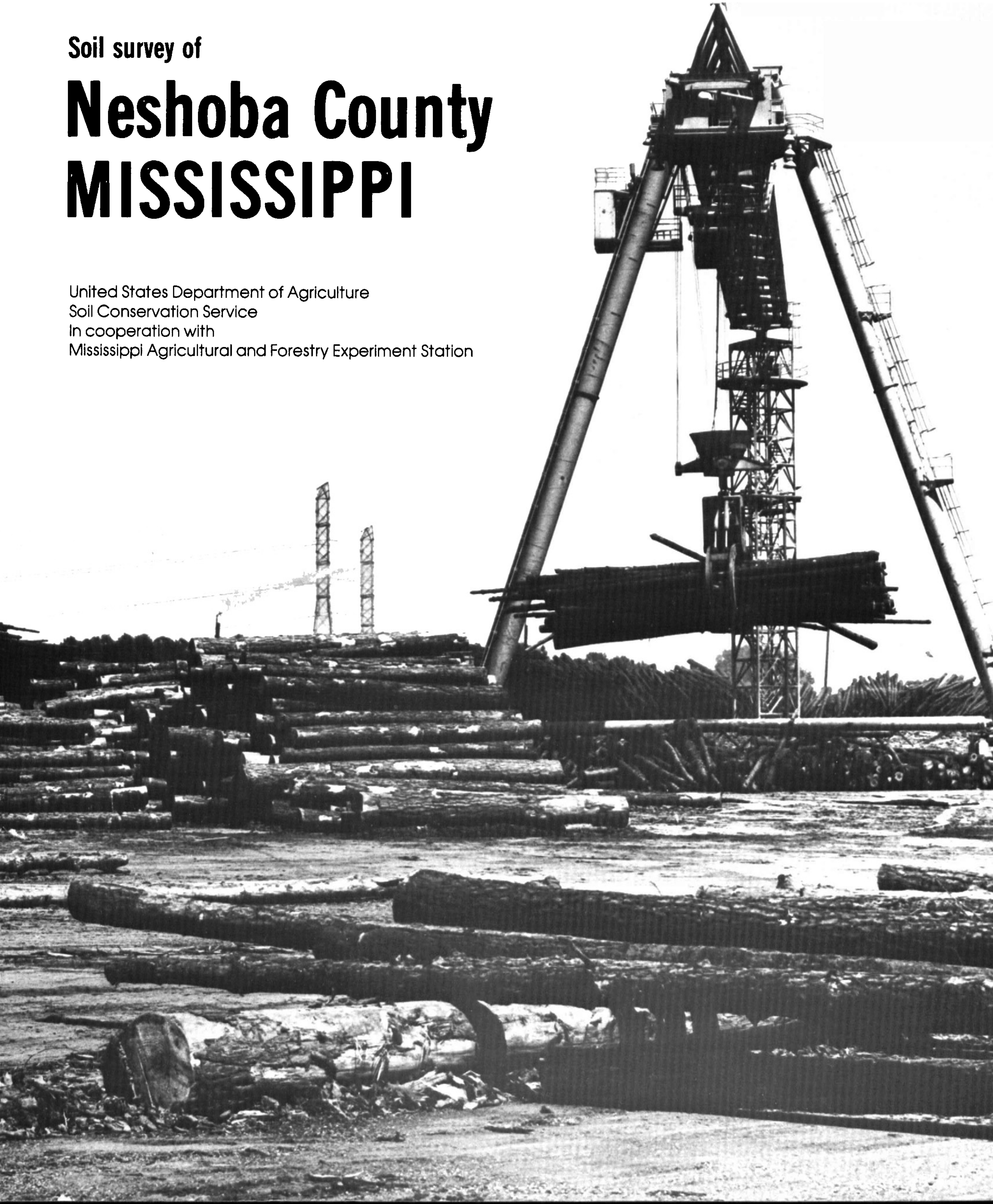
Soil survey of

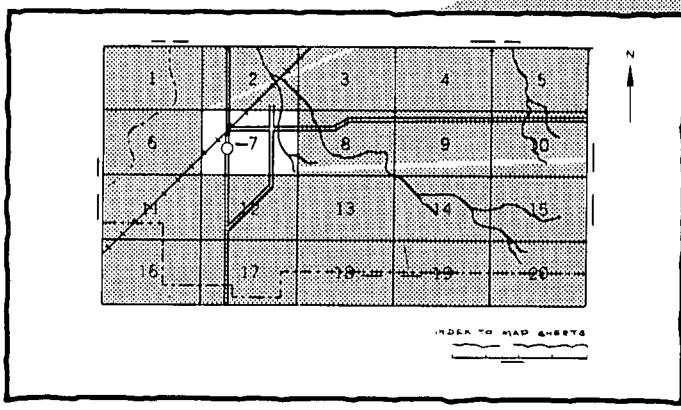
Neshoba County MISSISSIPPI

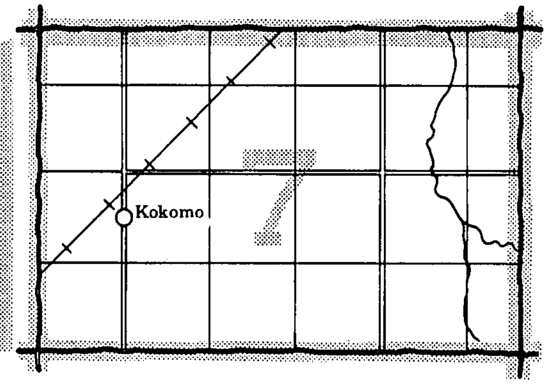
United States Department of Agriculture
Soil Conservation Service
In cooperation with
Mississippi Agricultural and Forestry Experiment Station



HOW TO USE

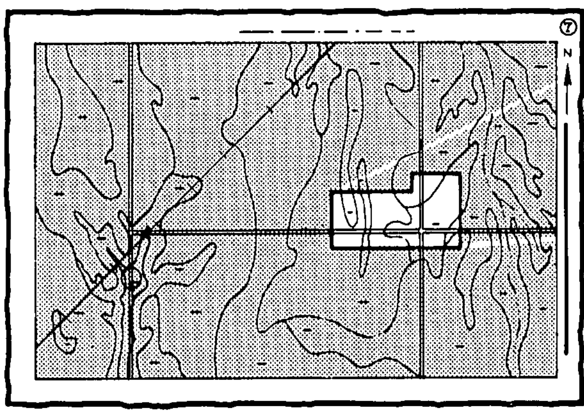
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

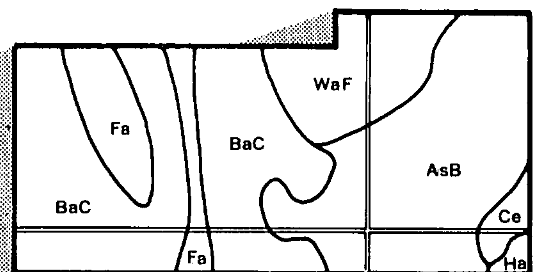




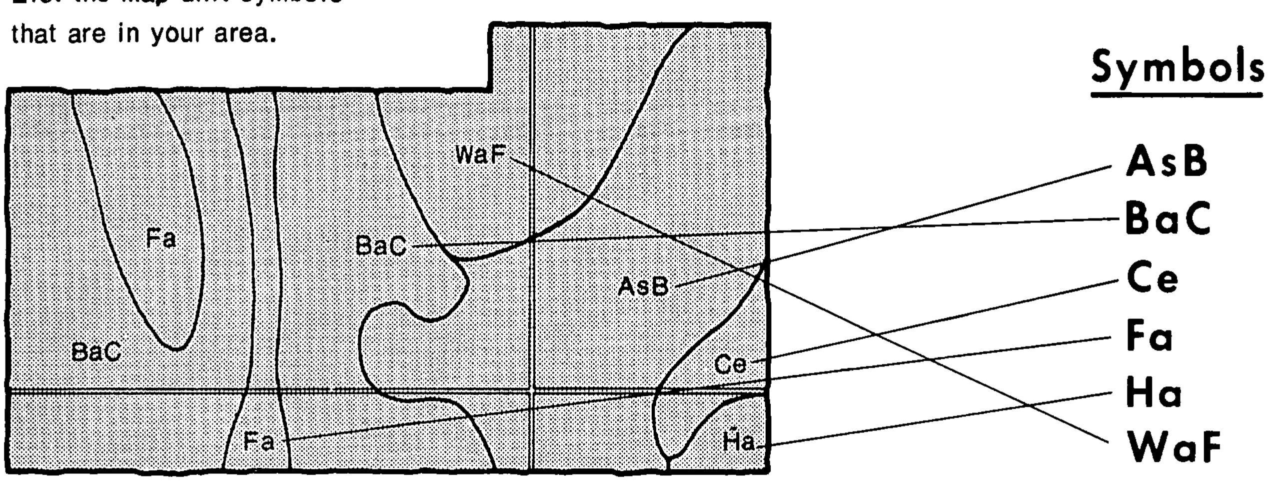
2. Note the number of the map sheet and turn to that sheet.

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



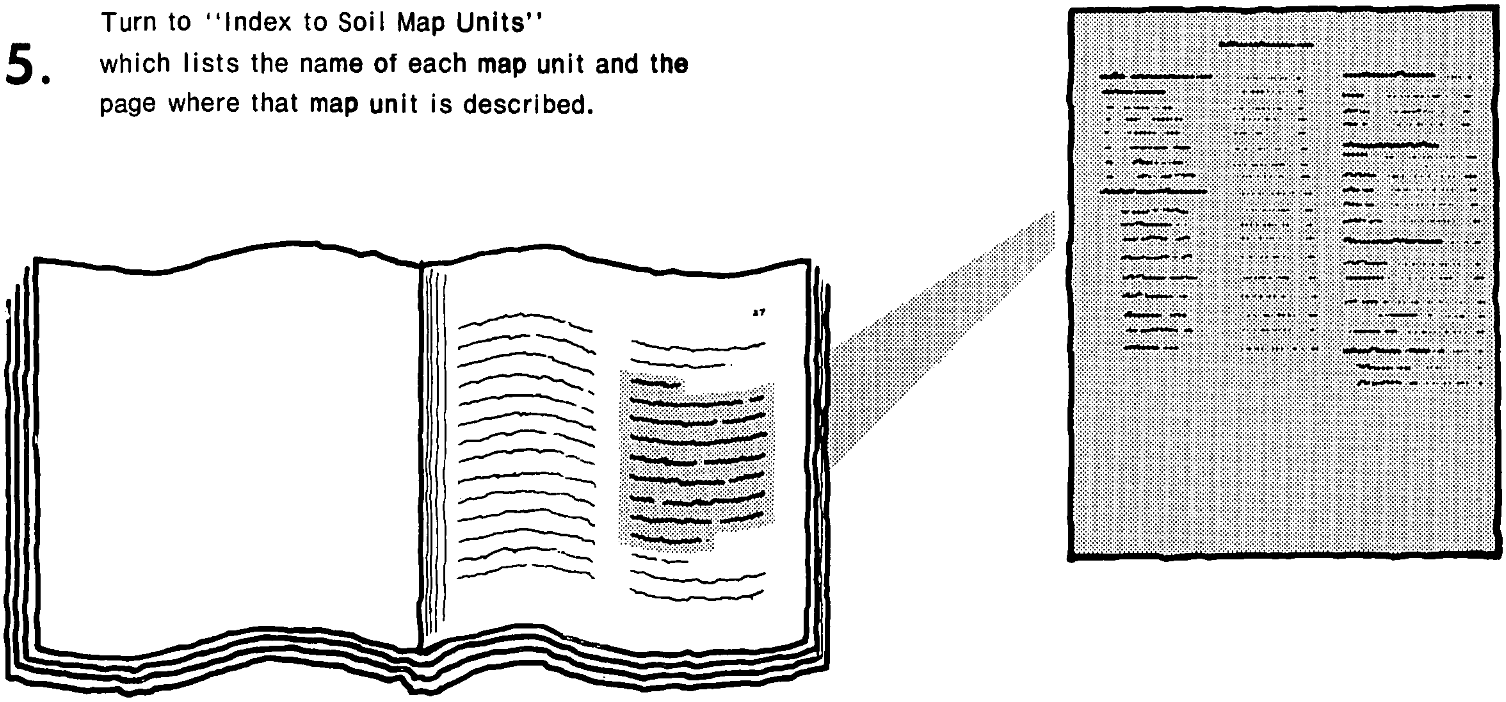


4. List the map unit symbols that are in your area.

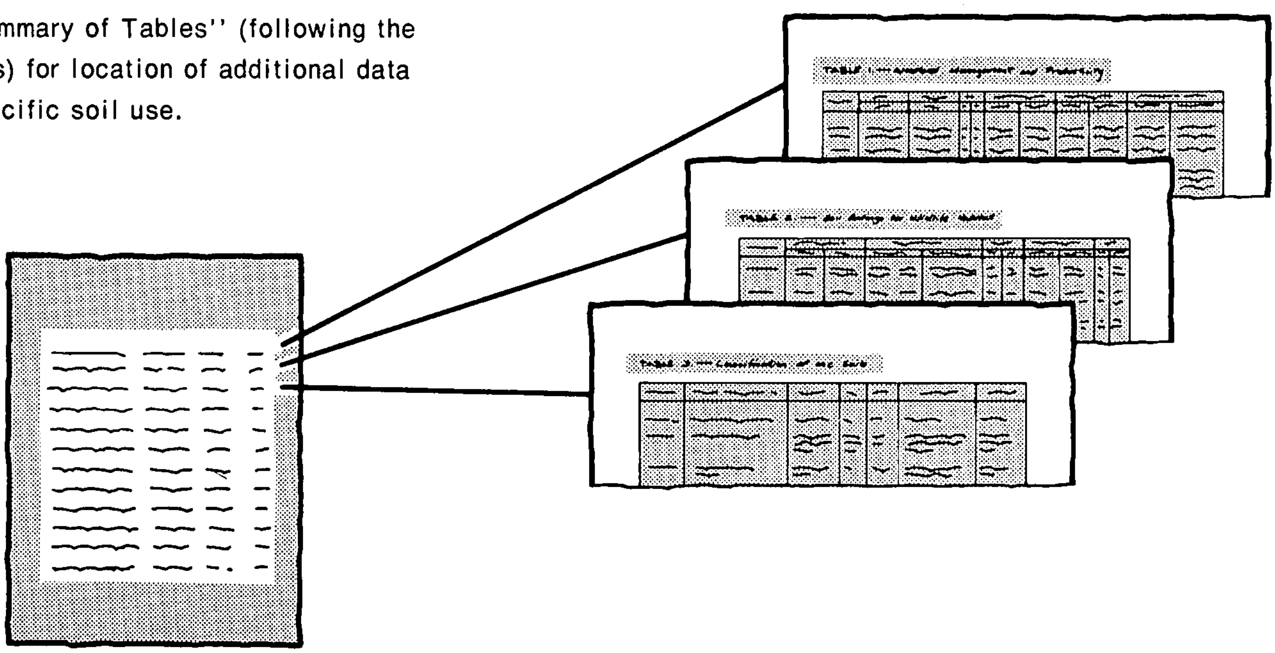


THIS SOIL SURVEY

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 soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. 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 performed in the period 1971-78. Soil names and descriptions were approved in March, 1979. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979. This survey was made cooperatively by the Soil Conservation Service and the Mississippi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Neshoba County Soil and Water Conservation District.

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

Cover: Giant crane unloading logs at lumbermill near Philadelphia, on Ora fine sandy loam, 5 to 8 percent slopes, eroded. Over 202,000 acres, or about 56 percent, of Neshoba County is classified as commercial forest.

contents

soil series

Issued April 1981

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summary of tables

foreword

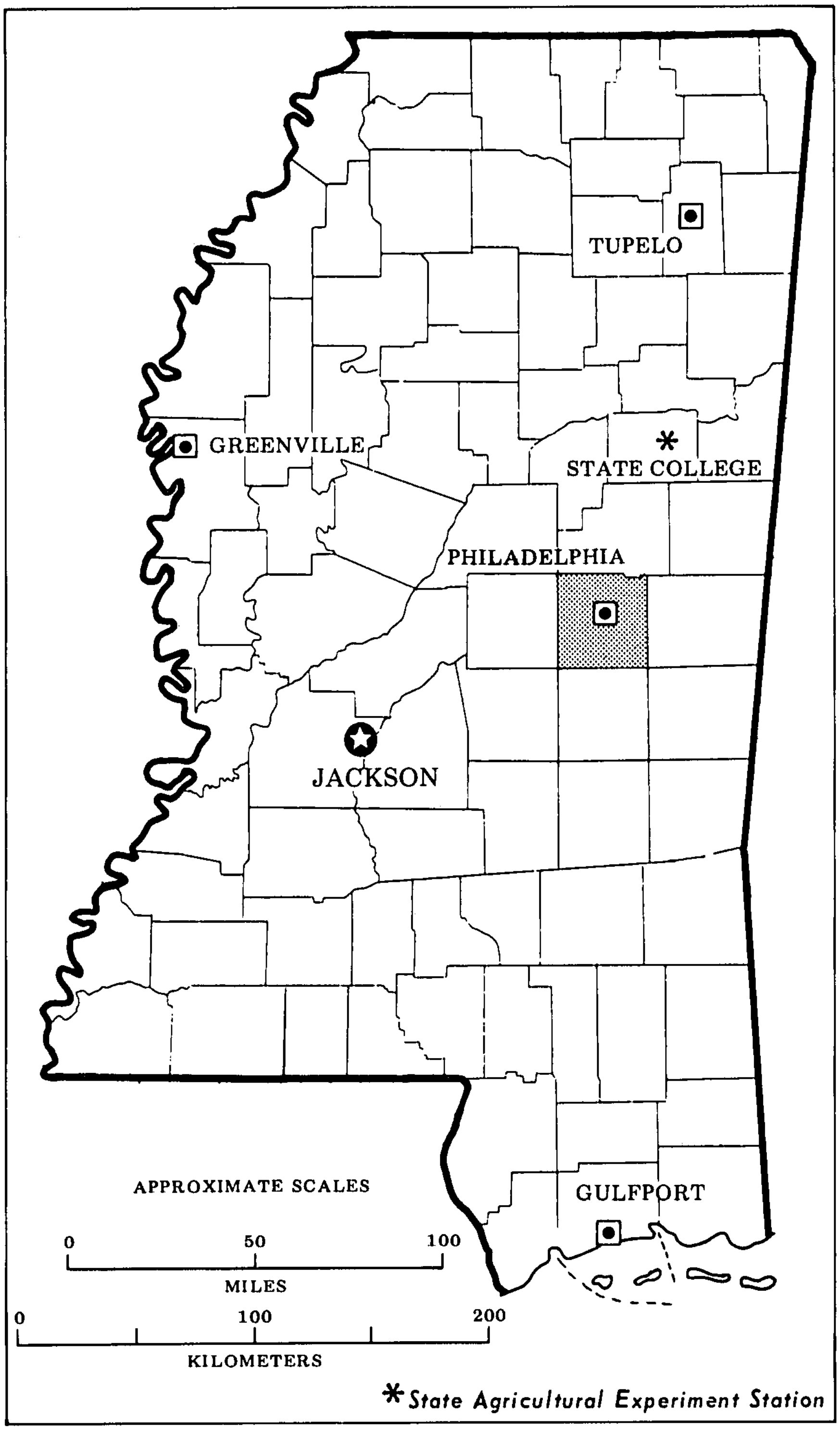
This soil survey contains information that can be used in land-planning programs in Neshoba County, Mississippi. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and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

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

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

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

Chester F. Bellard
State Conservationist
Soil Conservation Service



Location of Neshoba County in Mississippi.

soil survey of
Neshoba County, Mississippi

By Henry S. Galberry, Soil Conservation Service

Fieldwork by Henry S. Galberry, John W. Keyes, and Paul R. Brass, Soil Conservation Service

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

NESHOBA COUNTY is in the east-central part of Mississippi, and it has an area of about 568 square miles, or 363,520 acres. Philadelphia, the county seat, is near the center of the county. The population of the county is about 21,000, according to 1970 census (*26*).

The county is bounded on the north by Winston County, on the east by Kemper County, on the south by Newton County, and on the west by Leake County. Neshoba County is about 24 miles long from north to south and is about 23 miles wide from east to west.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent counties. Differences are the result of more information on soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

general nature of the county

This section gives general information concerning the settlement, physiography, and climate in the county.

settlement

The settlers of Neshoba County were the Choctaw Indians, from whose language the name Neshoba, meaning wolf, was taken.

The early immigrants to the county were principally from Alabama, South Carolina, North Carolina, Georgia, Tennessee, Kentucky, and Virginia.

Neshoba County was created out of land purchased from the Choctaw Indians. The land had been part of an area granted to them by the Treaty of Dancing Rabbit Creek.

The original county was larger, but in 1836 the people in the southern part of the county wanted the county divided. This was done—the northern part became the present Neshoba County and the southern part of the county became Newton County.

The Pearl River was an important waterway for the early settlers. Boats were used to send produce—beeswax, lumber, cotton, hides, eggs, poultry—to Jackson, Miss., and to bring back such supplies as flour, sugar, coffee, and cloth. The railroad, which runs north and south in the county, was completed just before 1907.

physiography

Neshoba County lies within the Coastal Plain physiographic province of the United States.

The county is generally hilly. It has narrow ridgetops, sloping to steep hillsides, and narrow to medium wide bottom land. Elevation ranges from about 320 feet above sea level to about 650 feet in the northwestern part of the county.

The Pearl River is the main drainageway for most of the county; part of the county is drained by tributaries of the Pascagoula River. Some of the main creeks that flow into the Pearl River from the north are Hurricane, Jofuska, Noxapater, and Pinishook Creeks and from the south are Beasha, Bogue Chitto, and Kentawka Creeks. Sipsey Creek provides drainage for the southwestern part of the county, and Chunky Creek provides drainage for the southeastern part.

climate

Prepared by the National Climatic Center, Asheville, N.C.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Philadephia, Miss., 1951 to 1975. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 46 degrees F, and the average daily minimum temperature is 34 degrees. The lowest temperature on record, which occurred at Philadephia on January 12, 1962, is -3 degrees. In summer the average temperature is 79 degrees, and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred on June 15, 1963, is 103 degrees.

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

The total annual precipitation is 54 inches. Of this, 26 inches, or 50 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 13 inches. The heaviest 1-day rainfall during the period of record was 6.1 inches on April 12, 1962. Thunderstorms occur on about 60 days each year, and most occur in summer.

Snowfall is rare. In 80 percent of the winters, there is no measurable snowfall. In 20 percent, the snowfall, usually of short duration, is more than 1 inch. The heaviest 1-day snowfall on record was more than 5 inches.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 65 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in March.

Severe local storms, including tornadoes, strike occasionally in or near the area. They are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane which has moved inland causes extremely heavy rains for 1 to 3 days.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. 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; and the kinds of rock. They dug many holes to study 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 little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management 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 can be used by farmers, and woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, 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 can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

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

Each map unit is rated for *cultivated crops, woodland, urban uses,* and *wildlife habitat.* Cultivated crops are those grown extensively in the survey area. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. The wildlife habitat potential of each unit is rated for openland wildlife, woodland wildlife, and wetland wildlife.

Descriptions of the general map units follow.

dominantly nearly level soils that are well drained to poorly drained, subject to flooding

1. Rosebloom-Arkabutla

Silty soils that are deep and poorly drained and somewhat poorly drained; formed in alluvial deposits

This map unit consists of soils in large, wooded bottom lands that are frequently flooded. Slopes range from 0 to 2 percent.

This map unit makes up about 10 percent of the county. It is about 50 percent Rosebloom soils, 25 percent Arkabutla soils, and the rest are minor soils.

The poorly drained Rosebloom soils are in the low-lying areas and in depressional areas. The somewhat poorly drained Arkabutla soils are on the slightly higher areas.

The minor soils are the well drained Ariel soils on the high areas adjoining streams, the moderately well drained Kirkville soils adjoining streams, and the somewhat poorly drained Mantachie soils on slightly higher areas.

This unit is entirely in woodland. The soils of this unit are well suited to woodland. These soils are poorly suited to crops because of wetness and the severe hazard of flooding. The soils are suited to pasture, but wetness and flooding are hazards. These soils have severe limitations for residential and other urban uses.

Rosebloom soils have good potential for wetland wildlife habitat and have fair potential for woodland and openland wildlife habitat. Arkabutla soils have fair potential for openland and wetland wildlife habitat and have good potential for woodland wildlife habitat.

2. Bibb-Mantachie

Loamy soils that are deep and poorly drained and somewhat poorly drained; formed in alluvial deposits

This map unit consists of soils in wooded bottom lands that are frequently or occasionally flooded. Slopes range from 0 to 2 percent.

This map unit makes up about 5 percent of the county. It is about 60 percent Bibb soils, 30 percent Mantachie soils, and the rest are minor soils.

The poorly drained Bibb soils are in the low-lying areas and in depressional areas. The somewhat poorly drained Mantachie soils are on the slightly higher areas.

The minor soils are the moderately well drained Kirkville soils adjoining the streams.

This unit is almost entirely in woodland or pasture. The soils of this unit are well suited to woodland. The soils that are subject to frequent flooding are poorly suited to crops because of wetness and the severe hazard of flooding; they are suited to pasture but wetness is a limitation and flooding a hazard. The soils that are subject to occasional flooding are suited or well suited to crops and pasture. However, flooding may be a hazard, and surface field ditches are needed to remove excess water. These soils have severe limitations for residential and other urban uses.

Bibb soils have good potential for wetland wildlife habitat and have fair potential for openland and woodland wildlife habitat. Mantachie soils have fair potential for openland and wetland wildlife habitat and have a good potential for woodland wildlife habitat.

