2.05	4.57	6	.0
December---	53.8	31.3	42.5	74	10	44	5.33	2.80	7.40	8	.5
Year-----	72.3	47.5	59.9	101	3	4,695	52.14	45.69	58.41	81	2.2

[1]A growing degree day is an index of the amount of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 F.).

TABLE 16.--FREEZE DATES IN SPRING AND FALL

[Weather station at Rome, Georgia. Period of record, 1951-1973]

Probability	Minimum temperature		
	24 F. or lower	28 F. or lower	32 F. or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 3	April 12	April 23
2 years in 10 later than--	March 25	April 7	April 19
5 years in 10 later than--	March 8	March 27	April 10
First freezing temperature in fall:			
1 year in 10 earlier than--	October 27	October 23	October 15
2 years in 10 earlier than--	November 2	October 27	October 19
5 years in 10 earlier than--	November 14	November 2	October 27

TABLE 17.--GROWING SEASON LENGTH

[Weather station at Rome, Georgia. Period of record, 1951-1973]

Probability	Daily minimum temperature during growing season		
	Higher than 24 F.	Higher than 28 F.	Higher than 32 F.
	Days	Days	Days
9 years in 10	228	202	187
8 years in 10	235	208	191
5 years in 10	250	219	200
2 years in 10	265	230	208
1 year in 10	273	236	212

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