3. Kirkville-Ariel

Loamy and silty soils that are deep and moderately well drained and well drained; formed in alluvial deposits

This map unit consists of soils in wide bottom lands along Beasha Creek that are occasionally flooded. Slopes range from 0 to 2 percent.

This map unit makes up about 1 percent of the county. It is about 45 percent Kirkville soils, 35 percent Ariel soils, and the rest are minor soils.

The moderately well drained, loamy Kirkville soils adjoin the well drained, silty Ariel soils that adjoin the streams.

The minor soils are the poorly drained Bibb soils in the low-lying areas and in depressional areas and the somewhat poorly drained Mantachie soils on slightly higher areas.

This unit is mostly in pasture and crops, but there is a large acreage of woodland. Both Kirkville and Ariel soils are well suited to pasture, crops, and woodland. Because of the severe hazard of flooding, this unit has severe limitations for residential and other urban uses.

These soils have good potential for woodland and openland wildlife habitat. They have poor potential for wetland wildlife habitat.

dominantly gently sloping to steep soils that are well drained and moderately well drained

4. Williamsville-Smithdale

Sandy and loamy soils that are deep, well drained, and strongly sloping to steep; formed in Coastal Plain deposits

This map unit consists mainly of soils on long, narrow, sloping ridgetops and strongly sloping to steep side slopes. The slopes are dissected by short drainageways and narrow flood plains. Slopes range from 8 to 40 percent.

This map unit makes up about 5 percent of the county. It is about 55 percent Williamsville soils, 25 percent Smithdale soils, and the rest are minor soils.

Both the sandy Williamsville and the loamy Smithdale soils are on the strongly sloping to steep side slopes.

The minor soils are the poorly drained Bibb soils on narrow flood plains and the well drained Neshoba and Ruston soils on narrow ridgetops.

This unit is entirely in woodland. Because of steepness of the slopes, soils of this unit are poorly suited to crops and pasture. Williamsville soils are well suited and Smithdale soils are suited to woodland. Soils of this unit have severe limitations for residential and other urban uses because of steepness of the slopes.

Soils of this unit have good potential for woodland wildlife habitat. They have fair potential for openland wildlife habitat and very poor potential for wetland wildlife habitat.

5. Lauderdale-Arundel

Silty and loamy soils that are shallow and moderately deep, well drained, and steep; formed in material weathered from stratified siltstone, sandstone, and buhrstone

This map unit consists mainly of soils on long, narrow ridgetops and steep side slopes. The slopes are dissected by short drainageways and narrow flood plains. Slopes range from 17 to 40 percent.

This map unit makes up about 5 percent of the county. It is about 43 percent Lauderdale soils, 40 percent Arundel soils, and the rest are minor soils.

The Lauderdale and Arundel soils are on the ridgetops and steep side slopes.

The minor soils are the Ruston soils on narrow ridgetops and the Smithdale and Sweatman soils on steep side slopes.

This unit is almost all woodland. A small acreage is in pasture. Because of the steepness of slopes and the presence of sandstone rocks on the surface and coarse shale and sandstone fragments in the profile, soils of this unit are poorly suited to crops and pasture. Lauderdale soils are poorly suited and Arundel soils are suited to woodland. Soils of this unit have severe limitations for residential and other urban uses because of the steepness of slope.

Lauderdale soils have poor potential for openland wildlife habitat and fair potential for woodland wildlife habitat. Arundel soils have fair potential for openland wildlife habitat and good potential for woodland wildlife habitat. These soils have very poor potential for wetland wildlife habitat.

6. Sweatman

Silty soils that are deep, well drained, and gently sloping to steep; formed in Coastal Plain deposits

This map unit consists mainly of soils on long narrow to moderate, gently sloping to sloping ridgetops and strongly sloping to steep side slopes. The slopes are dissected by many short drainageways and narrow flood plains. Slopes range from 2 to 40 percent.

This map unit makes up about 5 percent of the county. It is about 85 percent Sweatman soils and the rest are minor soils.

The Sweatman soils are on the ridgetops and side slopes.

The minor soils are the poorly drained Bibb soils on narrow flood plains, the well drained Ruston soils on ridgetops, and the well drained Smithdale soils on side slopes.

This unit is almost all woodland. A small acreage is in pasture. Because of steepness of slopes, soils of this unit are poorly suited to crops and pasture. They are suited to woodland. Soils of this unit have severe limitations for residential and other urban uses because of the steepness of slopes.

These soils have fair potential for openland wildlife habitat, good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat.

7. Williamsville-Neshoba

Sandy and silty soils that are deep, well drained, and gently sloping to steep; formed in Coastal Plain deposits

This map unit consists of soils on long, narrow to broad, gently sloping to sloping ridgetops and strongly sloping to steep side slopes. The slopes are dissected by short drainageways and narrow flood plains. Slopes range from 2 to 40 percent.

This map unit makes up about 5 percent of the county. It is about 40 percent Williamsville soils, 35 percent Neshoba soils, and the rest are minor soils.

The sandy Williamsville soils are on the strongly sloping to steep side slopes. The silty Neshoba soils are on the ridgetops.

The minor soils are the moderately well drained Ora soils that have a fragipan and are on ridgetops, the well drained Ruston soils on ridgetops, and the well drained Smithdale soils and Sweatman soils on side slopes.

This unit is mainly woodland, but many of the ridgetops and less steep side slopes are in pasture. A small acreage on ridgetops and narrow bottom lands are in crops.

The Neshoba soils are well suited to crops, pasture, and woodland. The Williamsville soils are poorly suited to crops because of steepness of slopes. These soils are well suited to woodland and are suited to pasture on the less steep slopes, but poorly suited on the steeper slopes. Because of steepness of slopes, Williamsville soils are severely limited for residential and other urban uses. Urban uses on the Neshoba soils have moderate limitations because of the shrink-swell potential.

The Williamsville soils have fair potential for openland wildlife habitat. The Neshoba soils have good potential for openland wildlife habitat. The Williamsville soils and Neshoba soils have good potential for woodland wildlife habitat and very poor potential for wetland wildlife habitat.

8. Sweatman-Ora-Smithdale

Silty and loamy soils that are deep, well drained and moderately well drained, and gently sloping to steep; formed in Coastal Plain deposits

This map unit consists of soils on long, narrow to broad, gently sloping to sloping ridgetops and side slopes and strongly sloping to steep side slopes. The slopes are dissected by short drainageways and narrow flood plains. Slopes range from 2 to 40 percent.

This map unit makes up about 45 percent of the county. It is about 45 percent Sweatman soils, 25 percent Ora soils, 20 percent Smithdale soils, and the rest are minor soils.

The well drained, silty Sweatman soils are on the ridgetops and side slopes. The moderately well drained, loamy Ora soils that have a fragipan are on the ridgetops and strongly sloping side slopes. The well drained, loamy Smithdale soils are on the side slopes.

The minor soils are the poorly drained Bibb soils and the somewhat poorly drained Mantachie soils on narrow flood plains and the well drained Ruston soils on ridgetops.

This unit is mainly in woodland and pasture. A small acreage is used for crops. The Sweatman soils on broad ridges are suited to crops, and the Ora soils are well suited to crops. Sweatman soils on ridgetops are suited to pasture and to woodland. Sweatman soils on steeper slopes are poorly suited to crops and pasture and suited to woodland. Ora soils on the side slopes are suited to pasture and to woodland. Smithdale soils are poorly suited to crops and pasture because of steepness of slopes; they are suited to woodland. Sweatman and Ora soils on ridgetops have moderate limitations for residential and other urban uses. Sweatman and Smithdale soils on steep side slopes have severe limitations for residential and other urban uses.

The Sweatman and Smithdale soils have fair or good potential for openland wildlife habitat. The Ora soils have good potential for openland wildlife habitat. The soils of this map unit have good potential for woodland wildlife habitat, and very poor potential for wetland wildlife habitat.

9. Smithdale-Ora-Sweatman

Loamy and silty soils that are deep, well drained and moderately well drained, and gently sloping to steep; formed in Coastal Plain deposits

This map unit consists of soils on long, narrow to broad, gently sloping and sloping ridgetops and strongly sloping to steep side slopes. The slopes are dissected by short drainageways and narrow flood plains. Slopes range from 2 to 40 percent.

This map unit makes up about 18 percent of the county. It is about 33 percent Smithdale soils, 30 percent Ora soils, 15 percent Sweatman soils, and the rest are minor soils.

The well drained, loamy Smithdale soils are on the strongly sloping and steep side slopes. The moderately well drained, loamy Ora soils that have a fragipan are on the ridgetops and strongly sloping side slopes. The well drained, silty Sweatman soils are on the ridgetops and side slopes.

The minor soils are the poorly drained Bibb soils and somewhat poorly drained Mantachie soils on narrow flood plains and the well drained Ruston soils on ridgetops.

This unit is mainly wooded and in pasture. A small acreage is in crops. Smithdale soils are poorly suited to crops because of steepness of slopes; they are suited or poorly suited to pasture and suited to woodland. Ora and Sweatman soils on broad ridges are well suited or suited to crops. Ora soils are well suited or suited to pasture and suited to woodland. Sweatman soils on steeper slopes are poorly suited to crops and pasture and suited to woodland. Smithdale and Sweatman soils on steep side slopes have severe limitations for residential and other urban uses. Ora and Sweatman soils on ridgetops have moderate limitations for residential and other urban uses.

The Smithdale and Sweatman soils have fair to good potential for openland wildlife habitat. The Ora soils have good potential for openland wildlife habitat. The soils of this map unit have good potential for woodland wildlife habitat and poor to very poor potential for wetland wildlife habitat.

dominantly nearly level to strongly sloping soils that are moderately well drained

10. Ora-Savannah

Loamy and silty soils that are deep; formed in Coastal Plain deposits and stream terrace deposits

This map unit consists of soils on nearly level and gently sloping broad areas and short, sloping and strongly sloping side slopes. Slopes range from 0 to 12 percent.

This map unit makes up about 1 percent of the county. It is about 45 percent Ora soils, 40 percent Savannah soils, and the rest are minor soils.

The Ora soils have a fragipan and are on the gently sloping broad areas and sloping and strongly sloping side slopes. The Savannah soils also have a fragipan and are on the nearly level and gently sloping broad areas.

The minor soils are the poorly drained Bibb soils on narrow flood plains; and the somewhat poorly drained Stough and poorly drained Guyton soils on lower lying broad areas.

This unit is mainly in pasture and crops. A smaller acreage is woodland. The Ora and Savannah soils on nearly level and gently sloping ridgetops are well suited to crops. On strongly sloping hillsides, Ora soils are poorly suited to row crops. Ora and Savannah soils are well suited or suited to pasture and are suited to woodland. Soils of this unit have moderate limitations for residential and other urban uses.

These soils have good potential for openland wildlife habitat and woodland wildlife habitat. They have poor or very poor potential for wetland wildlife habitat.

broad land use considerations

Larry F. Milner, soil conservationist, Soil Conservation Service, helped prepare this section.

About 6 percent of the soil in Neshoba County is used for cultivated crops. Two areas are well suited or suited to farming. These areas are identified as map units 3 and 10 on the general soil map at the back of this publication. Map unit 3 floods occasionally with resulting slight crop damage. Wetness is the main limitation for crops. The major soils of unit 3 are those of the Kirkville and Ariel series. Wetness and the erosion hazard are the major limitations for map unit 10 in which the major soils are those of the Ora and Savannah series.

About 19 percent of the soil in Neshoba County is in pasture. Map units 3 and 10 are well suited or suited to pasture and hay crops. The dominant soils of these units are those of the Kirkville, Ariel, Ora, and Savannah series. The less steep soils of map units 7, 8, and 9 are well suited or suited to pasture and hay crops. The dominant soils of these map units are those of Williamsville, Neshoba, Sweatman, Ora, and Smithdale series.

Most soils of the county are well suited or suited to woodland. The exception is the Lauderdale soils of the Lauderdale-Arundel map unit. These soils are poorly suited to woodland. Lauderdale soils have coarse fragments of sandstone and shale in the profile and shallow underlying layers of weathered stratified siltstone, sandstone, and buhrstone.

Areas that have the best suitability for urban development in the county are the gently sloping and sloping soils of the Ora series and the nearly level and gently sloping soils of the Savannah series of unit 10. Wetness is the main limitation. Most of these soils have moderately slow permeability in the fragipan layer, which limits their use as septic tank absorption fields. Many of these limitations can be overcome through proper design and installation. Rosebloom, Arkabutla, Bibb, Mantachie, Kirkville, and Ariel soils have severe limitations for urban development because of the flood hazard. The hilly areas of Williamsville, Smithdale, Ora, and Sweatman soils have severe limitations for urban development because of the steepness of slopes. Certain small gently sloping areas within these hilly areas, however, are suitable for houses and small commercial buildings.

Most map units in the county have moderate or severe limitations for recreational use. Units 1, 2, and 3 are on flood plains, and flooding is a limitation. Units 4, 5, 6, 7, 8, and 9 are too hilly, except for some broad ridges. Slope limits their use for intensive recreational areas, but these soils are suitable for such activities as hunting, hiking, and horseback riding. A few areas within these map units have slight limitations for use as campsites and picnic areas. Unit 10 has slight limitations for recreational uses. Suitability for wildlife habitat is discussed in the section "Use and management of the soils."

detailed soil map units

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

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

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

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

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

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Troup-Lucy complex, 15 to 25 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Smithdale-Ruston association, hilly, is an example.

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

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

Soil descriptions of detailed map units follow.

Ar—Ariel silt loam, occasionally flooded. This deep, well drained soil is on the flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is a dark brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 30 inches, is dark brown silt loam that has yellowish brown mottles. The lower part to a depth of 60 inches is pale brown silt loam that has light yellowish brown mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. This soil is occasionally flooded. Some areas are flooded more frequently but not during the growing season.

Included with this soil in mapping are small areas of Arkabutla and Kirkville soils.

Most of the acreage of this Ariel soil is used for cultivated crops and pasture. A small acreage is in woodland. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface drainage field ditches.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, water oak, and yellow-poplar. Woodland management limitations are slight.

This soil has severe limitations for urban uses because of the hazard of flooding.

This Ariel soil is in capability subclass IIw and in woodland suitability group 1o7.

Bb—Bibb sandy loam, occasionally flooded. This deep, poorly drained soil is on wet flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The underlying material, to a depth of 22 inches, is light brownish gray loam that has yellowish brown mottles. Below this to a depth of 60 inches is light brownish gray loam that has brown and red mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate (fig. 1), and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. This soil is flooded occasionally unless protected.

Included with this soil in mapping are small areas of Mantachie soils and some areas of Bibb soils that are flooded frequently. Flooding, however, does not usually occur during the growing season.

Most of this Bibb soil is in pasture and woodland. This soil is suited to crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface drainage fields ditches.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to eastern cottonwood, loblolly pine, sweetgum, and yellow-poplar. Wetness and flooding are the main limitations in woodland management and harvesting the tree crop. They can be partly overcome by using specialized equipment during wet periods or by logging during the drier seasons.

This soil has severe limitations for urban uses because of flooding.

This Bibb soil is in capability subclass IIIw and in woodland suitability group 2w9.

BM—Bibb-Mantachie association, frequently flooded. The soils of this association are poorly drained and somewhat poorly drained. They are in a regular and repeating pattern on broad flood plains. Slopes range from 0 to 2 percent. These soils are flooded two or three times each year. Areas range from about 160 to over 1,000 acres. The composition of this unit varies between mapped areas, but mapping has been controlled well enough for the expected use of the soils.

Bibb soils and closely similar soils make up about 46 percent of the unit, and Mantachie soils and closely similar soils make up about 43 percent. Other soils make up 11 percent.

The deep, poorly drained Bibb soils are in the lower lying and depressional areas. Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The next layer, to a depth of 22 inches, is light brownish gray loam that has yellowish brown mottles. Below this to a depth of 60 inches is light brownish gray loam that has brown and red mottles.

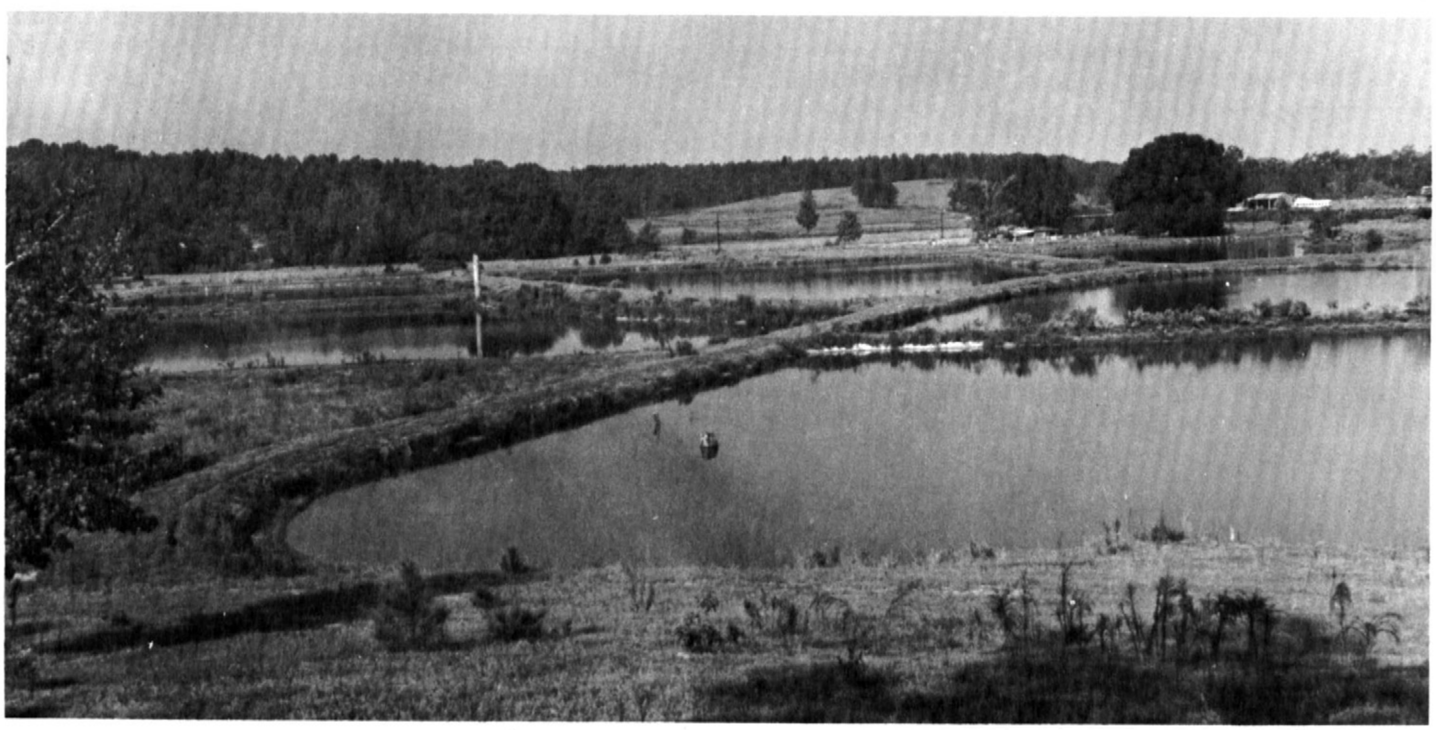


Figure 1.—Catfish and minnow ponds on Bibb sandy loam, occasionally flooded. Design and construction techniques were used to overcome the moderate permeability of this soil.

Bibb soils are very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is high. Runoff is very slow, and the erosion hazard is slight. These soils are flooded late in winter and spring following heavy rainfall.

The deep, somewhat poorly drained Mantachie soils are on the slightly higher lying areas. Typically, the surface layer is dark grayish brown loam about 7 inches thick and has brown mottles. The upper part of the subsoil, to a depth of about 14 inches, is grayish brown loam that has dark brown mottles. This is underlain, to 26 inches, with light brownish gray loam that has yellowish brown mottles. The lower part of the subsoil to a depth of 50 inches is light brownish gray loam that has many strong brown mottles.

Mantachie soils are very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight.

Included with these soils in mapping are small areas of Kirkville soils in higher lying areas along streams.

All of these Bibb and Mantachie soils are wooded. Soils of this unit are poorly suited to crops because of wetness and the severe flood hazard. They are suited to pasture, but wetness and flooding are hazards.

The Bibb soils are well suited to loblolly pine, eastern cottonwood, sweetgum, and yellow-poplar. The Mantachie soils are well suited to all of these plus cherrybark oak. Wetness and flooding limit woodland management. These can be partly overcome by harvesting the tree crop with specialized equipment during wet periods by logging during the drier seasons.

These soils have severe limitations for urban uses because of flooding and wetness.

These Bibb and Mantachie soils are in capability subclass Vw; Bibb soils are in woodland suitability group 2w9 and Mantachie soils are in woodland suitability group 1w8.

Gu—Guyton silt loam. This deep, poorly drained soil is on broad flats on uplands. Slopes range from 0 to 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick and has dark brown mottles. The subsurface layer, to a depth of 10 inches, is a light brownish gray silt loam that has yellowish brown mottles. The upper part of the subsoil, to 17 inches, is gray silt loam that has yellowish brown mottles. This is underlain, to 30 inches, with grayish brown silty clay loam that has yellowish brown mottles. From 30 and 43 inches, it is grayish brown silt loam that has yellowish brown and brown mottles. The lower part of the subsoil to 64 inches is a gray silt loam that has yellowish brown mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is slow; downward movement is impeded by a seasonal high water table. Available water capacity is high. Runoff is slow, and the erosion hazard is slight.

Included with this soil in mapping are small areas of Arkabutla and Rosebloom soils and small areas that contain a higher content of sodium in the upper part of the subsoil but otherwise are similar to Guyton soils.

Most of this Guyton soil is in pasture and woodland. This soil is suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface drainage field ditches.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly pine, sweetgum, and water oak. Wetness limits woodland management and harvesting of the tree crop. But this can be partly overcome by using specialized equipment during wet seasons or by logging during the drier seasons.

This soil has severe limitations for urban uses because of wetness.

This Guyton soil is in capability subclass IIIw and in woodland suitability group 2w9.

Jo—Johnston mucky loam, occasionally flooded. This deep, very poorly drained soil is on the flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is black mucky loam about 27 inches thick. The underlying materials, to a depth of 40 inches, is light brownish gray fine sandy loam that has brownish mottles. From 40 and 60 inches, the underlying material is light brownish gray fine sandy loam that has reddish mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately rapid in the surface layers and rapid in the underlying layers. The available water capacity is medium. Runoff is very slow, and the erosion hazard is slight. This soil is occasionally flooded.

Included with this soil in mapping are small areas of Bibb soils.

Most of this Johnston soil is in pasture and woodland. A small acreage is in cultivated crops. This soil is poorly suited to crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface drainage field ditches.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly pine, sweetgum, and water oak. Wetness and flooding limit managing and harvesting the tree crop. They can be partly overcome by using specialized equipment during wet seasons or by logging during the dry seasons.

This soil has severe limitations for urban uses because of flooding and wetness.

This Johnston soil is in capability subclass IVw and in woodland suitability group 1w9.

Kr—Kirkville fine sandy loam, occasionally flooded. This deep, moderately well drained soil is on the flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark grayish brown fine sandy loam about 2 inches thick. This is underlain, to a depth of about 8 inches, with brown fine sandy loam that has dark brown mottles. The upper part of the subsoil, to 15 inches, is a pale brown loam that has mottles in shades of gray and brown. The next layer, to 22 inches, is a mottled strong brown and gray loam. The lower part of the subsoil is loam mottled in shades of gray and brown to a depth of 60 inches.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Runoff is slow, and the erosion hazard is slight. This soil is occasionally flooded unless protected. Normally this soil is flooded during winter and early in spring before crops are planted.

Included with this soil in mapping are small areas of Mantachie and Bibb soils.

Most of this Kirkville soil is in pasture and crops. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface field drainage ditches.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly pine, sweetgum, cherrybark oak, and water oak. Wetness limits managing and harvesting the tree crop. This can be partly overcome by using specialized equipment during wet seasons or by logging during the drier seasons.

This soil has severe limitations for urban uses because of flooding.

This Kirkville soil is in capability subclass IIw and in woodland suitability group 1w8.

LA—Lauderdale-Arundel association, hilly. The soils of this association are well drained soils. They are a regular and repeating pattern on hilly uplands underlain by weathered siltstone, sandstone, and buhrstone. Slopes range from 17 to 40 percent. Areas range from 160 to more than 2,000 acres. The composition of this unit varies between mapped areas, but mapping was controlled well enough for the expected use of the soils.

Lauderdale soils and closely similar soils make up about 48 percent of the unit and Arundel soils and closely similar soils about 34 percent. Other soils make up the remaining 18 percent.

The Lauderdale soils that are shallow to weathered bedrock are on the ridgetops and side slopes. Typically, the surface layer is very dark gray silt loam about 3 inches thick. The upper part of subsoil, to a depth of 8 inches, is dark brown clay loam. The lower part of the subsoil, to 16 inches, is dark yellowish brown clay loam. The underlying material to a depth of 20 inches is weathered stratified siltstone, sandstone, and buhrstone.

Lauderdale soils are very strongly acid or strongly acid throughout. Permeability is moderately slow above the weathered bedrock, and the available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

The Arundel soils that are moderately deep to weathered bedrock are on ridgetops and side slopes. Typically, the surface layer is very dark grayish brown loam about 5 inches thick. The subsurface layer, to a depth of 9 inches, is brown loam. The subsoil is dark brown clay loam to 30 inches. The underlying material to 35 inches is weathered stratified siltstone, sandstone, and buhrstone.

Arundel soils are very strongly acid or strongly acid throughout. Permeability is very slow above the weathered bedrock, and the available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

Included with these soils in mapping are small areas of Ruston soils on ridgetops and small areas of Sweatman soils and Udorthents on side slopes.

Most of these Lauderdale and Arundel soils are woodland. The remainder is in pasture. Because of steep slopes, rapid runoff, and severe erosion hazard, these soils are poorly suited to crops and pasture. Permanent vegetation should be maintained on these soils.

Lauderdale soils are poorly suited and Arundel soils are suited for loblolly and shortleaf pines. The Lauderdale soils have coarse sandstone and siltstone fragments close to the surface, which limits productivity. Wetness and steepness of slopes limit managing and harvesting the tree crop. Wetness can be partly overcome by using specialized equipment during wet seasons or by logging during dry seasons. Steepness of slopes can be partly overcome by locating skid-trails and log-landing or hauling roads properly and within limiting grades.

These soils have severe limitations for urban uses because of shallow depth to rock, shrink-swell potential, and steepness of the slopes.

These Lauderdale and Arundel soils are in capability subclass VIIe; Lauderdale soils are in woodland suitability group 4d2 and Arundel soils are in woodland suitability group 3c2.

Ma—Mantachie loam, occasionally flooded. This deep, somewhat poorly drained soil is on the flood plains. Slopes range from 0 to 2 percent.

Typically, the surface layer is a dark grayish brown loam about 7 inches thick that has brown mottles. The upper part of the subsoil, to a depth of 14 inches, is grayish brown loam that has dark brown mottles. The lower part of the subsoil to 50 inches is light brownish gray loam that has mottles in shades of brown.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight. This soil is occasionally flooded, and the water table is within 1 foot of the surface in winter and spring.

Included with this soil in mapping are small areas of Bibb and Kirkville soils.

Most of this Mantachie soil is in pasture and woodland. A small acreage is in row crops. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, arranging crop rows, and maintaining surface drainage field ditches.

Good management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly pine, sweetgum, cherrybark oak, and yellow-poplar. Wetness limits managing and harvesting the tree crop, but this can be partly overcome by using specialized equipment during wet seasons or by logging during the drier seasons.

This soil has severe limitations for urban uses because of flooding.

This Mantachie soil is in capability subclass IIw and in woodland suitability group 1w8.

NeB2—Neshoba silt loam, 2 to 5 percent slopes, eroded. This deep, well drained soil is on ridgetops in hilly uplands.

Typically, the surface layer is reddish brown silt loam about 5 inches thick. The upper part of the subsoil, to a depth of 16 inches, is dark red silty clay loam. This is underlain, to about 36 inches, by dark red clay loam. The lower part of the subsoil to a depth of 80 inches is dark red clay.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid throughout, except for the surface layer where it has been limed. Permeability is moderate in the upper part of the subsoil and is moderately slow in the lower part. The available water capacity is high. Runoff is slow to medium. Erosion hazard is moderate.

Included with this soil in mapping are small areas of Williamsville soils.

Most of this Neshoba soil is in pasture and woodland. A small acreage is in row crops. This soil is well suited to row crops and pasture (fig. 2). When crops are grown, management includes leaving crop residues on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of the shrink-swell potential, but they can be overcome by good design and careful installation. Onsite sewage disposal systems should have oversized absorption fields.

This Neshoba soil is in capability subclass IIe and in woodland suitability group 2o1.

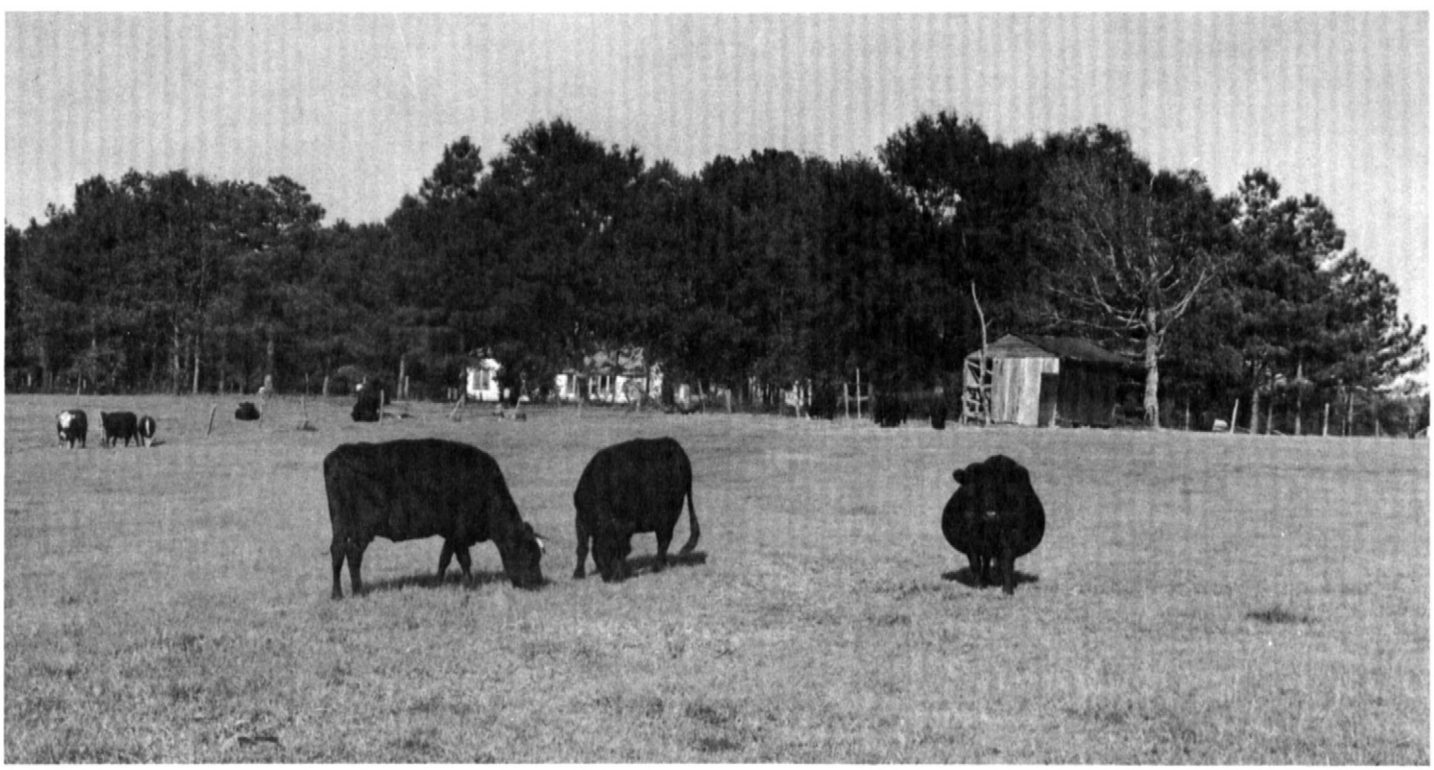


Figure 2.—Cattle grazing bahiagrass pasture on Neshoba silt loam, 2 to 5 percent slopes, eroded.

NeC2—Neshoba silt loam, 5 to 8 percent slopes, eroded. This deep, well drained soil is on ridges in hilly uplands.

Typically, the surface layer is reddish brown silt loam about 5 inches thick. The upper part of the subsoil, to a depth of 16 inches, is dark red silty clay loam. This is underlain, to 36 inches, by dark red clay loam. The lower part of the subsoil to a depth of 80 inches is dark red clay.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid throughout, except for the surface layer where it has been limed. Permeability is moderate in the upper part of the subsoil and is moderately slow in the lower part. The available water capacity is high. Runoff is slow to medium. The erosion hazard is moderate.

Included with this soil in mapping are small areas of Williamsville soils.

Most of this Neshoba soil is in pasture and woodland. A small acreage is in row crops. This soil is suited to row crops and well suited to pasture. When crops are grown, management includes leaving crop residues on the surface, contour farming, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of the shrink-swell potential, but they can be overcome by good design and installation.

This Neshoba soil is in capability subclass IIIe and in woodland suitability group 2o1.

OrB2—Ora fine sandy loam, 2 to 5 percent slopes, eroded. This deep, moderately well drained soil that has a fragipan is on uplands.

Typically the surface layer is yellowish brown fine sandy loam about 6 inches thick. The upper part of the subsoil, to a depth of about 23 inches, is yellowish red sandy clay loam. This is underlain to 60 inches by a fragipan mottled in shades of red, brown, and gray. From 23 to 28 inches, the fragipan is loam, and from 28 to 60 inches, it is sandy clay loam (fig. 3).

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some fields have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is slow to medium. The erosion hazard is slight to moderate.

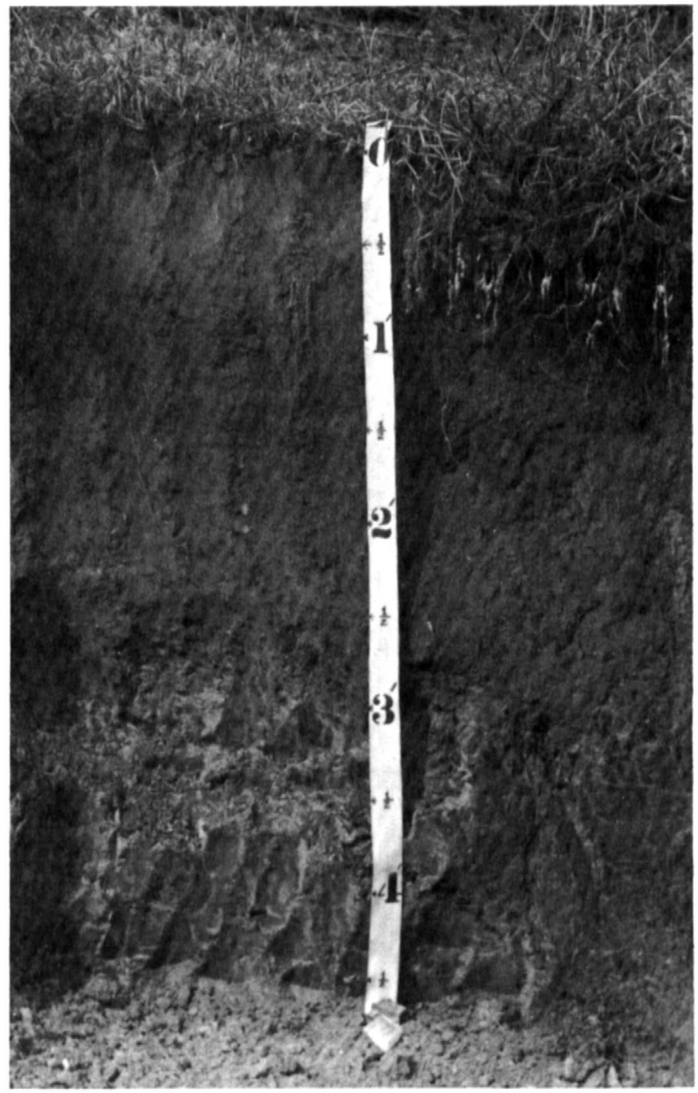


Figure 3.—Profile of Ora fine sandy loam, 2 to 5 percent slopes, eroded. The fragipan is most evident in the lower part of the soil.

Included with this soil in mapping are small areas of Savannah and Stough soils.

Most of this Ora soil is in pasture and woodland. A small acreage is in row crops. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly pine, shortleaf pine, and sweetgum. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of wetness.

This Ora soil is in capability subclass IIe and in woodland suitability group 3o7.

OrC2—Ora fine sandy loam, 5 to 8 percent slopes, eroded. This deep, moderately well drained soil that has a fragipan is on uplands.

Typically, the surface layer is yellowish brown fine sandy loam about 6 inches thick. The upper part of the subsoil, to a depth of about 23 inches, is yellowish red sandy clay loam. This is underlain to 60 inches by a fragipan mottled in shades of red, brown, and gray. From 23 to 28 inches, the fragipan is loam, and from 28 to 60 inches, it is sandy clay loam.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is medium. The erosion hazard is moderate.

Included with this soil in mapping are small areas of Ruston soils.

Most of this Ora soil is in pasture and woodland. A small acreage is in row crops. This soil is suited to row crops and is suited to pasture. When crops are grown, management includes leaving crop residue on the surface, contour farming, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly pine, shortleaf pine, and sweetgum. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of slopes and wetness.

This Ora soil is in capability subclass IIIe and in woodland suitability group 3o7.

OrD2—Ora fine sandy loam, 8 to 12 percent slopes, eroded. This deep, moderately well drained soil that has a fragipan is on side slopes of uplands.

Typically the surface layer is yellowish brown fine sandy loam about 6 inches thick. The upper part of the subsoil, to a depth of about 23 inches, is yellowish red sandy clay loam. This is underlain to 60 inches by a fragipan mottled in shades of red, brown, and gray. From 23 to 28 inches, the fragipan is loam, and from 28 to 60 inches, it is sandy clay loam.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is medium. The erosion hazard is severe.

Included with this soil in mapping are small areas of Smithdale soils.

Most of this Ora soil is in woodland. A small acreage is in pasture. This soil is suited to pasture. Because of steepness of slope, this soil is poorly suited to row crops. When crops are grown, management includes leaving crop residue on the surface, contour farming, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly pine, shortleaf pine, and sweetgum. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of slopes and wetness.

This Ora soil is in capability subclass IVe and in woodland suitability group 3o7.

Po—Pits. This miscellaneous area consists of sand pits and borrow pits ranging from 1 to 10 acres. Sand pits are open excavations from which sand has been removed. Borrow pits are those from which soil and underlying material have been removed for use in construction of roads and other fills.

Pits require major reclamation before they can be used for cropland or pasture.

Pine trees will protect the soil against erosion, but they grow slowly because of low fertility in the exposed substratum.

Pits are not assigned to a capability subclass or woodland suitability group.

PrA—Providence silt loam, 0 to 2 percent slopes. This deep, moderately well drained soil that has a fragipan and is on broad uplands.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The upper part of the subsoil, to a depth of about 24 inches, is yellowish brown silt loam that has many pale brown mottles in the lower part. Below this to 60 inches is a fragipan mottled in shades of brown, yellow, and gray. From 24 to 32 inches, the fragipan is silt loam, and from 32 to 60 inches, it is sandy clay loam.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is slow, and the erosion hazard is slight.

Included with this soil in mapping are small areas of Savannah soils.

Most of this Providence soil is in pasture and woodland. The remainder is in row crops. This soil is well suited to row crops and is suited to pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and maintaining surface drainage field ditches to remove excess surface water.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to sweetgum, loblolly pine, and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of the seasonal high water table perched above the fragipan.

This Providence soil is in capability subclass IIw and in woodland suitability group 3o7.

PrB2—Providence silt loam, 2 to 5 percent slopes, eroded. This deep, moderately well drained soil that has a fragipan is on upland ridges.

Typically the surface layer is dark brown silt loam about 5 inches thick. The upper part of the subsoil, to a depth of about 19 inches, is yellowish brown silt loam that has many pale brown mottles in the lower part. Below this to 60 inches is a fragipan mottled in shades of brown, yellow, and gray. From 19 to 28 inches, the fragipan is silt loam and from 28 to 60 inches, it is sandy clay loam.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is mainly the original surface layer. Some areas have a few rills and shallow gullies.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is medium, and the erosion hazard is moderate.

Included with this soil in mapping are small areas of Savannah soils.

Most of this Providence soil is in pasture and row crops. A small acreage is woodland. This soil is well suited to row crops and is suited to pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to sweetgum, loblolly pine, and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of the seasonal high water table perched above the fragipan.

This Providence soil is in capability subclass IIe and in woodland suitability group 3o7.

RA—Rosebloom-Arkabutla association, frequently flooded. The soils of this association are poorly drained and somewhat poorly drained. They are in a regular and repeating pattern, on large flood plains. Slopes range from 0 to 2 percent. These soils are flooded at least two or three times each year. Areas range from about 160 to 1,000 acres. The composition of this unit varies between mapped areas, but mapping has been controlled well enough for the expected use of the soils.

Rosebloom soils and closely similar soils make up about 52 percent of the unit, and Arkabutla soils and closely similar soils make up about 34 percent. Other soils make up 14 percent.

The deep, poorly drained Rosebloom soils are in the lower lying areas and in depressional areas. Typically, the surface layer is grayish brown silt loam about 3 inches thick that has dark yellowish brown and light gray mottles. The subsurface layer, to a depth of 8 inches, is gray silt loam that has yellowish brown mottles. The upper part of the subsoil, to 21 inches, is silt loam that grades from light brownish gray in the upper part to gray below and has yellowish brown mottles throughout. The lower part of the subsoil to 60 inches is light brownish gray silty clay loam that has yellowish brown mottles.

Rosebloom soils are very strongly acid or strongly acid throughout. Permeability is slow (fig. 4), and the available water capacity is high. Runoff is very slow, and the erosion hazard is slight.

The deep, somewhat poorly drained Arkabutla soils are in the slightly higher positions than Rosebloom soils. Typically, the surface layer is dark yellowish brown silt loam about 3 inches thick. The subsoil, to a depth of about 14 inches, is dark grayish brown silt loam that has dark yellowish brown mottles. This is underlain, to 25 inches, by gray silt loam that has yellowish brown mottles. The lower part of the subsoil to 65 inches is light brownish gray silty clay loam that has yellowish brown mottles.

Arkabutla soils are very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is high. Runoff is slow, and the erosion hazard is slight.

Included with these soils in mapping are small areas of Mantachie soils in slightly higher lying areas and small areas of Ariel and Kirkville soils in higher lying areas along streams.

The soils of this unit are used as woodland. The soils of this unit are poorly suited to crops because of wetness and the severe flood hazard. These soils are suited to pasture, but wetness and flooding are hazards.

Both the Rosebloom soils and Arkabutla soils are well suited to eastern cottonwood, Nuttall oak, water oak, and sweetgum. Wetness and flooding are the main limitations in managing and harvesting the tree crop. This can be partly overcome by using specialized equipment during wet seasons and by logging during the drier seasons.

These soils have severe limitations for urban uses because of the hazard of flooding.

These Rosebloom and Arkabutla soils are in capability subclass Vw; Rosebloom soils are in woodland suitability group 2w9 and Arkabutla soils are in woodland suitability group 1w9.

Figure 4.—Burnside Lake in Burnside Park. The lake is an old slough in an area of Rosebloom-Arkabutla association, frequently flooded. The slow permeability of Rosebloom soils is desirable for pond reservoir areas.

RuB2—Ruston fine sandy loam, 2 to 5 percent slopes, eroded. This deep, well drained soil is on ridgetops of uplands.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of about 22 inches, is yellowish red sandy clay loam. From 22 to 37 inches, the subsoil is yellowish red sandy loam that has yellowish brown and pale brown mottles. The lower part of the subsoil to 65 inches is red sandy clay loam that has yellowish brown mottles.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Runoff is slow to medium, and the erosion hazard is moderate.

Included with this soil in mapping are small areas of Ora and Neshoba soils.

Most of this Ruston soil is in pasture and woodland. A small acreage is in row crops. This soil is well suited for row crops (fig. 5) and pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil is slightly limited for urban uses (fig. 6).

This Ruston soil is in capability subclass IIe and in woodland suitability group 3o1.

RuC2—Ruston fine sandy loam, 5 to 8 percent slopes, eroded. This deep, well drained soil is on ridgetops of uplands.

Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of about 22 inches, is yellowish red sandy clay loam. From 22 to 37 inches, the subsoil is yellowish red sandy loam that has yellowish brown and pale brown mottles. The lower part of the subsoil to 65 inches is red sandy clay loam that has yellowish brown mottles.

In most areas, the surface layer is a mixture of topsoil and subsoil because erosion has removed part of the original surface. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Runoff is medium, and the erosion hazard is moderate.

Figure 5.—Combining soybeans grown on Ruston fine sandy loam, 2 to 5 percent slopes, eroded.

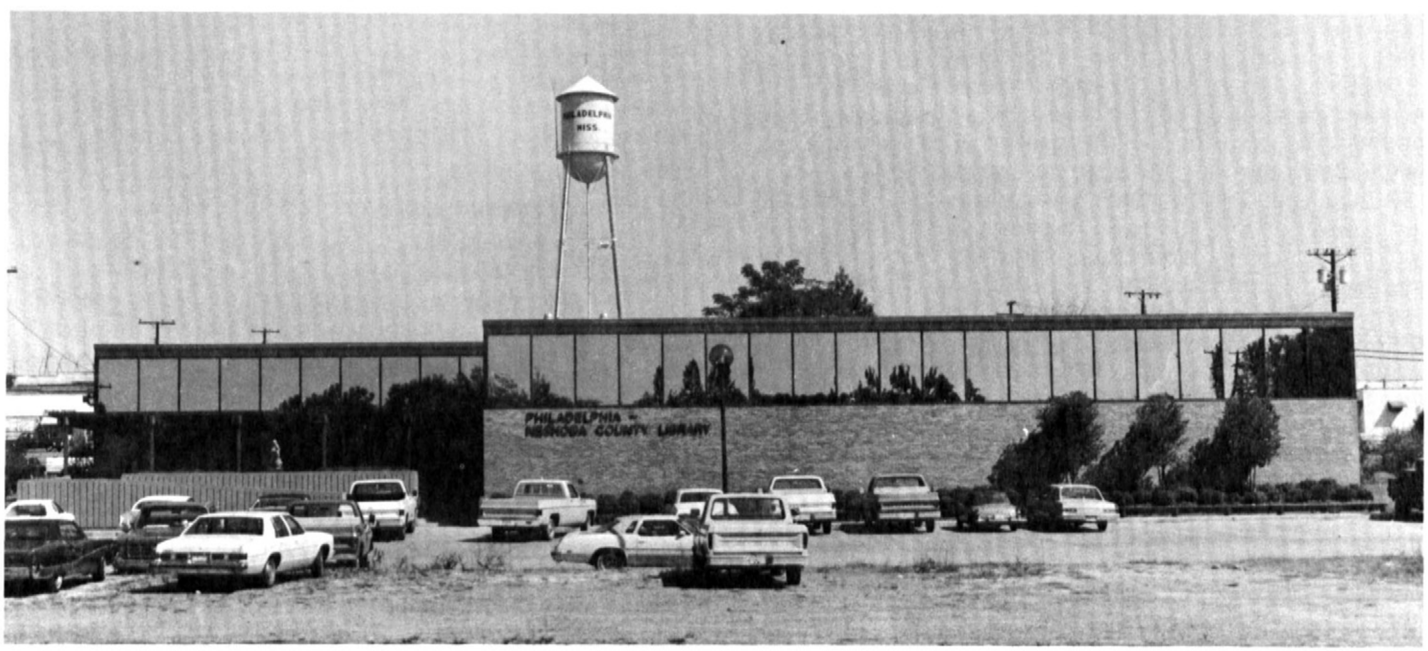


Figure 6.—The modern Philadelphia-Neshoba County library in Philadelphia is on Ruston fine sandy loam, 2 to 5 percent slopes, eroded.

Included with this soil in mapping are small areas of Ora and Neshoba soils.

Most of this Ruston soil is in pasture and woodland. A small acreage is in row crops. This soil is suited to row crops and is well suited to pasture. When crops are grown, management includes leaving crop residue on the surface, contour farming, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of slopes.

This Ruston soil is in capability subclass IIIe and in woodland suitability group 3o1.

SaA—Savannah silt loam, 0 to 2 percent slopes. This deep, moderately well drained soil that has a fragipan is on broad flats on uplands.

Typically the surface layer is pale brown silt loam about 6 inches thick. The subsoil is yellowish brown silt loam to a depth of about 24 inches. Below this to 65 inches is a fragipan mottled in shades of brown, gray, and yellow. It is silt loam to 37 inches and loam to 65 inches.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is slow, and the erosion hazard is slight.

Included with this soil in mapping are small areas of Ora and Stough soils.

Most of this Savannah soil is in pasture and row crops. The rest is in woodland. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly pine and southern red oak. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of wetness.

This Savannah soil is in capability subclass IIw and in woodland suitability group 3o7.

SaB2—Savannah silt loam, 2 to 5 percent slopes, eroded. This deep, moderately well drained soil that has a fragipan is on uplands and stream terraces.

Typically the surface layer is pale brown silt loam about 4 inches thick. The subsoil is yellowish brown silt loam to a depth of about 23 inches. Below this to a depth of 65 inches is a fragipan mottled in shades of brown, gray, and yellow. It is silt loam to 50 inches and loam to 65 inches.

In most areas, the surface layer has been thinned by erosion, and some areas, where plowed, are a mixture of the surface layer and the subsoil. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. A few areas have a few rills and shallow gullies exposing the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate above the fragipan and moderately slow in the fragipan. The available water capacity is medium. Runoff is medium to slow, and the erosion hazard is slight to moderate.

Included with this soil in mapping are small areas of Ora and Stough soils.

Most of this Savannah soil is in pasture and row crops. A small acreage is woodland. This soil is well suited to row crops and pasture. When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly pine and shortleaf pine, and southern red oak. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of wetness.

This Savannah soil is in capability subclass IIe and in woodland suitability group 3o7.

SmD2—Smithdale fine sandy loam, 8 to 12 percent slopes, eroded. This well drained soil is on side slopes of uplands.

Typically, the surface layer is brown fine sandy loam about 7 inches thick that has pale brown mottles. The upper part of the subsoil, to a depth of 39 inches, is red sandy clay loam. The lower part of the subsoil is red sandy loam to 80 inches.

In most areas, the surface layer has been thinned by erosion, and some areas, where plowed, are a mixture of the surface layer and the subsoil. In some areas, all of the original topsoil has been removed. In other areas, the plow layer is essentially the original surface layer. Some areas have a few rills and shallow gullies exposing the subsoil.

The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower subsoil. The available water capacity is medium. Runoff is medium to rapid. The erosion hazard is severe.

Included with this soil in mapping are small areas of Ruston and Ora soils.

Most of this Smithdale soil is in woodland and pasture. Because of steepness of slope, this soil is poorly suited to row crops. When crops are grown, management includes leaving crop residue on the surface, contour farming, and grassed waterways.

This soil is suited to pasture. Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has moderate limitations for urban uses because of slopes.

This Smithdale soil is in capability subclass IVe and in woodland suitability group 3o1.

SmE—Smithdale fine sandy loam, 12 to 17 percent slopes. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is brown fine sandy loam about 7 inches thick that has pale brown mottles. The subsurface layer is light yellowish brown fine sandy loam to a depth of about 13 inches. The upper part of the subsoil is red sandy clay loam to 43 inches. The lower part of the subsoil is yellowish red sandy loam to 80 inches.

The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part, and the available water capacity is medium. Runoff is rapid. The erosion hazard is severe.

Included with this soil in mapping are small areas of Ruston, Sweatman, and Williamsville soils.

Most of this Smithdale soil is in woodland. A small acreage is in pasture. This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil is severely limited for urban uses because of the steepness of the slopes.

This Smithdale soil is in capability subclass VIe and in woodland suitability group 3o1.

SmF—Smithdale fine sandy loam, 17 to 40 percent slopes. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is brown fine sandy loam about 7 inches thick that has pale brown mottles. The subsurface layer is light yellowish brown fine sandy loam to a depth of about 13 inches. The upper part of the subsoil is red sandy clay loam to 43 inches. The lower part of the subsoil is yellowish red fine sandy loam to 80 inches.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. The available water capacity is medium. Runoff is rapid. The erosion hazard is severe where permanent vegetation is not maintained.

Included with this soil in mapping are small areas of Ruston, Sweatman, and Williamsville soils.

Most of this Smithdale soil is in woodland. The remainder is in pasture. This soil is poorly suited to row crops and pasture because of steepness of the slopes. This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Smithdale soil is in capability subclass VIIe and in woodland suitability group 3o1.

SmF3—Smithdale fine sandy loam, 17 to 40 percent slopes, severely eroded. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is brown fine sandy loam about 3 inches thick that has pale brown mottles. The upper part of the subsoil is red sandy clay loam to a depth of about 30 inches. The lower part of the subsoil is red sandy loam to 80 inches.

In most areas, the original surface layer has been lost through erosion, and the surface consists entirely of subsoil. In some areas, the plow layer is a mixture of the original topsoil and materials from the subsoil. Rills and shallow gullies are common, and a few deep gullies, which are not crossable with tillage equipment, have formed.

The soil is very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part, and the available water capacity is medium. Runoff is rapid. The erosion hazard is severe.

Included with this soil in mapping are small areas of soils that are not severely eroded. Also included are small areas of Ruston, Sweatman, and Williamsville soils.

Most of this Smithdale soil is in woodland. A small acreage is in pasture. This soil is poorly suited to row crops and pasture. Because of steep slopes, rapid runoff, and the severe erosion hazard, permanent vegetation should be maintained on these soils.

This soil is suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Smithdale soil is in capability subclass VIIe and in woodland suitability group 3o1.

So—Smithdale-Udorthents complex, gullied. This mapping unit consists of small areas of a well drained Smithdale soil between the gullies and loamy soil materials in gullies. These soils are so intermingled that separating them was not practical at the scale selected for mapping. The map units are on side slopes of uplands. Areas range from 5 to 80 acres. Slopes range from 12 to 17 percent.

The Smithdale soil and closely similar soils make up about 60 percent of the map unit, and Udorthents, mainly gully walls, sides, and very severely eroded areas, make up about 35 percent. Other soils make up 5 percent.

Typically, the Smithdale soil's surface layer is brown fine sandy loam about 7 inches thick that has pale brown mottles. The subsurface layer is light yellowish brown fine sandy loam to a depth of about 13 inches. The upper part of the subsoil is red sandy clay loam to 43 inches. The lower part of the subsoil is red sandy loam to 80 inches.

This Smithdale soil is very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. The available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

The Udorthents consist of loamy soil materials. The areas of Udorthents have been so severely eroded that about 60 to 75 percent of the area has no diagnostic horizon. The gullies range from 2 to 10 feet in depth and many are still eroding. These soils contribute large amounts of loamy sediments to the drainage system.

Included with these soils in mapping are small areas of Ora soils and Sweatman soils.

This Smithdale soil and Udorthents are in formerly cultivated fields that now are in pines and native grasses. A few areas are in pasture. These soils are poorly suited to row crops and pasture. Because of steep slopes, rapid runoff, and the severe erosion hazard, permanent vegetation should be maintained on these soils.

The Smithdale soil is suited to shortleaf and loblolly pine. Woodland management limitations are slight.

These soils have severe limitations for urban uses because of steepness of slopes.

The Smithdale soil is in capability subclass VIIe and in woodland suitability group 3o1. The Udorthents are not assigned to a capability class or woodland suitability group.

SR—Smithdale-Ruston association, hilly. The soils of this association are deep and well drained. They are in a regular and repeating pattern, on rough, hilly uplands. Slopes range from 5 to 40 percent. Areas range from 160 to over 1,000 acres. The composition of this unit varies between mapped areas, but mapping was controlled well enough for the expected use of the soils.

Smithdale soils and closely similar soils make up about 48 percent of the unit, and Ruston soils and closely similar soils make up about 22 percent. Other soils make up 30 percent.

The Smithdale soils are on the side slopes. Typically, the surface layer is brown fine sandy loam about 7 inches thick that has pale brown mottles. The subsurface layer is light yellowish brown fine sandy loam to a depth of 13 inches. The upper part of subsoil is red sandy clay loam to 43 inches. The lower part of the subsoil is red sandy loam to 80 inches.

Smithdale soils are very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. The available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

The Ruston soils are on ridgetops and upper side slopes. Typically, the surface layer is dark brown fine sandy loam about 4 inches thick. The upper part of the subsoil is yellowish red sandy clay loam to a depth of 22 inches. From 22 to 37 inches, the subsoil is yellowish red sandy loam that has yellowish brown and pale brown mottles. The lower part of the subsoil is red sandy clay loam that has yellowish brown mottles to 65 inches.

Ruston soils are very strongly acid or strongly acid throughout. Permeability is moderate, and the available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

Included with these soils in mapping are small areas of Lucy, Sweatman, and Troup soils on side slopes and small areas of Kirkville soils on narrow flood plains.

These Smithdale and Ruston soils are used as woodland. Because of the steep slopes, rapid runoff, and severe erosion hazard, these soils are poorly suited to crops and pasture. Permanent vegetation should be maintained on these soils.

These Smithdale and Ruston soils are suited to loblolly and shortleaf pine. Woodland management limitations are slight.

These soils have severe limitations for urban uses because of the steepness of the slopes.

These soils are in capability subclass VIIe and in woodland suitability group 3o1.

StA—Stough fine sandy loam, 0 to 2 percent slopes. This deep, somewhat poorly drained soil is on broad upland flats.

Typically, the surface layer is brown fine sandy loam about 6 inches thick that has dark yellowish brown mottles. The upper part of the subsoil, to a depth of about 56 inches, is loam mottled in shades of brown, gray, and yellow. The lower part from 56 to 62 inches is light brownish gray loam that has yellowish brown mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and is moderately slow in the lower part. The available water capacity is medium. Runoff is slow, and the erosion hazard is slight.

Included with this soil in mapping are small areas of Savannah soils.

Most of this soil is in pasture and woodland. A small acreage is in row crops. This soil is suited to row crops and pasture (fig. 7). When crops are grown, management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil has good suitability to loblolly pine, sweetgum, and slash pine. Wetness is the main limitation in woodland management and harvesting the tree crop, but this can be partly overcome by using specialized equipment during wet periods or by logging during the drier seasons.

This soil has severe limitations for urban uses because of wetness.

This Stough soil is in capability subclass IIw and in woodland suitability group 2w8.

Figure 7.—Cotton, beginning to open, on Stough fine sandy loam, 0 to 2 percent slopes.

SwB2—Sweatman silt loam, 2 to 5 percent slopes, eroded. This deep, well drained soil is on upland ridgetops.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 28 inches, is red silty clay loam that has reddish brown mottles in the lower 6 inches. The lower part of the subsoil, to 32 inches, is yellowish red clay that has red and gray weathered shale fragments. Below this is strong brown, weathered stratified shale and clay loam that has red stains on shale fragments to a depth of 40 inches. This is underlain to 45 inches by light brownish gray loam and weathered stratified soft shale that has red and brown mottles.

In most areas, there are a few rills and shallow gullies extending into the subsoil. In some areas, the surface layer has been entirely removed and the plow layer consists wholly of materials from the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and the available water capacity is high. Runoff is medium, and the erosion hazard is moderate.

Included with this soil in mapping are small areas of Arundel, Lauderdale, and Ruston soils.

Most of this Sweatman soil is in woodland and pasture. A small acreage is in row crops. This soil is well suited to row crops and pasture. When crops are grown, soil management includes leaving crop residue on the surface, row arrangement, and grassed waterways.

Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil has moderate suitability for loblolly and shortleaf pine. Poor trafficability in wet weather limits managing and harvesting the tree crops. This can be partly overcome by using specialized equipment during wet seasons or by logging during dry seasons.

This soil has moderate limitations for urban uses, but special design is needed for foundations and streets because of shrinking and swelling in the subsoil.

This Sweatman soil is in capability subclass IIIe and in woodland suitability group 3c2.

SwC2—Sweatman silt loam, 5 to 8 percent slopes, eroded. This deep, well drained soil is on upland ridgetops.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 28 inches, is red silty clay loam that has reddish brown mottles in the lower 6 inches. The lower part of the subsoil, to 32 inches, is yellowish red clay that has red and gray weathered shale fragments. Below this is strong brown, weathered stratified shale and clay loam that has red stains on shale fragments to a depth of 40 inches. This is underlain to 45 inches by light brownish gray loam and weathered stratified soft shale that has red and brown mottles.

In most areas, there are a few rills and shallow gullies exposing the subsoil. In some areas, the surface layer has been entirely removed and the plow layer consists wholly of materials from the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow. and the available water capacity is high. Runoff is rapid and the erosion hazard is severe.

Included with this soil in mapping are small areas of Arundel, Lauderdale, and Ruston soils.

Most of this Sweatman soil is in woodland and pasture. A small acreage is in row crops. This soil is poorly suited to row crops and pasture.

This soil is suited to loblolly and shortleaf pine. Poor trafficability in wet weather limits managing and harvesting the tree crops. This can be partly overcome by using specialized equipment during wet seasons or by logging during dry seasons.

This soil has moderate limitations for urban uses, but special design is needed for foundations and streets because of the shrink-swell potential. Steepness of slopes is also a moderate limitation.

This Sweatman soil is in capability subclass IVe and in woodland suitability group 3c2.

SwD2—Sweatman silt loam, 8 to 17 percent slopes, eroded. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 28 inches, is red silty clay loam that has reddish brown mottles in the lower 6 inches. The lower part of the subsoil, to 32 inches, is yellowish red clay that has red and gray, weathered shale fragments. From 32 to 40 inches, it is strong brown, weathered stratified shale and clay loam that has red stains on shale fragments. This is underlain to 45 inches by light brownish gray loam and weathered stratified soft shale that has red and brown mottles.

In most areas, there are a few rills and shallow gullies. Areas exist where the surface layer has been entirely removed and where the surface layer consists wholly of materials from the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe.

Included with this soil in mapping are small areas of Arundel, Lauderdale, and Smithdale soils.

Most of this Sweatman soil is in woodland and pasture.

This soil is suited to loblolly and shortleaf pine. Poor trafficability in wet weather limits managing and harvesting the tree crops. This can be partly overcome by using specialized equipment during wet seasons or by logging during dry seasons.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Sweatman soil is in capability subclass VIIe and in woodland suitability group 3c2.

SwF—Sweatman silt loam, 17 to 35 percent slopes. This deep, well drained soil is on side slopes of uplands. Areas are from 30 to 160 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil, to a depth of 28 inches, is red silty clay loam that has many reddish brown mottles in the lower 6 inches. The lower part of the subsoil, to 32 inches, is yellowish red clay that has red and gray, weathered soft shale fragments. Below this is strong brown stratified shale and clay loam that has red stains on shale fragments to a depth of 40 inches. This is underlain to 45 inches by light brownish gray loam and weathered soft shale that has red and brown mottles.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow. and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe.

Included with this soil in mapping are small areas of Arundel, Lauderdale, and Smithdale soils.

Most of this Sweatman soil is in woodland. A small acreage is in pasture. Because of the steep slopes, rapid runoff, and the severe erosion hazard, permanent vegetation should be maintained on these soils.

This soil is suited to loblolly and shortleaf pine. Poor trafficability in wet weather limits managing and harvesting the tree crop. This can be partly overcome by using specialized equipment during wet seasons or by logging during dry seasons.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Sweatman soil is in capability subclass VIIe and in woodland suitability group 3c2.

SX—Sweatman association, hilly. The soils of this association are well drained. They are in a regular and repeating pattern on hilly uplands. Slopes range from 17 to 35 percent. Areas range from 160 to over 800 acres. The composition of this unit varies between mapped areas, but mapping has been controlled well enough for the expected use of the soils.

Sweatman soils and closely similar soils make up about 84 percent of the unit. Other soils make up 16 percent.

The deep Sweatman soils are on the ridgetops and side slopes. Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil, to depth of about 28 inches, is red silty clay that has reddish brown mottles in the lower 6 inches. The lower part of the subsoil, to a depth of 32 inches, is yellowish red clay that has red and gray, weathered shale fragments. From 32 to about 40 inches, it is strong brown, weathered stratified shale and clay loam that has red stains on shale fragments. This is underlain to a depth of 45 inches by light brownish gray loam and weathered stratified soft shale that has red and brown mottles.

Sweatman soils are very strongly acid or strongly acid throughout. Permeability is moderately slow, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe.

Included with these soils in mapping are small areas of Ora soils on ridgetops and small areas of Smithdale soils on the side slopes.

These Sweatman soils are woodland. Because of the steep slopes, rapid runoff, and severe erosion hazard, permanent vegetation should be maintained on these soils.

These Sweatman soils are suited to loblolly and shortleaf pine. Poor trafficability in wet weather limits managing and harvesting the tree crop. This can be partly overcome by using specialized equipment during wet periods or logging during dry seasons.

These soils have severe limitations for urban uses because of the steepness of the slopes.

These Sweatman soils are in capability subclass VIIe and in woodland suitability group 3c2.

TIF—Troup-Lucy complex, 15 to 25 percent slopes. This complex consists of soils in uplands. Areas range from 20 to 90 acres. The individual soils of this complex are in an intricate pattern, and it was not practical to separate each soil at the scale selected for mapping.

The Troup soil and closely similar soils make up about 60 percent of the complex, and the Lucy soil and closely similar soils make up about 23 percent. Other soils make up 17 percent.

The deep, well drained Troup soil, typically, has a dark brown loamy fine sand surface layer about 4 inches thick. The subsurface layer, to a depth of 45 inches, is yellowish brown loamy fine sand. The upper part of the subsoil, to 55 inches, is yellowish red sandy loam. The lower part of the subsoil to 80 inches is yellowish red sandy clay loam.

This Troup soil is very strongly acid or strongly acid throughout. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low. Runoff is slow to medium, and the erosion hazard is slight.

The deep, well drained Lucy soil, typically, has a very dark grayish brown loamy fine sand surface layer about 4 inches thick. The subsurface layer, to a depth of about 28 inches, is loamy fine sand that is dark brown to 10 inches and yellowish brown to 28 inches. The upper part of the subsoil, to 39 inches, is yellowish red sandy loam. The lower part is yellowish red sandy clay loam to a depth of 70 inches.

This Lucy soil is very strongly acid or strongly acid throughout. Permeability is rapid in the surface layer and moderate in the subsoil. The available water capacity is low. Runoff is slow to medium, and the erosion hazard is slight.

Included with these soils in mapping are small areas of Ruston soils on the ridgetops and small areas of Smithdale soils on the side slopes.

Most of these Troup and Lucy soils are in woodland. A small acreage is in pasture. Because of the steep slopes, permanent vegetation should be maintained on these soils.

Both the Troup and Lucy soils are suited to loblolly and slash pine. The sandy surface layer of these soils moderately limits managing and harvesting the tree crop, but conventional equipment can be used.

These soils have severe limitations for urban uses because of the steepness of the slopes.

These Troup and Lucy soils are in capability subclass VIIs and woodland suitability group 3s2.

WmD2—Williamsville loamy sand, 8 to 17 percent slopes, eroded. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is reddish brown loamy sand about 5 inches thick that is underlain by yellowish red loamy sand to about 12 inches. The upper part of the subsoil, to a depth of 17 inches, is dark red sandy clay loam that is underlain, to 48 inches, by dark red sandy clay. Below this, to 72 inches, is dark red sandy clay loam. The lower part of the subsoil to 80 inches is red loamy sand.

In most areas, there are a few rills and shallow gullies present. In some areas, the surface layer has been entirely removed. Where present the surface layer consists wholly of materials from the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow in the upper part of the subsoil and moderate in the lower part, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe.

Included with this soil in mapping are small areas of Neshoba, Ruston, and Smithdale soils.

Most of this Williamsville soil is in woodland and pasture. This soil is poorly suited to row crops but is suited to pasture. Management for pasture includes proper stocking, controlled grazing, and controlling weeds and brush.

This soil is well suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Williamsville soil is in capability subclass VIe and in woodland suitability group 2o1.

WmF2—Williamsville loamy sand, 17 to 40 percent slopes, eroded. This deep, well drained soil is on side slopes of uplands.

Typically, the surface layer is reddish brown loamy sand about 5 inches thick that is underlain by yellowish red loamy sand to about 12 inches. The upper part of the subsoil, to a depth of about 17 inches, is dark red sandy clay loam that is underlain to 48 inches by dark red sandy clay. Below this, to 72 inches, is dark red sandy clay loam. The lower part of the subsoil to 80 inches is red loamy sand.

In most areas, there are a few rills and shallow gullies. In some areas, the surface layer has been entirely removed and the present surface layer consists wholly of materials from the subsoil.

This soil is very strongly acid or strongly acid throughout. Permeability is moderately slow in the upper part of the subsoil and moderate in the lower part, and the available water capacity is high. Runoff is rapid, and the erosion hazard is severe.

Included with this soil in mapping are small areas of Neshoba, Ruston, and Smithdale soils.

Most of this Williamsville soil is in woodland. A small acreage is in pasture. Because of steep slopes, rapid runoff, and the severe erosion hazard, permanent vegetation should be maintained on this soil.

This soil is well suited to loblolly and shortleaf pine. Woodland management limitations are slight.

This soil has severe limitations for urban uses because of the steepness of the slopes.

This Williamsville soil is in capability subclass VIIe and in woodland suitability group 2o1.

WS—Williamsville-Smithdale association, hilly. The soils of this association are deep and well drained. They are in a regular and repeating pattern, on hilly uplands. Slopes range from 8 to 40 percent. Areas range from 160 to over 1,000 acres. The composition of this unit varies between mapped areas, but mapping has been controlled well enough for the expected use of the soils.

The Williamsville soils and closely similar soils make up about 52 percent of the unit, and the Smithdale soils and closely similar soils make up about 26 percent. Other soils make up 22 percent.

The Williamsville soils are on side slopes. Typically, the surface layer, about 5 inches thick, is reddish brown loamy sand that is underlain by yellowish red loamy sand to about 12 inches. The upper part of the subsoil, to a depth of about 17 inches, is dark red sandy clay that is underlain to 48 inches by dark red sandy clay. Below this, to 72 inches, is dark red sandy clay loam. The lower part of the subsoil to 80 inches is red loamy sand.

The Williamsville soils are very strongly acid or strongly acid throughout. Permeability is moderately slow in the upper part of the subsoil and moderate in the lower part. The available water capacity is high. Runoff is rapid, and the erosion hazard is severe where permanent vegetation is not maintained.

The Smithdale soils are on side slopes. Typically, the surface layer, about 7 inches thick, is brown fine sandy loam that has pale brown mottles. The subsurface layer is light yellowish brown fine sandy loam to a depth of about 13 inches. The upper part of the subsoil is red sandy clay loam to about 43 inches. The lower subsoil is red sandy loam to 80 inches.

The Smithdale soils are very strongly acid or strongly acid throughout. Permeability is moderate in the upper part of the subsoil and moderately rapid in the lower part. The available water capacity is medium. Runoff is rapid, and the erosion hazard is severe.

Included with these soils in mapping are small areas of Neshoba soils and Ruston soils on ridgetops, small areas of Sweatman and Troup soils on side slopes, and small areas of Kirkville soils on the narrow flood plains.

These Williamsville and Smithdale soils are woodland. Because of the steep slopes, rapid runoff, and severe erosion hazard, soils of this unit are dominantly poorly suited to crops and pasture. Permanent vegetation should be maintained on these soils.

The Williamsville soils are well suited to loblolly and shortleaf pine. The Smithdale soils are suited to loblolly and shortleaf pine. Woodland management limitations are slight.

These soils have severe limitations for urban uses because of the steepness of the slopes.

These Williamsville and Smithdale soils are in capability subclass VIIe. Williamsville soils are in woodland suitability group 2o1, and Smithdale soils are in woodland suitability group 3o1.

use and management of the soils

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

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

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

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

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

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

crops and pasture

Larry F. Milner, soil conservationist, Soil Conservation Service, helped prepare this section.

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

About 91,000 acres in the county was used as cropland and pasture according to the 1974 Census of Agriculture (*27*). Of this total, about 69,000 acres was used for permanent pasture, about 9,000 acres was used for row crops, and 1,000 acres for close-grown crops, mainly oats, wheat, and ryegrass. Other cropland, including hayland, orchards, and vineyards, totaled about 12,000 acres.

The potential of the soils in Neshoba County for increased production of food and fiber is good. About 17,000 acres of potentially good cropland is used as woodland and about 15,000 acres as pasture. In addition to the reserve productive capacity represented by this land, production could also be increased by applying the latest crop production technology to all cropland in the county.

Acreage in crops, mainly soybeans, and pasture has increased in the past. Suitabilities and limitations for specific uses of the land are discussed in the section "Detailed soil map units."

Soil erosion is the major concern on much of the openland in Neshoba County. If the slope is more than 2 percent, erosion is a hazard. Ora and Providence soils, for example, have slopes of 2 to 5 percent and the problem of wetness.

Loss of the surface layer through erosion is damaging for two reasons: First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils with a clayey subsoil, such as the Sweatman soils, and on soils with a layer in or below the subsoil that limits the depth of the root zone. Such layers include fragipans as in Ora, Providence, and Savannah soils, or shale as in Sweatman soils. Erosion also reduces productivity on soils that tend to be droughty, such as Smithdale soils. Second, soil erosion on farmland results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping fields, preparing a good seedbed and tilling are difficult on clayey or hardpan spots because the original friable surface soil has eroded away. Such spots are common in areas of moderately eroded Sweatman and Ora soils.

Erosion control provides protective surface cover, reduces runoff, and increases infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in a cropping system reduce erosion on sloping land and provide some nitrogen as well as improve tilth.

Cropping systems that provide substantial vegetative cover are necessary to control erosion on sloping soils, unless tillage is minimized. Minimizing tillage and leaving crop residue on the surface help to increase infiltration and reduce the hazard of runoff and erosion. These practices can be adapted to most soils in the county, but they are more difficult to use successfully on the eroded soils. No-till for soybeans, which is becoming common on more and more acreage, is effective in reducing erosion on sloping soils; no-till can be adapted to most soils in the survey area.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical on deep, well drained soils that have regular slopes. Ora and Ruston soils are generally suitable for terraces. Some soils are less suitable for terracing and diversions because of irregular or steep slopes.

Contouring and contour stripcropping help control erosion in the county. They are best adapted to soils with smooth, uniform slopes, such as areas of the sloping Ora, Ruston, and Neshoba soils.

Information for the design of erosion control practices for each kind of soil is available in the local office of the Soil Conservation Service.

Soil drainage is the major management need on many of the soils used for crops and pasture in the county. Most of the soils on flood plains need artificial drainage to achieve maximum production. Such soils include the Ariel, Arkabutla, Bibb, Johnston, Kirkville, Mantachie, and Rosebloom soils. These soils account for more than 100,000 acres in Neshoba County.

Guyton and Stough soils are on uplands in broad areas, where slope is nearly level. They require artifical drainage to achieve maximum production.

The design of drainage systems varies with the kind of soil, slope, size of area to be drained, and vegetation. Information on drainage design for each kind of soil is available in the local office of the Soil Conservation Service.

Soil fertility is naturally low in most soils of the uplands in the county. The soils on the flood plains, such as Ariel and Kirkville, are naturally higher in plant nutrients than most upland soils.

Most of the soils of the county are naturally very strongly acid or strongly acid and require applications of lime to raise the pH level for good growth of crops and pasture. Available phosphorous and potash levels are naturally low in most of these soils. On all soils additions of lime and fertilizer should be based on the results of soils tests, on the need of the crop, and on expected level of yields.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil.

Some of the soils used for crops in the county have a silt loam surface layer that is light in color and low in content of organic matter. Generally the structure of such soils is weak, and intense rainfall causes the formation of crust on the surface. The crust is hard when it is dry, and it is nearly impervious to water. When a crust forms, it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material into the surface layer help to improve soil structure and to reduce crust formation.

Fall plowing is generally not a good practice on the light-colored soils that have a silt loam surface layer. Because of the crust that forms during the winter and spring, many of the soils would be dense and hard at spring planting time. Also, much of the cropland consists of sloping soils that are subject to damaging erosion if they are plowed in the fall.

Row crops suited to the soils and climate of the county include cotton, corn, and soybeans. Also, sorghum, millet, sunflowers, cowpeas, and peanuts can be grown if economic conditions are favorable. The row crops are best suited to the Ariel, Kirkville, and Mantachie soils, and the nearly level and gently sloping areas of Ora, Providence, Ruston, and Savannah soils.

Oats is a common close-growing crop in Neshoba County. Bahiagrass, fescue, and common bermuda are also grown. They are suited to the same soils as row crops and can be grown on steeper slopes.

Many different vegetables are grown in gardens in Neshoba County. Climatic conditions are suitable for many vegetables to be grown commercially on the Ariel, Kirkville, and Mantachie soils, and the nearly level to sloping phases of Neshoba, Ora, Providence, Ruston, and Savannah soils.

Fruits, such as peaches and pears, are suited to deep, well drianed soils, such as Ruston and Neshoba soils. Fruits may also be grown on the strongly sloping Smithdale soils.

Lastest information and sugestions for growing special crops can be obtained from the local office of the Cooperative Extension Service or the Soil Conservation Service.

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 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

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

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

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs (*13, 14*).

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 slight limitations that restrict their use. No class I soils are shown on maps because of limited acreage and extent in Neshoba County.

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 miscellaneous areas have limitations that nearly preclude their use for commercial crop production. No class VIII soils are recognized or mapped in Neshoba County.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is 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 very cold or very 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. 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 shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

Joseph V. Zary, forester, Soil Conservation Service, helped prepare this section.

This section contains information on the relation between trees and their environment—particularly trees and the soils on which they grow. It also includes information on the kind, amount, and condition of woodland resources and the industries they support. The section also includes interpretations of the soils that can be used by owners of woodland, foresters, forest managers, and agricultural workers to develop and carry out plans for profitable tree planting.

Obviously, soil provides the medium in which a tree is anchored. Many characteristics of soil, such as chemical composition, texture, structure, depth, and postion, affect the growth of trees. A strong correlation exists between growth of trees, and soil charactersitics, such as soil depth and position on the slope. The relationships are often indirect.

The ability of a soil to supply water and nutrients to trees is strongly related to its texture, structure, and depth. Sands contain only a small amount of plant nutrients and are low in available water capacity. Many fine-textured soils, the clays, are high in plant nutrients and have high available water capacity. Aeration is impeded in heavy clays, particularly under wet conditions. This inhibits the metabolic processes requiring oxygen in the roots (*16*).

The nature of soils and the position on slope strongly influence species composition as well as growth within an individual tree species. Yellow-poplar, for instance, thrives on moderately moist, well drained, loose textured soils situated on lower to middle slopes, coves, and areas adjoining streams. Sweetgum is tolerant of different soils and sites, but it grows best on the rich, moist, alluvial loamy soils of river bottoms.

Because of the large number and wide distribution, oaks occupy a variety of soils. White oak, for instance, grows on soils on flood plains, ridges, uplands, coves, and well drianed second bottoms. However, it develops best on deep, well drained loamy soils. Water and willow oaks grow on many alluvial soils and the well drained, loamy ridges. Swamp chestnut oak is widely distributed on the best, well drained, loamy, first bottom ridges and thrives on well drained loamy terraces and colluvial sites in the bottom lands of both large and small streams. At the other extreme, on uplands, oaks such as southern red oak and scarlet oak occur on dry, sandy or clay soil but are also found widely on other soils. Another oak for uplands is post oak, which grows on rocky ridges, sandy outcroppings, and southern exposures.

In terms of board feet of sawtimber and cubic feet of growing stock, loblolly and shortleaf pine are the predominant and the most widely grown trees in Neshoba County. These two pines also constitute the loblolly-shortleaf pine forest type which occupies a major portion of the commerical forest area of the county. This forest type is described in more detail later in this section. The ability of these two species to grow on a variety of soils partly accounts for the wide distribution of these two pine species. Further, their ability to occupy similar sites accounts for the trees being closely intermingled.

Loblolly pine grows best in soils with slow surface drainage, a deep surface layer, and a firm subsoil. Such soils are common in the Southern Coastal Plain, which embraces all of Neshoba County (*15*), and in the flood plains of the larger streams. Loblolly pine attains its highest site index on soils of river bottoms and terraces.

Shortleaf pine grows well on soils with friable subsoils. Optimum shortleaf sites are the soils with fine sandy loam surface layers, clay subsoils, and good internal drainage. These soils are found mainly on upland ridges. Some sandy soils with excessive internal drainage are poor shortleaf sites. Generally, shortleaf pine does not grow on soils with a high calcium content or high pH (*16*).

Natural stands of longleaf and slash pine do not occur in Neshoba County. A relatively small number of plantations of these two pines have been established in the county (fig. 8).

Silvicultural practices that help to prevent the destruction of organic matter and the compaction of soil are important in maintaining soil moisture and aeration. These practices include (1) sanitation cutting to remove trees killed or injured by fire, insects, and fungi; (2) improvement cutting to improve species composition and stand condition; and (3) thinning to increase rate of growth, reduce tree competition, improve compostion,

Figure 8.—Pine plantation on Ruston fine sandy loam, 2 to 5 percent slopes, eroded.

and foster quality. All of these practices result in long-term increases in total yield of timber.

woodland resources

An area of approximately 202,400 acres, or 56 percent, of the total land area of 363,520 acres in Neshoba County is classified as commercial forest (*21, 22*). Commercial forest land is defined as that producing or capable of producing crops of industrial wood and not withdrawn from timber use (*20*). Commercial forests are divided into classes of ownership as follows: 104,900 acres is owned by miscellaneous private owners; 59,800 acres is owned by farmers; 25,700 acres is owned by the forest industry; and 12,000 acres is in public ownership (*21*).

Commercial forests may also be subdivided into forest types. Types may be based on tree species, site quality, or age (*7, 9, 12*). As used in this report, forest types are stands of trees of similar character, composed of the same species, and growing under the same ecological and biological conditions. These forest types are named for the trees that predominate.

The loblolly-shortleaf pine forest type is most important. This type includes mainly southern pine except longleaf and slash pine and eastern red cedar, singly or in combination. The loblolly-shortleaf pine forest type occupies about 70,400 acres throughout the county. Associated trees of this forest type are oak and hickory species, sweetgum, and blackgum (*8, 12, 20, 21, 22*).

The oak-hickory forest type is second in importance. This type is composed of oaks and hickories on uplands, singly or in combination, except where pines comprise 25 to 50 percent, in which case the stand would be classified oak-pine. The oak-hickory forest type occurs on about 52,800 acres in the county. Associated trees include yellow-poplar, maple, black walnut, and elm.

The oak-pine forest type ranks third in importance. This type is composed of hardwoods (usually oaks on uplands) in which softwoods, except southern baldcypress, comprise 25 to 50 percent of the stocking. The oak-pine forest type occupies about 44,000 acres throughout the county. Associated trees include hickory, sweetgum, blackgum, and yellow-poplar.

The oak-gum-cypress forest type is fourth in importance. This includes bottom land forests of tupelo, blackgum, sweetgum, oak, and southern baldcypress, singly or in combination. Where pines comprise 25 to 50 percent of the stand, it is classified oak-pine. The oak-gum-cypress forest type occurs on about 35,200 acres in the county. Associated trees include cottonwood, black willow, ash, hackberry, maple, and elm species. In recent years much of the bottom land forests of Neshoba County have been converted to cropland and pasture for economic reasons. The remaining acreage in this forest type is located in parts of the flood plains of Pearl River and its major tributaries—Beasha, Coonshuck, Cushtusia, Fulton and Kentawka Canals, and Bear, Bogue Chitto, Coffadeliah, Hurricane, Joel, Jofuska, Nanawaya, Noxapater, Ocobla, Owl, Pinishook, and Spring Creeks.

The loblolly-shortleaf, oak-hickory, and oak-pine forest types occupy sites ranging from lower slopes to upper slopes and ridges throughout the county. The oak-hickory forest type and the oak components of the oak-pine forest type occupy upland topographic positions, and the member species are generally referred to as upland hardwoods.

In terms of cubic feet of growing stock, board feet of sawtimber, distribution, and acreages which they occupy, individual species rate (large to small) in the following order: loblolly pine, shortleaf pine, sweetgum, red oak, white oak, tupelo and blackgum combined, hickory, beech, red maple, elm, yellow-poplar, and hackberry (*5, 10*).

In 1972, 22,811,000 board feet of saw-logs were produced in Neshoba County. This volume included 17,103,000 board feet of softwood (pine) and 5,708,000 board feet of hardwood (*23*). During the same year, 61,191 standard cords of round pulpwood were produced on the commerical forest land of the county. Of this volume, 41,815 standard cords were softwood (pine) and 19,376 standard cords were hardwood (*23, 24*). In 1972, 2,749,000 board feet of veneer logs were produced in Neshoba County. This volume included 2,506,000 board feet of softwood (pine) and 243,000 board feet of hardwood. Also 5,000 linear feet of piling (pine), 35,000 commercial posts (pine), and other miscellaneous wood products amounting to 50,000 cubic feet were produced. In 1977, Neshoba County produced 86,231 standard cords of pulpwood (*3*). Of this volume, 52,203 cords were softwood (pine) and 34,028 cords were hardwood.

economic and environmental impact

Neshoba County's commercial forest contributes substantially to the economy in east-central Mississippi and to a large number of wood-using industries in the county, itself. The protecting, managing, harvesting, and logging operations in the forest, as well as with the processing, transporting, and merchandising of wood products, provide employment for hundreds of workers (*6, 23*).

Five sawmills operate in the county. Two of these are portable mills, which use circular headsaws and conventional edgers and which use both pine and hardwood trees. Two other mills are stationary, which use short logs and tree-length logs of pine only. They produce dimension lumber; common boards, both finished and unfinished; structural timbers; pulp chips; and shavings. The remaining mill is stationary and uses only hardwood short logs and tree-length logs. This mill produces dimension lumber, common boards, structural timbers, and pulp chips. Three of the sawmills are equipped with modern and efficient debarkers, headsaws, edgers, trimmers, and residue chippers. Two of the mills have dry kilns. Such equipment enables these mills to operate efficiently, adhere to rigid grading standards, and process high quality wood products (*6, 23*).

One plywood mill in Neshoba County manufacturers pine plywood. This mill uses short logs and tree-length logs of pine and has a capacity of 35,000 board feet per 8-hour shift. One chipping mill in the county produces hardwood pulp chips and uses about 25,000 standard cords of hardwood annually. One plant produces pine poles, piling, and posts, which are shipped to wood preserving plants elsewhere. Another plant produces pine poles and posts and uses a nonpressure process in treating these products with penta and waterborne chemicals.

Four pulpwood dealers in Neshoba County use pine and hardwood trees from forests within 20 to 30 miles of their mills. There are also three secondary wood-using industries in the county. One processes pine bark for mulch, soil conditioner, and decorative purposes. One industry engages in millwork and manufactures cabinets and store fixtures. The third industry produces survey stakes (*6*).

In the county, there are 19 logging operators whose crews engage in producing mainly pulpwood and short logs from pine and hardwood trees. This work force includes the woods crews which fell, buck, skid, and load the pulpwood and logs, as well as the haulers who transport the products to sawmills, plants and pulpwood yards.

The commercial forest land of Neshoba County provides food and shelter for wildlife and offers opportunity for sport and recreation to many users annually. There are a number of hunting and fishing clubs in the county that either lease or otherwise use the forest land. This forest land provides watershed protection, helps to arrest soil erosion and reduce sedimentation, enhances the quality and value of water resources, and furnishes a limited amount of native forage for domestic livestock.

Trees can be planted to screen distracting views of dumps and other unsightly areas, muffle the sound of traffic, reduce the velocity of winds, and lend beauty to the landscape. Trees produce fruits and nuts for use by people as well as wildlife. Trees and forests help filter out airborne dust and other impurities; convert carbon dioxide into life-giving oxygen; and provide shade from the sun's hot rays.

woodland production

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity (*18, 19*).

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 *w*, indicates excessive water in or on the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; and *s*, sandy texture. The letter *o* indicates that limitations or restrictions are insignificant.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

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

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common 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. Commonly grown 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 suited to the soils and to commercial wood production.

recreation

Larry F. Milner, soil conservationist, Soil Conservation Service, helped prepare this section.

Neshoba County has considerable potential for year-round outdoor recreation because of the favorable climate and location.

Many large ponds are available for fishing plus the Pearl River area, which provides fishing and hunting grounds for hundreds of sportsmen.

A large recreational park is located at Burnside. This area provides fishing, picnicking, and camping. In addition, sites are available for campers and trailers. These sites provide outlets for electricity and sanitary facilities. Also located here is a large community meeting house, a baseball field, and a nature trail.

Two recreational parks are located in Philadelphia (fig. 9). These provide softball fields, tennis courts, a swimming pool, a zoo, and a fishing pond.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil

Figure 9.—Baseball field at Northside Park in Philadelphia is on Bibb sandy loam, occassionally flooded. Extensive drainage and site preparation has reduced the wetness and flooding hazards at this site.

properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

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

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have 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 campsites.

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

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

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

wildlife habitat

Edward G. Sullivan, biologist, Soil Conservation Service, helped prepare this section.

Of all the factors that affect wildlife populations, the way man uses the land is the most important. Regardless of how well suited a soil may be for producing wildlife habitat, if the present land use eliminates the plants for the habitat, the animals will not be there. For this reason the kinds and numbers of wild animals in Neshoba County have varied over the years since the area was settled.

Before Neshoba County was settled by man, the area was predominantly forest. Hardwoods were the dominant vegetation. In this habitat animals living in forests were abundant. Some of these were squirrels, deer, turkeys, bobcats, wolves, eagles, and many kinds of birds including the now extinct passenger pigeon.

As this area was settled, logging and land clearing pushed the woodland animals farther back into remote areas. In their place came animals that live in openland. Clearing fields, logging, burning, and other soil disturbances created vegetative patterns, which met the needs of bobwhite quail, rabbits, doves, many types of ground and brush inhabiting song birds, rodents, and reptiles.

These conditions were responsible for some of the highest bobwhite quail populations anywhere in the county. As this trend continued, forest animal numbers further declined. Wolves, panthers, and later, deer and turkeys disappeared. But agricultural and industrial demands and methods continued to change. After World War II, reforestation and wildlife management efforts began. With restocking and management, deer and turkeys have been restored. More intensive farming methods have caused some decline in numbers of openland wildlife. Kinds and numbers of wild animals will continue to change as man's methods and demands on the land change.

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

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

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

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, ryegrass, panicgrass, clover, and annual and bush lespedezas.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are perennial lespedeza, beggarweed, wild bean, and pokeberry.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, beech, cherry, maple, and dogwood.

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

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are wild grape, viburnum, honeysuckle, blackberry, greenbrier, and elaeagnus.

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

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

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

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

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

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

engineering

Robert L. Tisdale, agricultural engineer, Soil Conservation Service, helped prepare this section.

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

building site development

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

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

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

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

sanitary facilities

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

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

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

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

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

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

Excessive seepage because of rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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

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

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

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

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

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

construction materials

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

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

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

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

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

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

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

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

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

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

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

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

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

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

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

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

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

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

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

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

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

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps.

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

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

engineering index properties

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

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

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

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

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

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

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

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

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

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

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

physical and chemical properties

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

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

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

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

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

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

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

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

soil and water features

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

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

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

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

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

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

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

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

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

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

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

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

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

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

physical and chemical analyses of selected soils

The results of physical analysis of three typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil series and their morphology." Soil samples were analyzed by the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station.

The grain-size analyses of the soils in table 17 were obtained using the hydrometer method of Day (*4*). Forty grams of soil were dispersed in a 0.5 percent solution of sodium metaphosphate by mixing 5 minutes in a shaker. The dispersed soil was transferred to a sedimentation cylinder, made to 1,000 milliliters, and equilibrated overnight in a 30 degrees C water bath. The suspension was then mixed and allowed to settle. Hydrometer readings were taken at predetermined times to determine the clay content. The total sand was separated on a 325-mesh sieve, dried, and weighed. The particle-size distribution of the total sand fraction (.05-2 millimeter) was determined by the weight percentage of the very coarse, coarse, medium, fine, and very fine fraction (3AI). All results, shown in table 17 are expressed on the basis of 110 degrees oven-dry weight.

The physical properties of soils, such as water infiltration and conduction, shrink-swell potential, crusting, ease of tillage, consistence, and water holding capacity, are closely related to soil texture, that is, the percentage of sand, silt, and clay.

The soil analyses reported in table 18 were also made in the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station. The procedures used were essentially like those given in the Soil Survey Investigation Report No. 1 (SSIR I) (*17*).

Soil samples were collected from open pits by the soil scientist. Preparation of the samples for analyses at the laboratory consisted of air drying, grinding, and screening through a No. 10 sieve.

The exchangeable cations, calcium, magnesium, potassium, and sodium, were extracted by neutral, normal ammonium acetate (5A1). Calcium and magnesium in the extract were determined with a Perkin-Elmer atomic absorption apparatus using strontium chloride to suppress interference of aluminum, silicon, and phosphorus. Potassium and sodium were analyzed by flame photometry using a Beckman flame spectrophotometer. Extractable acidity (hydrogen plus aluminum) was extracted with barium chloridetriethanolamine buffered at pH 8.2.

The percentage base saturation was calculated by dividing the sum of the bases (calcium, magnesium, sodium, and potassium) by the sum of the cations and multiplying by 100. The sum of the cations include in addition to the bases the extractable acidity (hydrogen plus aluminum).

Soil pH was determined potentiometrically with a Coleman pH meter using a 1:1 soil:water ratio.

Percent organic matter was determined by the hydrogen peroxide method (6A3).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*25*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 19, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

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

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

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

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. An example is Williamsville loamy sand.

soil series and their morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*11*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*25*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

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

Ariel series

The Ariel series consists of deep, well drained soils that formed in silty material on flood plains. Slopes range from 0 to 2 percent.

Ariel soils are associated with Arkabutla, Bibb, Kirkville, Mantachie, and Rosebloom soils. Ariel soils are better drained and contain less clay in the upper part of the B horizon than Arkabutla soils. Ariel soils are better drained and have a higher silt content in the subsoil than Bibb, Kirkville, and Mantachie soils. Ariel soils are browner in the upper part of the subsoil than Bibb, Kirkville, and Mantachie soils. Ariel soils have less clay in the subsoil than Mantachie soils. They are better drained and contain less clay in the upper part of the B horizon than Rosebloom soils.

Typical pedon of Ariel silt loam, occasionally flooded, in a field 1 mile west of Hope Community on Mississippi Highway 488, north 1,300 feet along Beasha Canal, and west of canal 60 feet, SE1/4SW1/4 sec. 3, T. 10 N., R. 10 E.

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

B21—6 to 19 inches; dark brown (7.5YR 4/4) silt loam; common fine faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.

B22—19 to 30 inches; dark brown (7.5YR 4/4) silt loam; common fine faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear smooth boundary.

A2b—30 to 36 inches; pale brown (10YR 6/3) silt loam containing noticeable sand; many fine faint light yellowish brown (2.5YR 6/4) mottles; moderate medium subangular blocky structure; friable; slightly brittle and compact; common fine pores; many fine black and brown concretions; very strongly acid; clear wavy boundary.

B2b—36 to 60 inches; pale brown (10YR 6/3) loam; common fine faint light yellowish brown (2.5YR 6/4) and few fine faint yellowish brown mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; friable; slightly brittle and compact; common fine pores; common fine black and brown concretions; patchy clay films on faces of peds; bridging and coating of sand grains with clay and oxides; very strongly acid.

Solum thickness ranges from 60 to 80 inches. Reaction is very strongly acid or strongly acid throughout.

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

The B2 horizon is dark yellowish brown, brown, or dark brown.

The A2b horizon is light brownish gray, pale brown, or grayish brown. It may be mottled in shades of brown and gray.

The B2b horizon is mottled in shades of brown and gray or has a brown matrix with brown and gray mottles.

The 10- to 40-inch control section ranges from 12 to 18 percent clay and from 3 to 15 percent sand on a weighted average.

Arkabutla series

The Arkabutla series consists of deep, somewhat poorly drained soils that formed in silty alluvium on flood plains. Most areas are flooded for short periods following heavy rainfall. Slopes range from 0 to 2 percent.

Arkabutla soils are associated with Ariel, Mantachie, and Rosebloom soils. Arkabutla soils differ from Ariel soils by having colors of chroma of 2 or less within 16 inches of the surface. Arkabutla soils are browner and less gray in the upper part of the subsoil than Rosebloom soils. Arkabutla soils have more clay in the subsoil than Ariel soils. Arkabutla soils have more silt in the B horizon than Mantachie soils.

Typical pedon of Arkabutla silt loam, in a wooded area of Rosebloom-Arkabutla association, frequently flooded, in Pearl River swamp about 3.5 miles northwest of Philadelphia on Mississippi Highway 19, west 300 feet along Pearl River, and north 200 feet from the river, NW1/4SW1/4, sec. 1, T. 11 N., R. 11 E.

A1—0 to 4 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

B21—4 to 14 inches; dark grayish brown (10YR 4/2) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

B22g—14 to 25 inches; gray (10YR 6/1) silt loam; common fine faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; clear smooth boundary.

B23g—25 to 36 inches; light brownish gray (10YR 6/2) silty clay loam; common fine faint yellowish brown (10YR 5/8) and gray (10YR 5/1) mottles; weak and moderate medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.

B24g—36 to 55 inches; gray (10YR 5/1) silty clay loam; common fine faint yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; very strongly acid; clear smooth boundary.

B3g—55 to 65 inches; light brownish gray (10YR 6/2) silty clay loam; common fine faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; very strongly acid.

Solum thickness exceeds 40 inches. Reaction is very strongly acid or strongly acid throughout.

The A horizon is brown, dark brown, dark yellowish brown, or any of these as a matrix that has gray mottles. There may be a thin A1 horizon of very dark grayish brown or very dark gray.

The B21 horizon is dark grayish brown or grayish brown or is mottled in shades of brown, yellow, and gray, or has a dark brown, brown, or yellowish brown matrix that has few to many gray mottles. The Bg horizon is gray or light brownish gray and has few to many mottles in shades of brown. The texture of the B horizon is silt loam or silty clay loam. The clay content in the 10- to 40-inch control section ranges from 20 to 34 percent on a weighted average. Brown concretions range from none to many in the B horizon.

Arundel series

The Arundel series consists of moderately deep, well drained soils. They formed in loamy material over weathered stratified siltstone, sandstone, and buhrstone on uplands. Slopes range from 17 to 25 percent.

Arundel soils are associated with Lauderdale and Sweatman soils. Arundel soils differ from Lauderdale soils by having a higher clay content in the upper part of the subsoil and a thicker solum. Arundel soils have an underlying, weathered stratified siltstone, sandstone, and buhrstone Cr horizon, which the Sweatman soils do not have.

Typical pedon of Arundel loam, in a wooded area of Lauderdale-Arundel association, hilly, 0.5 mile east of Bethsadia Church on gravel road, south 0.5 mile on intersecting gravel road, east 0.3 mile along gravel road, southeast 1,600 feet along logging road, and south 100 feet, SW1/4NW1/4, sec. 31, T. 10 N., R. 13 E.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable; many fine roots; small sandstones comprising about 2 percent of the volume; strongly acid; abrupt smooth boundary.

A2—5 to 9 inches; brown (10YR 5/3) loam; weak fine granular structure; friable; common fine and medium roots; small sandstones comprising about 3 percent of the volume; very strongly acid; clear smooth boundary.

B2t—9 to 30 inches; dark brown (7.5YR 4/4) clay loam; moderate medium angular blocky structure; firm; common fine and medium roots; common shale fragments ranging from 5 to 20 millimeters in diameter, comprising about 15 percent of the volume; many clay films on faces of peds; very strongly acid; abrupt wavy boundary.

Cr—30 to 35 inches; alternating horizontal layers of siltstone, sandstone, and buhrstone; fragments have pale brown (10YR 6/3) interiors; dark brown (7.5YR 4/2) silt coatings between the fractures; yellowish brown stain throughout the rock structure; siltstone, sandstone, and buhrstone can be cut with a spade.

Solum thickness ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout. Content of sandstone, buhrstone, or siltstone fragments by volume ranges from 0 to 20 percent in the A and B horizons.

The A horizon is very dark gray, dark gray, very dark grayish brown, or dark grayish brown. Some pedons have a pale brown or brown A2 horizon. The texture is silt loam, loam, or fine sandy loam.

The Bt horizon is dark brown, strong brown, dark yellowish brown, yellowish brown, or yellowish red. The texture is silty clay loam, clay loam, silty clay or clay. The clay content or the upper 20 inches of the the Bt horizon ranges from 35 to 78 percent on a weighted average.

The Cr horizon is weathered stratified siltstone, sandstone, and buhrstone or is thick bedded weathered sandstone or siltstone, or both.

Bibb series

The Bibb series consists of deep, poorly drained, moderately permeable soils that formed in stratified loamy and sandy alluvium. These soils are on nearly level flood plains that are occasionally to frequently flooded. Slopes range from 0 to 2 percent.

Bibb soils are associated with Ariel, Johnston, Kirkville, Mantachie, and Stough soils. Bibb soils are more gray and less brown in the upper part of the subsurface horizon than Ariel, Kirkville, and Mantachie soils. Bibb soils do not have the dark colored, mucky loam surface layer over 2 feet thick that is common in Johnston soils. Bibb soils do not have as much clay content in the upper part of the subsurface horizon as Mantachie soils. Stough soils have a fragipan that Bibb soils do not.

Typical pedon of Bibb sandy loam in an area of Bibb-Mantachie association, frequently flooded, 1.3 miles west of Spring Creek Church on rural road, and 600 feet south of road in a pasture, SW1/4NE1/4 sec. 4, T. 11 N., R. 12 E.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

C1g—7 to 22 inches; light brownish gray (10YR 6/2) loam; many fine faint yellowish brown (10YR 5/8) mottles; massive; friable; common fine roots; very strongly acid.

C2g—22 to 60 inches; light brownish gray (10YR 6/2) loam; many fine distinct dark brown (7.5YR 4/4) and few fine prominent red (2.5YR 4/6) mottles; massive; friable; few fine roots; very strongly acid.

Reaction is very strongly acid or strongly acid throughout. Black and brown concretions range from none to common throughout.

The A horizon is dark brown, brown, grayish brown, dark grayish brown, light brownish gray, gray, or dark gray. Some pedons have mottles in shades of brown and yellow.

The C horizon is light brownish gray, gray, dark gray, or very dark gray and has few to many mottles in shades of brown and yellow.

The texture is silt loam, loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand. The 10- to 40-inch control section has less than 16 percent clay on a weighted average.

Guyton series

The Guyton series consists of deep, poorly drained soils that formed in silty material on uplands. Slopes range from 0 to 1 percent.

Guyton soils are associated with Savannah and Stough soils. Guyton soils have more gray and less brown and contain more silt in the upper part of the B2t horizon than Savannah. Guyton soils do not have the fragipan that is common to Savannah soils. Guyton soils contain more silt and clay in the upper part of the B2t horizon than Stough soils.

Typical pedon of Guyton silt loam in a pasture 0.2 miles southwest of Bond Church along Mississippi Highway 21, north 2 miles on paved road, east 1 mile on gravel road, east 0.5 mile on field road, and 200 feet south, NW1/4NW1/4 sec. 22, T. 12 N., R. 13 E.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; common fine faint dark brown (10YR 3/3) mottles; weak fine granular structure; friable; many fine roots; strongly acid; abrupt wavy boundary.

A2g—5 to 10 inches; light brownish gray (10YR 6/2) silt loam; common medium faint yellowish brown (10YR 5/6) mottles; weak fine granular and subangular blocky structure; friable; many fine roots; very strongly acid; clear irregular boundary.

B&A—10 to 17 inches; gray (10YR 5/1) silt loam (B2t); few medium distinct yellowish brown (10YR 5/6) mottles; tongues of gray (10YR 6/1) silt loam (A2) between prisms; moderate coarse prismatic structure parting to moderate medium subangular blocky; friable; common fine roots; very strongly acid; clear irregular boundary.

B21tg—17 to 30 inches; grayish brown (10YR 5/2) silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few pockets and tongues of gray (10YR 6/1) silt loam; many clay films on faces of peds; very strongly acid; clear irregular boundary.

B22tg—30 to 43 inches; grayish brown (10YR 5/2) silt loam; common fine faint yellowish brown (10YR 5/6) and brown (10YR 5/3) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; pockets and tongues of gray (10YR 6/1) very fine sandy loam; dark gray (10YR 4/1) clay accumulations at bases of some tongues; many clay films on faces of peds; very strongly acid; gradual irregular boundary.

B23tg—43 to 64 inches; gray (10YR 6/1) silt loam; many medium coarse yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to weak medium subangular blocky; firm; few pockets and tongues of light gray (10YR 7/1) very fine sandy loam; patchy clay films on faces of peds; very strongly acid.

Solum thickness ranges from 50 to 80 inches. Reaction is very strongly acid or strongly acid throughout.

The A1 and Ap horizons are dark grayish brown, brown, or light brownish gray. The A2g horizon is gray or light brownish gray. Mottles in shades of brown range from few to many.

The B2tg horizon is gray, grayish brown, or light brownish gray and has few to many mottles in shades of gray or brown. The texture is silt loam, silty clay loam, or clay loam. The clay content of the upper 20 inches of the B2tg horizon ranges from 18 to 30 percent on a weighted average.

Johnston series

The Johnston series consists of deep, very poorly drained soils that formed in loamy material on flood plains. Slopes range from 0 to 2 percent.

Johnston soils are associated with Bibb and Mantachie soils. Johnston soils are more poorly drained than Bibb and Mantachie soils. Johnston soils have a black, mucky surface layer more than 24 inches thick, which the Bibb and Mantachie soils do not have. Johnston soils have less clay in the underlying materials than Mantachie soils.

Typical pedon of Johnston mucky loam, occasionally flooded, in a field about 5 miles southwest from Dixon on Mississippi Highway 21, northwest 4 miles on paved road to Turnertown, and east 700 feet, NE1/4NW1/4 sec. 7, T. 9 N., R. 10 E.

A11—0 to 14 inches; black (10YR 2/1) mucky loam; massive; friable; many fine roots; common medium pockets of uncoated sand at 13 inches; strongly acid; clear wavy boundary.

A12—14 to 27 inches; black (10YR 2/1) mucky loam; few fine faint grayish brown (10YR 5/2) mottles; massive; friable; common to few fine roots; strongly acid; clear wavy boundary.

C1g—27 to 40 inches; light brownish gray (10YR 6/2) fine sandy loam; common fine faint yellowish brown (10YR 5/4) mottles; massive; friable; very strongly acid; clear wavy boundary.

C2g—40 to 60 inches; light brownish gray (10YR 6/2) fine sandy loam; many fine prominent yellowish red (5YR 4/6) mottles; massive; friable; very strongly acid.

Some pedons have a few inches of alluvial sediments recently deposited on the dark A1 horizon. Reaction is very strongly acid or strongly acid throughout.

The A1 horizon is black or very dark gray. Organic matter content in the A1 horizon ranges from 8 to 20 percent, and thickness ranges from 24 to 36 inches. A dark gray or dark grayish brown AC horizon is present in some pedons. It is loam, fine sandy loam, or loamy sand.

The C horizon is light brownish gray, gray, dark gray, or it has a light brownish gray or gray matrix that has mottles in shades of brown or red. The texture is fine sandy loam, sandy loam, sand, or fine sand.

Kirkville series

The Kirkville series consists of deep, moderately well drained soils that formed in loamy material on flood plains. Slopes range from 0 to 2 percent.

Kirkville soils are associated with Ariel, Bibb, and Mantachie soils. Kirkville soils have chroma of 2 in mottles within 24 inches of the surface that Ariel soils do not have. Kirkville soils have less silt in the subsoil than Ariel soils and less clay in the subsoil than Mantachie soils. Kirkville soils are better drained and have a browner upper subsoil than Bibb and Mantachie soils.

Typical pedon of Kirkville fine sandy loam, occasionally flooded, in a field about 0.6 mile west of Kemper County line along Mississippi Highway 16, and north of highway about 80 feet, NE1/4SW1/4 sec. 36, T. 11 N., R. 13 E.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

A12—2 to 8 inches; brown (10YR 5/3) fine sandy loam; common medium distinct dark brown (7.5YR 4/4) mottles; weak fine granular and subangular blocky structure; friable; many fine roots; very strongly acid; clear smooth boundary.

B21—8 to 15 inches; pale brown (10YR 6/3) loam; common medium faint light brownish gray (10YR 6/2) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

B22—15 to 22 inches; mottled strong brown (7.5YR 5/6) and gray (10YR 6/1) loam; weak medium subangular blocky structure; friable; few fine roots; few fine brown concretions; very strongly acid; gradual smooth boundary.

B23—22 to 38 inches; mottled strong brown (7.5YR 5/6) and gray (10YR 6/1) loam; weak medium subangular blocky structure; friable; few fine brown concretions; very strongly acid; gradual smooth boundary.

B24—38 to 60 inches; mottled gray (10YR 6/1) and strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; common fine brown concretions; very strongly acid.

Solum thickness ranges from 35 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout.

The A1 horizon is dark grayish brown, dark brown, or brown.

The upper part of the B horizon is dark yellowish brown that may have mottles in chroma of 2 or less or is mottled in shades of brown and gray. The lower part of the B horizon is gray, light brownish gray, or is mottled in shades of brown and gray. The B horizon is fine sandy loam or loam. The 10- to 40-inch control section ranges from 10 to 18 percent clay.

Lauderdale series

The Lauderdale series consists of shallow, well drained soils. They formed in loamy material over weathered stratified siltstone, sandstone, and buhrstone on uplands. Slopes range from 17 to 40 percent.

Lauderdale soils are associated with Arundel and Sweatman soils. Lauderdale soils have a thinner solum and a lower clay content in the upper part of the subsoil than Arundel and Sweatman soils. Lauderdale soils have an underlying weathered stratified siltstone, sandstone, and buhrstone Cr horizon, which Sweatman soils do not have.

Typical pedon of Lauderdale silt loam in wooded area of Lauderdale-Arundel association, hilly, southeast 0.8 mile from Bethsadia Church, east 0.1 mile on gravel road, northeast 0.3 mile on gravel road, 0.6 mile east to fork on logging road, east 700 feet along logging road, south 120 feet, SW1/4NW1/4 sec. 31, T. 10 N., R. 13 E.

A1—0 to 3 inches; very dark gray (10YR 3/1) silt loam; weak fine granular and subangular blocky structure; friable; many fine roots; few medium sandstone fragments; strongly acid; clear smooth boundary.

B21t—3 to 8 inches; dark brown (10YR 4/3) clay loam; weak medium subangular blocky structure; friable; slightly plastic; many fine roots; common fine and coarse sandstone fragments comprising 3 to 10 percent of volume; few mica flakes; patchy clay films on faces of peds; strongly acid; clear smooth boundary.

B22t—8 to 16 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable, slightly plastic; many fine roots; common fine and coarse sandstone fragments comprising about 3 to 10 percent of the volume; few mica flakes; thin clay films on faces of peds; strongly acid; abrupt wavy boundary.

Cr—16 to 20 inches; alternating horizontal layers of weathered stratified siltstone, sandstone, and buhrstone with pale brown (10YR 6/3) interior; dark brown (7.5YR 4/2) silt coatings between the fractures; yellowish brown stain throughout rock structure; few fine roots between the fractures; siltstone, sandstone, and buhrstone can be cut with spade.

Solum thickness ranges from 12 to 20 inches. Reaction is very strongly acid or strongly acid throughout. The content of sandstone, buhrstone, or siltstone fragments ranges from about 2 to 15 percent of the volume in the A and B horizons.

The A horizon is very dark gray, dark gray, very dark grayish brown, dark grayish brown, grayish brown, brown, or yellowish brown. Some pedons have a thin pale brown or yellowish brown A1 horizon.

The Bt horizon is reddish brown, yellowish red, strong brown, dark brown, brown, dark yellowish brown, or yellowish brown. The texture is loam, silty clay loam, sandy clay loam, or clay loam. The upper 20 inches of the Bt horizon ranges from 20 to 35 percent clay.

The Cr horizon is weathered stratified siltstone, sandstone, and buhrstone, or is thick bedded sandstone or siltstone, or both.

Lucy series

The Lucy series consists of deep, well drained soils that formed in loamy material on uplands. Slopes range from 15 to 25 percent.

Lucy soils are associated with Smithdale and Troup soils. Lucy soils differ from Smithdale soils by having a thicker A horizon. Lucy soils differ from Troup soils by having a thinner A horizon and containing more sand in the upper B2t horizon. Lucy soils have less clay in the upper B2t horizon than Smithdale soils.

Typical pedon of Lucy loamy fine sand in a wooded area of Troup-Lucy complex, 15 to 25 percent slopes, approximately 2 miles southeast of House Community on Mississippi Highway 19 at Joiner Lake, west of road 90 feet, SW1/4NW1/4 sec. 27, T. 9 N., R. 13 E.

A11—0 to 4 inches; very dark grayish brown (10YR 3/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

A12—4 to 10 inches; dark brown (10YR 4/3) loamy fine sand; single grain; loose; common fine and medium roots; very strongly acid; clear wavy boundary.

A2—10 to 28 inches; yellowish brown (10YR 5/6) loamy fine sand; single grain; loose; few fine and medium roots; very strongly acid; clear wavy boundary.

B1—28 to 32 inches; yellowish red (5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

B21t—32 to 39 inches; yellowish red (5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay and oxides; very strongly acid; clear wavy boundary.

B22t—39 to 70 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay and oxides; very strongly acid.

Solum thickness exceeds 60 inches. Reaction is very strongly acid or strongly acid throughout.

The texture of the A horizon is loamy sand, loamy fine sand, or sand. Thickness of the A horizon ranges from 20 to 40 inches. The A1 horizon is brown, dark brown, dark grayish brown, or very dark grayish brown. The A2 horizon is yellowish brown, brown, or dark brown.

The B1 horizon is strong brown, yellowish brown, or yellowish red. The B2t horizon is yellowish red or red. The texture of the B horizon is sandy loam or sandy clay loam.

Mantachie series

The Mantachie series consists of deep, somewhat poorly drained soils that formed in loamy material on flood plains. Slopes range from 0 to 2 percent.

Mantachie soils are associated with Ariel, Arkabutla, Bibb, Johnston, and Kirkville soils. Mantachie soils have gray matrix colors above 16 inches and contain more sand and less silt than Ariel soils. Mantachie soils are better drained than Bibb soils and are less well drained than Kirkville soils. Mantachie soils are more sandy and less silty than Arkabutla soils. Mantachie soils have more brown in the upper part of the subsoil than Bibb soils. Mantachie soils have more clay in the subsoil than Bibb and Kirkville soils. Mantachie soils do not have the more than 2 feet of thick mucky surface layer that the Johnston soils have.

Typical pedon of Mantachie loam, occasionally flooded, in a pasture 1 mile south of Philadelphia on Mississippi Highway 15, east 0.3 mile on private road, northeast 1,300 feet, NW1/4SW1/4 sec. 2, T. 10 N., R. 11 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam; common fine faint brown (10YR 5/3) mottles; weak fine granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

B21—7 to 14 inches; grayish brown (10YR 5/2) loam; many fine and medium distinct dark brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

B22g—14 to 26 inches; light brownish gray (10YR 6/2) loam; common fine and medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

B23g—26 to 50 inches; light brownish gray (10YR 6/2) loam; many fine and medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few soft red concretions; very strongly acid.

Solum thickness ranges from 30 to 60 inches. Reaction is very strongly acid or strongly acid throughout.

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

The upper part of the B horizon is brown, yellowish brown, dark grayish brown, or grayish brown and has few to many gray mottles. It also may be mottled in shades of gray, yellow, or brown. The lower part of the B horizon is gray, light gray, light brownish gray, grayish brown, or dark grayish brown. The texture is silt loam, sandy loam, loam, sandy clay loam, or clay loam. The clay content of the 10- to 40-inch control section ranges from 18 to 34 percent on a weighted average.

Neshoba series

The Neshoba series consists of deep, well drained soils that formed in loamy material on uplands. Slopes range from 2 to 8 percent.

Neshoba soils are associated with Ruston and Williamsville soils. Neshoba soils have more clay and are redder in the upper B2t horizon than Ruston soils. Neshoba soils have more clay in the lower subsoil than Williamsville soils.

Typical pedon of Neshoba silt loam, in an area of Neshoba silt loam, 2 to 5 percent slopes, eroded, in a field east 1.3 miles on gravel road south of Neshoba County Fairgrounds from Mississippi Highway 21, north 800 feet on gravel road, and west 60 feet from gravel road, SW1/4NW1/4 sec. 17, T. 10 N., R. 11 E.

Ap—0 to 5 inches; reddish brown (5YR 4/4) silt loam; few fine distinct dark red mottles; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

B21t—5 to 16 inches; dark red (2.5YR 3/6) silty clay loam; moderate medium subangular blocky structure; firm, slightly sticky and slightly plastic; common fine roots; nearly continuous clay films on faces of peds; strongly acid; clear smooth boundary.

B22t—16 to 36 inches; dark red (2.5YR 3/6) clay loam; moderate fine and medium angular blocky structure; firm, sticky and plastic; few fine roots; continuous clay films on faces of peds; strongly acid; gradual smooth boundary.

B23t—36 to 56 inches; dark red (2.5YR 3/6) clay; moderate fine and medium angular blocky structure; firm, sticky and plastic; common fine to coarse ironstone fragments; common pockets of greensand; continuous clay films on faces of peds; strongly acid; gradual smooth boundary.

B24t—56 to 70 inches; dark red (2.5YR 3/6) clay; moderate fine and medium angular blocky structure; firm, sticky and plastic; many fine to coarse ironstone fragments; many pockets of greensand; continuous clay films on faces of peds; strongly acid; gradual smooth boundary.

B3—70 to 80 inches; dark red (2.5YR 3/6) clay; many fine to coarse distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; many fine to coarse ironstone fragments comprising about 25 percent of the volume (fig. 10); many pockets of greensand; patchy clay films on faces of peds; strongly acid.

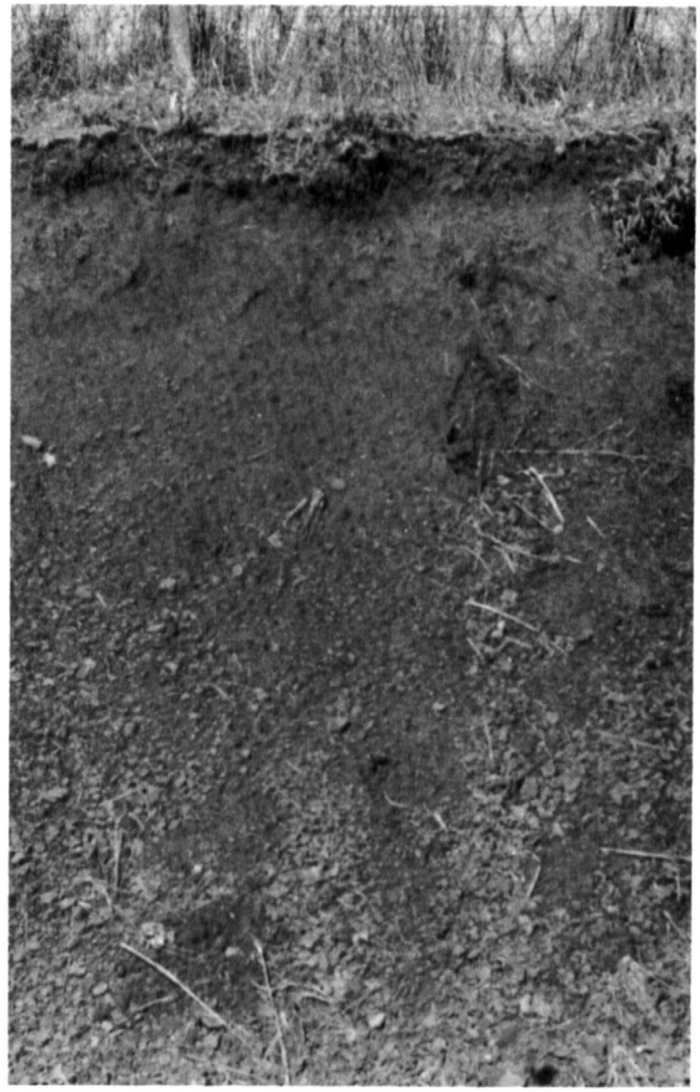


Figure 10.—Profile of Neshoba silt loam, 2 to 5 percent slopes, eroded, showing many ironstones in the lower part of the subsoil.

Solum thickness is 60 inches or more. Reaction is very strongly acid or strongly acid throughout, except where the surface layer has been limed.

The Ap horizon is reddish brown, yellowish red, brown, dark brown, or dark grayish brown.

The B2t horizon is dark red, dusky red, or dark reddish brown. The texture is silty clay loam, silty clay, clay loam, sandy clay or clay.

The B3 horizon is dark red or red mottled with shades of brown. The texture is clay or sandy clay.

The upper 20 inches of the B horizon ranges from 35 to 55 percent clay on a weighted average.

Ora series

The Ora series consists of deep, moderately well drained soils that have a fragipan. These soils formed in loamy material on uplands. Slopes range from 2 to 12 percent.

Ora soils are associated with Providence, Ruston, and Savannah soils. Ora soils have more sand and less silt in the A horizon and upper part of the B horizons than Providence. Ora soils have a fragipan, which the Ruston soils do not have. Ora soils do not have yellowish brown or strong brown in the upper part of the B2t horizon that the Savannah soils have.

Typical pedon of Ora fine sandy loam, in a wooded area of Ora fine sandy loam, 5 to 8 percent slopes, eroded, 1.3 miles east of House Community on gravel road, and north 30 feet from gravel road, NE1/4SW1/4 sec. 16, T. 9 N., R. 13 E.

Ap—0 to 6 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; friable; many fine roots; strongly acid; clear wavy boundary.

B2t—6 to 23 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; patchy clay films on ped faces; sand grains coated and bridged with clay and oxides; very strongly acid; clear wavy boundary.

Bx1—23 to 28 inches; mottled strong brown (7.5YR 5/6) and yellowish red (5YR 4/6) loam; common fine and medium distinct light brown (7.5YR 6/4) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 65 percent of the volume; common fine pores; many fine to coarse black and brown concretions; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; very strongly acid; clear wavy boundary.

Bx2—28 to 50 inches; yellowish red (5YR 4/6) sandy clay loam; common fine and medium distinct light brown (7.5YR 6/4) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact, and brittle in about 65 percent of the volume; many fine pores; common fine and medium pale brown (10YR 6/3) vertical coats; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; very strongly acid; gradual wavy boundary.

Bx3—50 to 60 inches; mottled dark red (2.5YR 3/6) and yellowish red (5YR 4/6) sandy clay loam; common fine distinct gray (10YR 5/1) and reddish brown (5YR 4/4) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact, and brittle in about 65 percent of the volume; few fine pores; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; very strongly acid.

Depth to the fragipan ranges from 18 to 42 inches. Reaction is very strongly acid or strongly acid throughout. Black and brown concretions range from none to common and fine to coarse in the fragipan.

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

The Bt horizon is yellowish red or red. The texture is sandy clay loam, loam, or clay loam. The Bx horizon is mottled in shades of red, gray, brown, and yellow or has yellowish red matrix colors that are mottled in shades of gray, red, and brown. The texture is sandy clay loam, loam, or sandy loam.

Providence series

The Providence series consists of deep, moderately well drained soils that have a fragipan. These soils formed in silty over loamy material on uplands. Slopes range from 0 to 5 percent.

Providence soils are associated with Ora and Savannah soils. Providence soils have more silt and less sand in the A horizon and upper part of the B2t horizon than Ora and Savannah soils.

Typical pedon of Providence silt loam, in an area of Providence silt loam, 0 to 2 percent slopes, in a wooded area, east 0.3 mile from Leake County line along Mississippi Highway 16, north 0.3 mile on gravel road, east 20 feet from gravel road, SW1/4NW1/4 sec. 19, T. 11 N., R. 10 E.

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

B21t—9 to 18 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine and few medium roots; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; very strongly acid; clear smooth boundary.

B22t—18 to 24 inches; yellowish brown (10YR 5/6) silt loam; many fine faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine and medium roots; few patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

Bx1—24 to 32 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/6), and dark yellowish brown (10YR 4/4) silt loam; many fine faint light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle in about 60 percent of the volume; few fine pores; very strongly acid; clear smooth boundary.

IIBx2—32 to 43 inches; mottled brown (10YR 5/3), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) sandy clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle in about 65 percent of the volume; common fine pores; common clay films on faces of peds; very strongly acid; gradual smooth boundary.

IIBx3—43 to 60 inches; mottled light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) sandy clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle in about 65 percent of the volume; patchy clay films on faces of peds; very strongly acid.

Depth to the fragipan ranges from 18 to 38 inches. Reaction is very strongly acid or strongly acid throughout.

The Ap horizon is dark brown or grayish brown or dark gray.

The Bt horizon is yellowish brown or strong brown and may include brownish mottles or coatings on faces of peds in the lower part of the horizon. The texture is silt loam or silty clay loam.

The Bx horizon is mottled in shades of brown, yellow, red, or gray. The texture is silt loam or silty clay loam.

The IIBx horizon is mottled in shades of brown, yellow, red, or gray. The texture is sandy clay loam or loam.

Rosebloom series

The Rosebloom series consists of deep, poorly drained soils that formed in silty material on flood plains. Slopes range from 0 to 2 percent.

Rosebloom soils are associated with Ariel and Arkabutla soils. The Rosebloom soils are poorly drained and more gray and less brown in the upper part of the B horizon than Ariel and Arkabutla soils. The Rosebloom soils contain more clay in the upper part of the B horizon than Ariel soils.

Typical pedon of Rosebloom silt loam in a wooded area of Rosebloom-Arkabutla association, frequently flooded, in Pearl River Swamp about 4 miles northwest of Philadelphia along Mississippi Highway 19, east 400 feet from Mississippi Highway 19 into woods, SE1/4SE1/4 sec. 35, T. 12 N., R. 11 E.

A11—0 to 3 inches; grayish brown (10YR 5/2) silt loam; common fine faint dark yellowish brown (10YR 4/4) and light gray (10YR 7/1) mottles; weak fine granular structure; friable; many fine and few medium roots; strongly acid; abrupt smooth boundary.

A12—3 to 8 inches; gray (10YR 6/1) silt loam; common fine faint yellowish brown (10YR 5/8) mottles; weak fine granular structure; friable; many fine and few medium roots; very strongly acid; abrupt smooth boundary.

B21g—8 to 12 inches; light brownish gray (10YR 6/2) silt loam; many fine faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

B22g—12 to 21 inches; gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; few fine black and brown concretions; very strongly acid; clear smooth boundary.

B23g—21 to 32 inches; light brownish gray (10YR 6/2) silty clay loam; common fine faint yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine pores; few fine black and brown concretions; very strongly acid; clear smooth boundary.

B24g—32 to 60 inches; light brownish gray (10YR 6/2) silty clay loam; few fine faint yellowish brown mottles; moderate medium subangular blocky structure; friable; few fine black and brown concretions; very strongly acid.

Solum thickness ranges from 40 to 65 inches. Reaction is very strongly acid or strongly acid throughout.

The A horizon is dark gray, grayish brown, dark grayish brown, or is mottled with these colors.

The B horizon is dark gray, gray, light gray, or light brownish gray that has or does not have brown mottles. The texture is silt loam or silty clay loam. The 10- to 40-inch control section ranges from 18 to 30 percent clay on a weighted average.

Ruston series

The Ruston series consists of deep, well drained soils formed in loamy material on uplands. Slopes range from 2 to 8 percent.

Ruston soils are associated with Neshoba, Ora, Smithdale, and Williamsville soils. Ruston soils differ from Neshoba and Williamsville soils by containing more sand and less clay in the upper part of the B2t horizon. Ora soils have a fragipan; Ruston soils do not. Ruston soils contain more clay in the lower part of the B2t horizon than Smithdale soils.

Typical pedon of Ruston fine sandy loam, in an area of Ruston fine sandy loam, 2 to 5 percent slopes, eroded, in pasture, north of Arlington community 2 miles on Mississippi Highway 395, southwest about 0.8 mile on gravel road, east 20 feet from gravel road, SW1/4SW1/4 sec. 8, T. 12 N., R. 11 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular and subangular blocky structure; friable; common fine roots; strongly acid; clear wavy boundary.

B21t—4 to 22 inches; yellowish red (5YR 4/6) sandy clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t&A'2—22 to 37 inches; yellowish red (5YR 4/6) sandy loam; common medium and coarse distinct yellowish brown (10YR 5/4) and pale brown (10YR 6/3) sandy loam mottles and pockets; moderate medium and coarse subangular blocky structure; firm, slightly compact and brittle in less than 40 percent of the volume; few fine roots; patchy dark red (2.5YR 3/6) clay films on faces of peds; very strongly acid; clear wavy boundary.

B'23t—37 to 65 inches; red (2.5YR 4/6) sandy clay loam; few fine prominent yellowish brown (10YR 5/4) sandy loam pockets and seams; moderate medium and coarse subangular blocky structure; firm; patchy dark red (2.5YR 3/6) clay films on faces of peds; very strongly acid.

Solum thickness is 60 inches or more. Reaction is very strongly acid or strongly acid throughout.

The Ap horizon is dark brown, dark grayish brown, or grayish brown. The A2 horizon when present is light yellowish brown or pale brown.

The Bt horizon is yellowish red or red. The texture is sandy clay loam, loam, or clay loam.

The A'2 portion of the Bt&A'2 has pockets and mottles of light yellowish brown, yellowish brown, or pale brown. The texture is fine sandy loam or sandy loam.

The B't horizon is yellowish red or red. The texture is sandy clay loam, loam, or clay loam.

The control section ranges from 18 to 30 percent clay on a weighted average.

Savannah series

The Savannah series consists of deep, moderately well drained soils that have a fragipan. These soils formed in loamy material on uplands and stream terraces. Slopes range from 0 to 5 percent.

Savannah soils are associated with Guyton, Ora, Providence, and Stough soils. Savannah soils are browner in the upper part of the B2t horizon than Guyton soils. Guyton and Stough soils do not have a fragipan. Savannah soils are browner in the upper part of the subsoil than Ora soils. Savannah soils are more sandy and less silty A horizon and upper part of the B horizon than Providence soils. Savannah soils have more clay in the upper part of the subsoil than Stough soils and are better drained.

Typical pedon of Savannah silt loam, in a wooded area, northeast 0.5 mile from Bond Church along Mississippi Highway 21, south 0.8 mile on gravel road, east 1.3 miles on gravel road, north about 50 feet, SW1/4SE1/4 sec. 27, T. 12 N., R. 13 E.

Ap—0 to 4 inches; pale brown (10YR 6/3) silt loam; weak fine granular structure; friable; many fine and few medium roots; strongly acid; clear wavy boundary.

B21t—4 to 12 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; many fine and few medium roots; few root holes filled with A material; sand grains bridged and coated with clay and oxides; very strongly acid; clear wavy boundary.

B22t—12 to 23 inches; yellowish brown (10YR 5/6) silt loam; weak and moderate medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay and oxides; patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

Bx1—23 to 33 inches; mottled yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) silt loam; few fine faint light brownish gray and dark yellowish brown mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 60 percent of volume; sand grains bridged and coated with clay and oxides; patchy clay films on faces of peds; common fine pores; common fine black and brown concretions; very strongly acid; gradual wavy boundary.

Bx2—33 to 50 inches; mottled yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) silt loam; weak coarse prismatic structure parting to moderate medium subangular and angular blocky; firm, compact and brittle in about 60 percent of volume; common clay films on faces of peds; few 1-inch seams of light brownish gray (10YR 6/2) fine sandy loam; common fine pores; few fine black and brown concretions; very strongly acid; clear wavy boundary.

Bx3—50 to 65 inches; mottled yellowish brown (10YR 5/6) and gray (10YR 5/1) loam; weak coarse prismatic structure parting to moderate medium subangular and angular blocky; firm, compact and brittle in about 60 percent of volume; common clay films on faces of peds; common fine pores; very strongly acid.

Solum thickness ranges from 60 inches to more than 85 inches. Reaction is very strongly acid or strongly acid throughout. Black and brown concretions range from none to common throughout the solum.

The Ap horizon is dark grayish brown, pale brown, or brown.

The Bt horizon is yellowish brown or strong brown. The texture is loam or silt loam containing noticeable sand.

The Bx horizon is mottled in shades, singly or in combinations, of brown, yellow, gray, or red. The texture is loam, sandy clay loam, loam, or clay loam. The upper 20 inches of the Bt horizon range from 18 to 20 percent clay on a weighted average.

The Savannah soils in this survey area are taxadjuncts to the Savannah series. They have silt loam textures and less fine and coarser sand than typical for the series.

Smithdale series

The Smithdale series consists of deep, well drained soils that formed in loamy material on side slopes of uplands. Slopes range from 8 to 40 percent.

Smithdale soils are associated with Lucy, Ruston, Sweatman, Troup, and Williamsville soils. Smithdale soils have a thinner A horizon and contain more clay in the upper part of the B2t horizon than Lucy soils. Smithdale soils have more sand in the lower part of the B horizon than Ruston soils. Smithdale soils have less clay in the upper part of the B2t horizon than Sweatman and Williamsville soils. Smithdale soils do not have over 40 inches of thickness in the A horizon that the Troup soils have. Smithdale soils are also more loamy and contain less clay in the upper part of the subsoil than Williamsville soils.

Typical pedon of Smithdale fine sandy loam, in an area of Smithdale fine sandy loam, 17 to 40 percent slopes, in a pasture 1 mile northwest from Arlington along Mississippi Highway 19, north 0.2 mile to intersecting paved road, and north of intersection 700 feet, NE1/4NW1/4 sec. 18, T. 12 N., R. 11 E.

Ap—0 to 7 inches; brown (10YR 5/3) fine sandy loam; common fine and medium faint pale brown (10YR 6/3) mottles; weak fine granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

A2—7 to 13 inches; light yellowish brown (10YR 6/4) fine sandy loam; few fine faint dark grayish brown mottles; weak fine granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

B21t—13 to 26 inches; red (2.5YR 4/6) sandy clay loam; weak and moderate medium angular and subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; very strongly acid; clear smooth boundary.

B22t—26 to 43 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular and angular blocky structure; friable; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; few pockets of uncoated sand grains; very strongly acid; clear smooth boundary.

B23t—43 to 80 inches; yellowish red (5YR 4/6) sandy loam; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay and oxides; pockets of uncoated sand grains; very strongly acid.

Solum thickness exceeds 60 inches. Reaction is very strongly acid or strongly acid throughout, except where the surface layer has been limed.

The Ap and A2 horizons are light yellowish brown, yellowish brown, pale brown, dark brown, or brown.

The upper part of the Bt horizon is yellowish red or red. The texture is clay loam, sandy clay loam, or loam. The lower part of the Bt horizon is yellowish red, red, or mottled in shades of red and brown and contains few to many pockets of uncoated sand grains. The texture is loam or sandy loam. The upper 20 inches of the Bt horizon ranges from 18 to 33 percent clay on a weighted average.

Stough series

The Stough series consists of deep, somewhat poorly drained soils that formed in loamy material on broad upland flats. Slopes range from 0 to 2 percent.

Stough soils are associated with Bibb, Guyton, and Savannah soils. Stough soils are better drained than Bibb and Guyton soils but are not as well drained as Savannah soils. Stough soils are more brown and less gray in the upper part of the subsoil than the Bibb and Guyton soils. Stough soils do not have as much clay in the upper part of the subsoil as Guyton and Savannah soils and do not have a fragipan.

Typical pedon of Stough fine sandy loam, 0 to 2 percent slopes, in a pasture northwest of Williamsville 2.3 miles on gravel road, and north of road 50 feet, SE1/4NW1/4 sec. 28, T. 11 N., R. 11 E.

Ap—0 to 6 inches; brown (10YR 5/3) fine sandy loam; common fine faint dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; friable; many fine roots; strongly acid; clear smooth boundary.

B21t—6 to 10 inches; yellowish brown (10YR 5/4) loam; common fine faint yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine roots; sand grains bridged and coated with clay and oxides; patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

B22t—10 to 20 inches; mottled light brownish gray (10YR 6/2), pale brown (10YR 6/3), and yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; few fine roots; common fine black and brown concretions; sand grains bridged and coated with clay and oxides; patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

B23t—20 to 27 inches; mottled light brownish gray (10YR 6/2), pale brown (10YR 6/3), and yellowish brown (10YR 5/8) loam; weak coarse prismatic structure parting to moderate medium subangular blocky; friable, slightly compact and brittle in about 50 percent of the volume; common fine pores; common fine and medium black and brown concretions; sand grains bridged and coated with clay and oxides; patchy clay films on faces of peds; very strongly acid; clear smooth boundary.

B24t—27 to 38 inches; mottled gray (10YR 6/1), gray (10YR 5/1), and yellowish brown (10YR 5/8) loam; moderate coarse prismatic structure parting to moderate medium angular and subangular blocky;

friable, slightly compact and brittle in about 50 percent of the volume; few fine pores; few fine black and brown concretions; common clay films on faces of peds; very strongly acid; clear smooth boundary.

B25t—38 to 56 inches; mottled gray (10YR 5/1) and yellowish brown (10YR 5/8) loam; moderate coarse prismatic structure parting to moderate medium angular and subangular blocky; friable, slightly compact and brittle in about 50 percent of the volume; few fine pores; few fine black and brown concretions; common clay films on ped faces; very strongly acid; clear smooth boundary.

B26tg—56 to 62 inches; light brownish gray (10YR 6/2) loam; many fine faint yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular and angular blocky; friable, slightly compact and brittle in about 50 percent of the volume; few fine pores; common clay films on faces of peds; very strongly acid.

Solum thickness is 60 inches or more. Reaction is very strongly acid or strongly acid throughout.

The Ap horizon is brown, grayish brown, or dark grayish brown.

The upper part of the Bt horizon has matrix colors of pale brown or yellowish brown and has few to many mottles of chroma of 2 or less, or the horizon is mottled in shades of brown and gray. The lower part of the Bt horizon is gray, light gray, light brownish gray, or is mottled in shades of brown and gray. Texture is fine sandy loam, loam, sandy loam, or sandy clay loam. The upper 20 inches of the Bt horizon range from 8 to 18 percent clay on a weighted average.

Sweatman series

The Sweatman series consists of deep, well drained soils that formed in clayey material on uplands. Slopes range from 2 to 40 percent.

Sweatman soils are associated with Arundel, Lauderdale, and Smithdale soils. Sweatman soils have similar drainage to Arundel, Lauderdale, and Smithdale soils. Sweatman soils do not have bedrock within the 60-inch depth of the Arundel and Lauderdale soils. Sweatman soils have more clay in the upper part of the subsoil than Lauderdale and Smithdale soils.

Typical pedon of Sweatman silt loam, in field southeast of Philadelphia, 2 miles along Mississippi Highway 486, north 0.5 mile on gravel road, and east of road 30 feet, NW1/4SE1/4 sec. 34, T. 11 N., R. 12 E.

Ap—0 to 6 inches; brown (7.5YR 5/4) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt wavy boundary.

B21t—6 to 22 inches; red (2.5YR 4/6) silty clay; moderate medium angular and subangular blocky structure; firm, plastic and sticky; common fine roots; many clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t—22 to 28 inches; red (2.5YR 4/6) silty clay; many fine distinct reddish brown (5YR 4/4) mottles; moderate medium angular blocky structure; firm, plastic and sticky; few fine roots; many clay films on faces of peds; few partly weathered gray shale fragments; very strongly acid; clear wavy boundary.

B3—28 to 32 inches; yellowish red (5YR 5/8) clay loam; common fine distinct red (2.5YR 4/6) and few fine prominent light brownish gray (10YR 6/2) mottles that are soft weathered shale fragments; moderate medium angular blocky structure; pockets of platy rock structure; firm, plastic and sticky; many clay films on faces of peds; many fine light brownish gray shale fragments; very strongly acid; abrupt wavy boundary.

C1—32 to 40 inches; strong brown (7.5YR 5/8) stratified, weathered shale and clay loam; common red (2.5YR 4/6) coats on shale; platy rock and weak medium angular blocky structure; firm; very strongly acid; abrupt smooth boundary.

C2—40 to 45 inches; light brownish gray (10YR 6/2) stratified weathered soft shale and loam; medium and coarse mottles in shades of red, brown, and gray; platy rock structure; firm; very strongly acid.

Solum thickness ranges from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout.

The Ap horizon is dark grayish brown, brown, dark brown, or grayish brown. The texture is silt loam, loam, or fine sandy loam.

The Bt horizon is yellowish red or red. The texture is silty clay or clay. The upper 20 inches of the Bt horizon ranges from 35 to 55 percent clay on a weighted average.

The B3 horizon is yellowish red or red. The texture is clay loam, silty clay, or clay.

The C horizon is mottled in shades of red, gray, and brown. It is stratified shale and fine sandy loam, loam, and sandy clay loam and weathered shale rich in mica.

Troup series

The Troup series consists of deep, well drained soils that formed in loamy material on uplands. Slopes range from 15 to 25 percent.

Troup soils are associated with Lucy and Smithdale soils. Troup soils have a thicker surface layer than Lucy and Smithdale soils.

Typical pedon of Troup loamy fine sand, in a wooded area of Troup-Lucy complex, 15 to 25 percent slopes, about 2 miles southeast of House Community on Mississippi Highway 19 at Joiner Lake, west of the lake about 120 feet, SW1/4NW1/4 sec. 27, T. 9 N., R. 13 E.

A1—0 to 4 inches; dark brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

A21—4 to 11 inches; yellowish brown (10YR 5/4) loamy fine sand; single grained; loose; common fine and medium roots; very strongly acid; clear wavy boundary.

A22—11 to 26 inches; yellowish brown (10YR 5/8) loamy fine sand; single grained; loose; few fine and medium roots; very strongly acid; clear wavy boundary.

A23—26 to 45 inches; yellowish brown (10YR 5/6) loamy fine sand; single grained; loose; very strongly acid; clear wavy boundary.

B21t—45 to 55 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay and oxides; very strongly acid; clear wavy boundary.

B22t—55 to 80 inches; yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay and oxides; very strongly acid.

Solum thickness ranges from 80 to more than 120 inches. Reaction is very strongly acid or strongly acid throughout.

The A1 horizon is brown or dark brown. The A2 horizon is brown, yellowish brown, light yellowish brown, or pale brown. The texture is loamy fine sand or fine sand. Thickness of the A horizon ranges from 40 to about 72 inches.

The B2t horizon is yellowish red or strong brown. The texture is sandy loam or sandy clay loam.

Williamsville series

The Williamsville series consists of deep, well drained soils that formed in clayey material on uplands. Slopes range from 8 to 40 percent.

Williamsville soils are associated with Neshoba, Ruston, and Smithdale soils. Williamsville soils have more sand and contain less clay in the lower part of the subsoil than Neshoba soils. Williamsville soils have more clay in the upper part of the subsoil and are redder than Ruston and Smithdale soils.

Typical pedon of Williamsville loamy sand, in a wooded area 0.2 mile south of Neshoba County Fairgrounds, along Mississippi Highway 21, and west about 140 feet, SE1/4SE1/4 sec. 13, T. 10 N., R. 10 E.

A11—0 to 5 inches; reddish brown (5YR 4/4) loamy sand; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

A12—5 to 12 inches; yellowish red (5YR 4/6) loamy sand; weak fine granular structure; friable; many fine and medium roots; common fine to coarse ironstone fragments; strongly acid; clear smooth boundary.

B21t—12 to 17 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine to coarse ironstone fragments; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; strongly acid; clear smooth boundary.

B22t—17 to 30 inches; dark red (2.5YR 3/6) sandy clay; moderate fine and medium angular and subangular blocky structure; firm; few fine and medium roots; common fine to coarse ironstone fragments; continuous clay films on faces of peds; strongly acid; gradual smooth boundary.

B23t—30 to 48 inches; dark red (2.5YR 3/6) sandy clay; weak and moderate, fine and medium subangular and angular blocky structure; firm; few fine and medium roots; common fine to coarse ironstone fragments; continuous clay films on faces of peds; strongly acid; gradual smooth boundary.

B31—48 to 72 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; patchy clay films on faces of peds; sand grains coated and bridged with clay and oxides; strongly acid; gradual smooth boundary.

B32—72 to 80 inches; red (2.5YR 4/6) loamy sand; weak fine granular structure; friable; sand grains coated and bridged with clay and oxides; few pockets of uncoated sand grains; strongly acid.

Solum thickness ranges from 60 to about 80 inches. Reaction is very strongly acid or strongly acid throughout.

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

The Bt horizon is dark red, red, yellowish red, or reddish brown. The texture is sandy clay loam, clay loam, sandy clay, or clay. The B3 horizon is dark red and red. The texture is sandy clay loam, loam, sandy loam, or loamy sand. The upper 20 inches of the Bt horizon ranges from 35 to 55 percent clay on a weighted average.

formation of the soils

In this section the factors of soil formation are discussed in relation to the soils of Neshoba County. In addition, the processes of soil formation are described.

factors of soil formation

The characteristics of the soil at any given point are determined by the nature of the parent material, climate, living organisms, relief, and time. All of these factors affect the formation of every soil. The relative importance of each differs from place to place. In extreme cases, one factor may dominate in the formation of the soil and determine most of its properties, which is common when the parent material consists of almost pure quartz sand. Weathering has little affect on quartz sand, and the soils derived from it usually have faint horizons. Even in quartz sand, however, distinct profiles can be formed under certain types of vegetation where the topography is low and nearly level and the water table is high.

The five soil-forming factors are interdependent; each modifies the effects of the others. Climate and living organisms are the active factors of soil formation. They act on parent material and gradually change it into a natural body that has genetically related horizons. Relief largely controls runoff and therefore influences the effectiveness of climate and vegetation. Finally, time is needed to change parent material into a soil. The time needed for horizon differentiation may be much or little, but some time is always required.

parent material

Water from the Gulf of Mexico covered the valley of the Mississippi River as far north as Cairo, Ill., during the late Mesozoic and early Cenozoic eras of geologic time. Streams emptying into the gulf deposited layers of unconsolidated sand, clay, and silt. After the water receded from the area that included Neshoba County, marine deposits were exposed.

Alluvium is another kind of parent material from which the soils of Neshoba County developed. Streams throughout the county have deposited alluvium on their flood plains. From this alluvium, some of the best soils in Neshoba County have formed. Most of these areas still receive fresh deposits during each flood.

climate

The climate of the county is of the humid, warm-temperature, continental type. It is characterized by long warm summers and mild winters. The average temperature and normal rainfall distribution for the county are given in table 1.

The warm, moist weather that prevails most of the year favors rapid chemical reactions. The relatively high precipitation leaches the bases and other soluble materials and promotes the translocation of colloidal matter and other less soluble materials. Climate is the direct or indirect cause of variations in the kinds of plant and animal life and of the major differences that these variations have brought about in the development of soils. In the warm, humid climate of Neshoba County, the more mature soils have been highly leached and the geologically young soils are being leached. Because the soils are frozen for only short periods during winter, translocating and leaching proceed without interruption throughout most of the years.

living organisms

The higher plants, micro-organisms, earthworms, and other forms that live on or in the soil are determined by the climate and many other factors. Living organisms are indispensable in soil development.

The organic matter that accumulates in the upper part of soil from the decay of leaves and other parts of plants is changed into other chemical compounds by living organisms. The organic acids released by decomposition of the organic matter dissolve the slowly soluble mineral constituents and hasten the leaching and translocating of these inorganic materials. Climate also affects the kinds and amounts of vegetation and micro-organisms and the rate of chemical action and of leaching.

The native plants on the uplands of Neshoba County consisted of hardwoods of the oak-hickory forest type. The flood plains of the county were covered with bottom land hardwoods dominated by oak, gum, and beech trees and a fairly heavy undergrowth of vines and cane. The organic matter has been reduced by aerobic organisms in most soils in the hilly part of the county.

The forest cover and the warm, humid climate have greatly contributed to the light color and small amount of organic matter in most of the soils. In undisturbed areas of the more mature soils, the material to a depth of 1/2 to 1 inch is generally dark and contains a large quantity of partly decayed leaves, twigs, and bark. Johnston soils, on wetter parts of flood plains, are covered with water most of the year and have a dark surface layer, over 2 feet thick, containing accumulations of organic matter.

A vast number of organisms live in the soils. Their existence depends on the soil conditions, particularly the food supply. The number of organisms constantly fluctuates because of multiplication and because of death, which is frequently caused by starvation. The total weight of organic matter, both living and dead including plant roots, in an acre of soil to plow layer depth is mostly over 5,000 pounds, and in some soils it is more than 10,000 pounds. Nearly all natural soil reactions are directly or indirectly biochemical.

relief

Soils of Neshoba County range from nearly level to steep. The relief modifies the effects of climate and vegetation.

On some steep soils, runoff is so great that soil formation occurs at a slow pace. On these steep slopes, the quantity of water that percolates through the soil and the quantity of material leached and washed down are small.

In some nearly level soils and depressional areas where the water table is high, the soils are likely to be wet and gray. A fragipan forms in many of the soils that have broad, nearly level slopes. As the steepness of the slope increases, the thickness of the fragipan usually decreases. A pan seldom occurs in soils that have slopes of more than 15 percent.

time

Time is required for the development of soil from the parent material. The length of time required depends on the other factors involved. If the factors of soil formation have not operated long enough to form a soil that is nearly in equilibrium with the environment, the soil is considered young or immature.

The soils on the bottom lands are then youngest and do not have distinctly developed profile characteristics. Erosion regularly occurs on soils in the uplands, and the bottom lands frequently receive fresh deposits of sediment.

The soils in the uplands are the oldest and best developed or contain horizons that are most clearly expressed. These soils have developed characteristic properties and are essentially in equilibrium with their environment. Soils that have steep slopes, however, have less pronounced horizons than soils with more gentle slopes.

processes of soil formation

Because of the wide range in parent material, relief, age, and biological activity, the soil-forming processes of Neshoba County are complex. The soils of the county have changed greatly since the geologic ages thousands of years ago when loess was being deposited on much of this area by the westerly winds. The soil-forming processes have produced the soils as we now know them and are still active. The processes have been working much longer on soils of the uplands than on soils of the flood plains. The soils of the uplands are older and have stronger development than soils of the bottom lands.

The differences in the horizons of the soils in the county are caused by one or more processes. The main processes are the accumulation of organic matter, the leaching of carbonates and salts, the formation and translocation of silicate clay minerals, and the reduction and transfer of iron.

Organic matter has accumulated in the top layer of the soils in the county to form an A horizon. A large amount of this organic matter is well decomposed material, or humus, but a considerable amount consists of living plants and other organisms.

Carbonates and salts have been leached from most soils in the county. Most soils in the area are acid, and their colloidal complexes are predominantly saturated with hydrogen ions.

The formation and translocation of silicate clay minerals, or eluviation, have affected all the soils in the county except the alluvial soils. Because alluvial soils are young, the processes that cause the formation and translocation of silicate clay minerals have not acted on them long enough to cause significant differences among layers. The A horizon of soils in the uplands in the county are eluviated and contain a small amount of clay. The illuviated B horizon contains an accumulation of clay. The results of eluviation, or downward movement of clay, can be identified as clay films on faces of peds and on the walls of root channels and wormholes or other holes. Some soils in the county have more than one sequum, that is, more than one eluvial horizon and its related illuvial horizon.

The reduction and transfer of iron have occurred in the poorly drained and somewhat poorly drained soils and to some extent in the lower part of the moderately well drained soils. This process is called gleying. It is more likely to occur in soils that are nearly level or are in depressional areas than in those that are sloping. In the nearly level areas or depressional areas, the restricted drainage results in reduced leaching, pronounced hydration, anaerobic biological activity, accumulation of organic acids, reduction of iron, and development of gray colors. Red, yellow, and brown colors generally occur in soils that are well oxidized. When the soil is not sufficiently aerated and oxidized, gleying occurs, and mottles and concretions of iron and manganese form.

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glossary

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

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

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

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

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Medium	6 to 9
High	9 to 12
Very high	More than 12

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

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

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

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

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

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

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Coarse textured soil. Sand or loamy sand.

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

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

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

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

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

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

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

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the 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.

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

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

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

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material.

Munsell notation. A designation of color by degrees of the three simple 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.

Narrow-base terrace. A terrace no more than 4 to 8 feet wide at the base. A narrow-base terrace is similar to a broad-base terrace, except for the width of the ridge and channel.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated 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 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

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

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of 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.

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.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

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 water soaks into the soil or flows slowly to a prepared outlet. 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.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded 1951-75 at Philadelphia, Miss.]

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	Units	In	In	In		In
January----	56.1	33.0	44.5	77	9	69	5.25	3.12	7.15	9	0.4
February---	59.3	35.3	45.5	80	13	234	5.02	2.98	6.83	8	.2
March------	67.1	41.9	54.5	85	22	219	5.58	3.62	7.35	8	.1
April------	76.2	51.0	61.0	89	30	593	6.02	2.79	8.65	7	.0
May--------	82.8	58.6	70.7	93	39	642	4.09	1.97	5.82	7	.0
June-------	88.9	65.2	77.1	98	49	813	3.66	1.71	5.25	7	.0
July-------	91.3	68.5	79.9	99	56	927	5.45	3.25	7.41	9	.0
August-----	91.2	67.1	79.1	99	54	902	3.42	1.74	4.78	6	.0
September--	86.3	61.8	74.1	97	41	723	3.50	1.38	5.21	5	.0
October----	77.6	48.9	63.3	92	28	412	2.86	.98	4.38	4	.0
November---	66.4	39.7	53.1	84	18	142	3.68	1.84	5.17	6	.0
December---	58.2	34.5	46.4	79	12	72	5.66	3.15	7.70	8	.0
Yearly:											
Average--	75.1	50.5	62.4	---	---	---	---	---	---	---	---
Extreme--	---	---	---	100	7	---	---	---	---	---	---
Total----	---	---	---	---	---	5,748	54.19	45.08	63.48	84	.7

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

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded 1951-76 at Philadelphia, Miss.]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 21	March 29	April 13
2 years in 10 later than--	March 13	March 25	April 9
5 years in 10 later than--	February 25	March 16	April 1
First freezing temperature in fall:			
1 year in 10 earlier than--	October 27	October 24	October 15
2 years in 10 earlier than--	November 4	October 29	October 20
5 years in 10 earlier than--	November 18	November 8	October 30

TABLE 3.--GROWING SEASON

[Recorded 1951-75 at Philadelphia, Miss.]

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	235	214	192
8 years in 10	246	221	198
5 years in 10	266	236	211
2 years in 10	286	251	223
1 year in 10	296	258	229

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ar	Ariel silt loam, occasionally flooded	2,839	0.8
Bb	Bibb sandy loam, occasionally flooded	34,750	9.6
BM	Bibb-Mantachie association, frequently flooded	5,278	1.5
Gu	Guyton silt loam	2,391	0.7
Jo	Johnston mucky loam, occasionally flooded	789	0.2
Kr	Kirkville fine sandy loam, occasionally flooded	16,229	4.5
LA	Lauderdale-Arundel association, hilly	16,114	4.4
Ma	Mantachie loam, occasionally flooded	6,929	1.9
NeB2	Neshoba silt loam, 2 to 5 percent slopes, eroded	2,284	0.6
NeC2	Neshoba silt loam, 5 to 8 percent slopes, eroded	6,489	1.8
OrB2	Ora fine sandy loam, 2 to 5 percent slopes, eroded	5,853	1.6
OrC2	Ora fine sandy loam, 5 to 8 percent slopes, eroded	25,404	7.0
OrD2	Ora fine sandy loam, 8 to 12 percent slopes, eroded	11,701	3.2
Po	Pits	135	*
PrA	Providence silt loam, 0 to 2 percent slopes	372	0.1
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded	137	*
RA	Rosebloom-Arkabutla association, frequently flooded	36,905	10.2
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded	2,311	0.6
RuC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded	8,799	2.4
SaA	Savannah silt loam, 0 to 2 percent slopes	1,534	0.4
SaB2	Savannah silt loam, 2 to 5 percent slopes, eroded	5,838	1.6
SmD2	Smithdale fine sandy loam, 8 to 12 percent slopes, eroded	9,279	2.6
SmE	Smithdale fine sandy loam, 12 to 17 percent slopes	18,323	5.0
SmF	Smithdale fine sandy loam, 17 to 40 percent slopes	9,891	2.7
SmF3	Smithdale fine sandy loam, 17 to 40 percent slopes, severely eroded	2,446	0.7
So	Smithdale-Udorthents complex, gullied	424	0.1
SR	Smithdale-Ruston association, hilly	8,422	2.3
StA	Stough fine sandy loam, 0 to 2 percent slopes	6,013	1.7
SwB2	Sweatman silt loam, 2 to 5 percent slopes, eroded	2,853	0.8
SwC2	Sweatman silt loam, 5 to 8 percent slopes, eroded	26,238	7.2
SwD2	Sweatman silt loam, 8 to 17 percent slopes, eroded	33,690	9.3
SwF	Sweatman silt loam, 17 to 35 percent slopes	5,629	1.5
SX	Sweatman association, hilly	23,242	6.4
TlF	Troup-Lucy complex, 15 to 25 percent slopes	1,543	0.4
WmD2	Williamsville loamy sand, 8 to 17 percent slopes, eroded	11,746	3.2
WmF2	Williamsville loamy sand, 17 to 40 percent slopes, eroded	3,256	0.9
WS	Williamsville-Smithdale association, hilly	4,632	1.3
	Water	2,812	0.8
	Total	363,520	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

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

Map symbol and soil name	Cotton lint	Corn	Soybeans	Improved bermudagrass	Bahiagrass
	Lb	Bu	Bu	AUM*	AUM*
Ar----- Ariel	800	110	40	11.0	---
Bb----- Bibb	---	100	35	---	---
BM:**					
Bibb-----	---	---	---	---	---
Mantachie-----	---	---	---	---	---
Gu----- Guyton	---	---	23	---	9.5
Jo----- Johnston	---	80	40	---	---
Kr----- Kirkville	700	95	40	---	10.0
LA:**					
Lauderdale-----	---	---	---	---	---
Arundel-----	---	---	---	---	---
Ma----- Mantachie	650	90	35	---	10.0
NeB2----- Neshoba	650	75	35	10.0	10.0
NeC2----- Neshoba	600	70	30	9.5	9.5
OrB2----- Ora	700	80	35	8.5	9.0
OrC2----- Ora	600	70	30	8.0	8.5
OrD2----- Ora	---	---	---	7.0	8.0
Po.** Pits					
PrA----- Providence	700	80	35	10.0	9.0
PrB2----- Providence	700	80	35	9.5	8.5
RA:**					
Rosebloom-----	---	---	---	---	---
Arkabutla-----	---	---	---	---	---
RuB2, RuC2----- Ruston	600	65	25	12.0	9.5
SaA----- Savannah	700	80	35	8.5	9.0

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Cotton lint	Corn	Soybeans	Improved bermudagrass	Bahiagrass
	Lb	Bu	Bu	AUM*	AUM*
SaB2 Savannah	650	75	35	8.5	9.0
SmD2 Smithdale	400	50	25	9.0	---
SmE Smithdale	---	---	---	9.0	---
SmF, SmF3 Smithdale	---	---	---	---	---
So** Smithdale	---	---	---	9.0	---
SR:**					
Smithdale	---	---	---	---	---
Ruston	---	---	---	---	---
StA Stough	725	80	25	8.0	8.0
SwB2 Sweatman	400	50	20	---	6.5
SwC2 Sweatman	---	---	---	---	6.0
SwD2 Sweatman	---	---	---	---	5.5
SwF Sweatman	---	---	---	---	---
SX** Sweatman	---	---	---	---	---
TlF Troup-Lucy	---	---	---	6.0	5.0
WmD2 Williamsville	---	---	---	5.5	5.0
WmF2 Williamsville	---	---	---	---	---
WS:**					
Williamsville	---	---	---	---	---
Smithdale	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	---	---	---	---	---
II	48,028	14,112	33,916	---	---
III	85,270	48,129	37,141	---	---
IV	62,877	47,218	15,181	478	---
V	27,789	---	27,789	---	---
VI	64,183	64,183	---	---	---
VII	72,581	71,517	---	1,064	---
VIII	---	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

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

Map symbol and soil name	Wood-land group	Management concerns: Erosion hazard	Management concerns: Equip-ment limita-tion	Management concerns: Seedling mortal-ity	Management concerns: Plant competi-tion	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Ar-----Ariel	1o7	Slight	Slight	Slight	Moderate	Cherrybark oak------	110	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, water oak, yellow-poplar.
						Eastern cottonwood--	115	
						Loblolly pine-------	95	
						Sweetgum------------	100	
						Water oak-----------	105	
						Yellow-poplar-------	110	
Bb-----Bibb	2w9	Slight	Severe	Severe	Severe	Loblolly pine-------	90	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
						Sweetgum------------	90	
						Water oak-----------	90	
BM:*								
Bibb-----------	2w9	Slight	Severe	Severe	Severe	Loblolly pine-------	90	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
						Sweetgum------------	90	
						Water oak-----------	90	
Mantachie---------	1w8	Slight	Severe	Severe	Severe	Green ash-----------	80	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
						Eastern cottonwood--	90	
						Cherrybark oak------	100	
						Loblolly pine-------	98	
						Sweetgum------------	95	
						Yellow-poplar-------	95	
Gu-----Guyton	2w9	Slight	Severe	Moderate	--------	Loblolly pine-------	90	Loblolly pine, sweetgum.
						Slash pine----------	90	
						Sweetgum------------	---	
						Green ash-----------	---	
						Southern red oak----	---	
						Water oak-----------	---	
Jo-----Johnston	1w9	Slight	Severe	Severe	--------	Loblolly pine-------	97	Loblolly pine, slash pine, baldcypress, yellow-poplar, sweetgum, green ash, water tupelo.
						Sweetgum------------	111	
						Water oak-----------	103	
Kr-----Kirkville	1w8	Slight	Moderate	Moderate	Moderate	Cherrybark oak------	100	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
						Loblolly pine-------	95	
						Sweetgum------------	100	
						Water oak-----------	100	
LA:*								
Lauderdale--------	4d2	Moderate	Moderate	Moderate	Slight	Loblolly pine-------	70	Loblolly pine, shortleaf pine.
						Shortleaf pine------	65	
Arundel-----------	3c2	Slight	Moderate	Moderate	Slight	Loblolly pine-------	70	Loblolly pine, shortleaf pine.
						Shortleaf pine------	60	
Ma-----Mantachie	1w8	Slight	Severe	Moderate	Severe	Green ash-----------	80	Green ash, eastern cottonwood, cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
						Eastern cottonwood--	90	
						Cherrybark oak------	100	
						Loblolly pine-------	98	
						Sweetgum------------	95	
						Yellow-poplar-------	95	
NeB2, NeC2-----Neshoba	2o1	Slight	Slight	Slight	Slight	Loblolly pine-------	90	Loblolly pine.
						Shortleaf pine------	80	
OrB2, OrC2, OrD2---Ora	3o7	Slight	Slight	Slight	Moderate	Loblolly pine-------	83	Loblolly pine, slash pine.
						Shortleaf pine------	69	
						Sweetgum------------	80	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Wood-land group	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Plant competi-tion	Common trees	Site index	
PrA, PrB2---------- Providence	3o7	Slight	Slight	Slight	Slight	Loblolly pine------- Shortleaf pine------ Sweetgum-----------	84 64 90	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
RA:* Rosebloom---------	2w9	Slight	Severe	Moderate	Moderate	Green ash----------- Eastern cottonwood-- Cherrybark oak------ Nuttall oak--------- Water oak----------- Willow oak---------- Sweetgum------------ American sycamore---	95 100 95 95 95 90 95 80	Green ash, eastern cottonwood, cherrybark oak, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum.
Arkabutla---------	1w9	Slight	Severe	Moderate	Moderate	Cherrybark oak------ Eastern cottonwood-- Green ash----------- Loblolly pine------- Nuttall oak--------- Sweetgum------------ Water oak-----------	105 110 95 100 110 100 100	Cherrybark oak, eastern cottonwood, green ash, loblolly pine, sweetgum, American sycamore.
RuB2, RuC2--------- Ruston	3o1	Slight	Slight	Slight	--------	Loblolly pine------- Shortleaf pine------	84 75	Loblolly pine.
SaA, SaB2---------- Savannah	3o7	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Southern red oak----	81 76 75	Loblolly pine, slash pine.
SmD2, SmE, SmF, SmF3, So*--------- Smithdale	3o1	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 69	Loblolly pine.
SR:* Smithdale---------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 69	Loblolly pine.
Ruston------------	3o1	Slight	Slight	Slight	--------	Loblolly pine------- Shortleaf pine------	84 75	Loblolly pine.
StA---------------- Stough	2w8	Slight	Moderate	Slight	Moderate	Cherrybark oak------ Loblolly pine------- Slash pine---------- Sweetgum------------ Water oak-----------	85 90 86 85 80	Loblolly pine, slash pine, sweetgum.
SwB2, SwC2, SwD2, SwF, SX*---------- Sweatman	3c2	Slight	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	83 73	Loblolly pine, shortleaf pine.
TlF:* Troup-------------	3s2	Slight	Moderate	Moderate	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	82 64 84	Loblolly pine, longleaf pine, slash pine.
Lucy--------------	3s2	Slight	Moderate	Moderate	Slight	Slash pine---------- Longleaf pine------- Loblolly pine-------	80 70 80	Slash pine, longleaf pine, loblolly pine.
WmD2, WmF2--------- Williamsville	2o1	Moderate	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	88 80	Loblolly pine.
WS:* Williamsville-----	2o1	Moderate	Moderate	Slight	Slight	Loblolly pine------- Shortleaf pine------	88 80	Loblolly pine.
Smithdale---------	3o1	Slight	Slight	Slight	Moderate	Loblolly pine------- Shortleaf pine------	80 69	Loblolly pine.

* 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]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
Ar: Ariel	Severe: floods.	Moderate: floods.	Severe: floods.	Slight.
Bb: Bibb	Severe: floods, wetness.	Severe. wetness.	Severe: wetness.	Severe: wetness.
BM:*				
Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Mantachie	Severe: floods.	Moderate: wetness.	Severe: floods.	Moderate: wetness.
Gu: Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Jo: Johnston	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness.
Kr: Kirkville	Moderate: floods, wetness.	Moderate: floods, wetness.	Moderate: floods, wetness.	Slight.
LA:*				
Lauderdale	Severe: slope.	Severe: slope.	Severe: depth to rock.	Moderate: slope.
Arundel	Severe: percs slowly, slope.	Severe: slope.	Severe: percs slowly, slope.	Moderate: slope.
Ma: Mantachie	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
NeB2: Neshoba	Slight	Slight	Moderate: slope.	Slight.
NeC2: Neshoba	Slight	Slight	Severe: slope.	Slight.
OrB2: Ora	Slight	Slight	Moderate: slope.	Slight.
OrC2: Ora	Slight	Slight	Severe: slope.	Slight.
OrD2: Ora	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Po.* Pits				
PrA: Providence	Slight	Slight	Slight	Slignt.
PrB2: Providence	Slight	Slight	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
RA:*				
Rosebloom	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Arkabutla	Severe: floods, wetness.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
RuB2 Ruston	Slight	Slight	Moderate: slope.	Slight.
RuC2 Ruston	Slight	Slight	Severe: slope.	Slight.
SaA Savannah	Slight	Slight	Slight	Slight.
SaB2 Savannah	Slight	Slight	Moderate: slope.	Slight.
SmD2, SmE Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
SmF, SmF3 Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
So* Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
SR:*				
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ruston				
StA Stough	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
SwB2 Sweatman	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.
SwC2 Sweatman	Moderate: percs slowly.	Slight	Severe: slope.	Slight.
SwD2 Sweatman	Moderate: percs slowly, slope.	Moderate: slope.	Severe: slope.	Slight.
SwF, SX* Sweatman	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
TlF:*				
Troup	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.
Lucy	Moderate: too sandy, slope.	Moderate: too sandy, slope.	Severe: slope.	Moderate: too sandy.
WmD2 Williamsville	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
WmF2------------------ Williamsville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WS:*				
Williamsville---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Smithdale------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* 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]

Map symbol and soil name	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
Ar: Ariel	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Bb: Bibb	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
BM:*											
Bibb	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Mantachie	Poor	Fair	Fair	Good	---	---	Fair	Fair	Fair	Good	Fair.
Gu: Guyton	Fair	Fair	Fair	Fair	---	---	Good	Good	Fair	Fair	Good.
Jo: Johnston	Fair	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Kr: Kirkville	Good	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor.
LA:*											
Lauderdale	Poor	Poor	Fair	Fair	---	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Arundel	Poor	Fair	Good	Good	---	---	Very poor.	Very poor.	Fair	Good	Very poor.
Ma: Mantachie	Fair	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair.
NeB2: Neshoba	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
NeC2: Neshoba	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
OrB2: Ora	Good	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor.
OrC2, OrD2: Ora	Fair	Good	Good	Good	---	---	Very poor.	Very poor.	Good	Good	Very poor.
Po.* Pits											
PrA, PrB2: Providence	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
RA:*											
Rosebloom	Poor	Fair	Fair	Fair	---	Fair	Good	Good	Fair	Fair	Good.
Arkabutla	Poor	Fair	Fair	Good	Good	---	Fair	Fair	Fair	Good	Fair.
RuB2: Ruston	Good	Good	Good	---	Good	---	Poor	Very poor.	Good	Good	Very poor.
RuC2: Ruston	Fair	Good	Good	---	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
SaA, SaB2: Savannah	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	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
SmD2, SmE---------- Smithdale	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
SmF, SmF3---------- Smithdale	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
So*---------------- Smithdale	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
SR:*											
Smithdale---------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Ruston------------	Fair	Good	Good	---	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
StA---------------- Stough	Fair	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
SwB2--------------- Sweatman	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Very poor.
SwC2, SwD2--------- Sweatman	Fair	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Very poor.
SwF, SX*----------- Sweatman	Poor	Fair	Good	Good	---	---	Very poor.	Very poor.	Fair	Good	Very poor.
TlF:*											
Troup-------------	Poor	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Fair	Poor	Very poor.
Lucy--------------	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
WmD2, WmF2--------- Williamsville	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
WS:*											
Williamsville-----	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Smithdale---------	Very poor.	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

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

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ar: Ariel	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Bb: Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
BM:*					
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Gu: Guyton	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Jo: Johnston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Kr: Kirkville	Severe: floods, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
LA:*					
Lauderdale	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Arundel	Severe: too clayey, slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, depth to rock, slope.	Severe: shrink-swell, slope, depth to rock.	Severe: shrink-swell, slope.
Ma: Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
NeB2, NeC2: Neshoba	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, corrosive.	Moderate: shrink-swell.
OrB2, OrC2: Ora	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength.
OrD2: Ora	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.	Severe: slope, wetness.	Moderate: low strength.
Po.* Pits					
PrA, PrB2: Providence	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength.
RA:*					
Rosebloom	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Arkabutla	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness, corrosive.	Severe: floods, low strength.
RuB2: Ruston	Slight	Slight	Slight	Slight	Moderate: low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
RuC2-------------- Ruston	Slight-----------	Slight-----------	Slight-----------	Moderate: slope.	Moderate: low strength.
SaA, SaB2--------- Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: low strength.
SmD2, SmE--------- Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
SmF, SmF3--------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
So*--------------- Smithdale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
SR:*					
Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ruston-----------	Slight-----------	Slight-----------	Slight-----------	Moderate: slope.	Moderate: low strength.
StA--------------- Stough	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
SwB2-------------- Sweatman	Moderate: too clayey, slope.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, corrosive.	Moderate: shrink-swell.
SwC2-------------- Sweatman	Moderate: too clayey, slope.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, corrosive, slope.	Moderate: shrink-swell.
SwD2-------------- Sweatman	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Moderate: shrink-swell, slope.
SwF, SX*---------- Sweatman	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TlF:*					
Troup------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lucy-------------	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
WmD2-------------- Williamsville	Moderate: slope, too clayey.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, shrink-swell.
WmF2-------------- Williamsville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WS:*					
Williamsville----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Smithdale--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

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

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ar: Ariel	Severe: floods, percs slowly.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
Bb: Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
BM:*					
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
Gu: Guyton	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Jo: Johnston	Severe: floods, wetness.	Severe: seepage, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Poor: wetness.
Kr: Kirkville	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
LA:*					
Lauderdale	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock	Severe: slope.	Severe: area reclaim.
Arundel	Severe: percs slowly, slope, depth to rock.	Severe: depth to rock.	Severe: too clayey, depth to rock.	Severe: slope.	Poor: thin layer, too clayey.
Ma: Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
NeB2, NeC2: Neshoba	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: thin layer.
OrB2, OrC2: Ora	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
OrD2: Ora	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Good.
Po.* Pits					
PrA: Providence	Severe: percs slowly.	Slight	Moderate: too clayey.	Slight	Fair: too clayey.
PrB2: Providence	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RA:*					
Rosebloom	Severe: wetness, floods, percs slowly.	Severe: floods, wetness.	Severe: wetness, floods.	Severe: floods, wetness.	Poor: wetness.
Arkabutla	Severe: floods, wetness.	Moderate: seepage.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey.
RuB2, RuC2 Ruston	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
SaA Savannah	Severe: percs slowly.	Slight	Slight	Slight	Good.
SaB2 Savannah	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
SmD2, SmE Smithdale	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
SmF, SmF3 Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
So* Smithdale	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
SR:*					
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe. slope.	Severe: slope.	Poor: slope.
Ruston	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
StA Stough	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
SwB2, SwC2 Sweatman	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Poor: thin layer.
SwD2 Sweatman	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Poor: thin layer.
SwF, SX* Sweatman	Severe: slope, percs slowly.	Severe: slope.	Moderate: too clayey.	Severe: slope.	Poor: slope, thin layer.
TlF:*					
Troup	Severe: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage, slope.	Poor: slope.
Lucy	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
WmD2 Williamsville	Severe: percs slowly.	Severe: slope.	Severe: slope, too clayey.	Moderate: slope.	Poor: thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WmF2: Williamsville	Severe: percs slowly.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: thin layer.
WS:*					
Williamsville	Severe: percs slowly.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: thin layer.
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

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

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ar: Ariel	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Bb: Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
BM:*				
Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Mantachie	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Gu: Guyton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Jo: Johnston	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Kr: Kirkville	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
LA:*				
Lauderdale	Poor: area reclaim, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: area reclaim, thin layer.
Arundel	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, too clayey, slope.
Ma: Mantachie	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
NeB2, NeC2: Neshoba	Fair: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
OrB2, OrC2, OrD2: Ora	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Po.* Pits				
PrA, PrB2: Providence	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
RA:*				
Rosebloom	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Arkabutla	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
RuB2, RuC2: Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
SaA, SaB2: Savannah	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
SmD2, SmE: Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
SmF, SmF3: Smithdale	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
So*: Smithdale	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
SR:*				
Smithdale	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Ruston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
StA: Stough	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
SwB2, SwC2, SwD2: Sweatman	Fair: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
SwF, SX*: Sweatman	Fair: shrink-swell, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
TlF:*				
Troup	Fair: slope.	Fair: excess fines.	Unsuited: excess fines.	Poor: slope, too sandy.
Lucy	Fair: low strength.	Fair: excess fines, thin layer.	Unsuited: excess fines.	Fair: too sandy, slope.
WmD2: Williamsville	Fair: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
WmF2: Williamsville	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
WS:*				
Williamsville	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Smithdale	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

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

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Ar: Ariel	Moderate: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Cutbanks cave, floods.	Erodes easily	Erodes easily.
Bb: Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Floods	Not needed	Wetness.
BM:*						
Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Floods	Not needed	Wetness.
Mantachie	Moderate: seepage.	Moderate: piping.	Severe: no water.	Wetness, floods.	Not needed	Wetness.
Gu: Guyton	Slight	Moderate: erodes easily, compressible.	Severe: slow refill.	Cutbanks cave, percs slowly.	Not needed	Wetness.
Jo: Johnston	Severe: seepage.	Severe: wetness.	Slight	Floods	Not needed	Wetness.
Kr: Kirkville	Severe: seepage.	Moderate: compressible, unstable fill.	Severe: deep to water.	Floods, wetness.	Favorable	Favorable.
LA:*						
Lauderdale	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Slope, depth to rock.	Rooting depth, slope.	Rooting depth, slope.
Arundel	Moderate: depth to rock.	Moderate: thin layer, unstable fill.	Severe: no water.	Percs slowly, slope.	Percs slowly, slope, depth to rock.	Percs slowly, slope.
Ma: Mantachie	Moderate: seepage.	Moderate: piping.	Severe: no water.	Wetness, floods.	Not needed	Wetness.
NeB2, NeC2: Neshoba	Moderate: seepage.	Moderate: shrink-swell, unstable fill.	Severe: deep to water.	Not needed, slope.	Percs slowly, erodes easily.	Percs slowly, erodes easily.
OrB2, OrC2, OrD2: Ora	Moderate: seepage.	Moderate: piping.	Severe: no water.	Percs slowly	Favorable	Rooting depth.
Po.* Pits						
PrA, PrB2: Providence	Slight	Moderate: piping, unstable fill.	Severe: no water.	Cutbanks cave, percs slowly, slope.	Erodes easily, percs slowly, piping.	Erodes easily, percs slowly, slope.
RA:*						
Rosebloom	Slight	Moderate: compressible.	Severe: deep to water.	Floods, wetness.	Wetness	Wetness.
Arkabutla	Moderate: seepage.	Moderate: piping.	Severe: no water.	Cutbanks cave, floods.	Erodes easily, piping, wetness.	Erodes easily.
RuB2: Ruston	Moderate: seepage.	Slight	Severe: no water.	Not needed	Favorable	Favorable.
RuC2: Ruston	Moderate: seepage.	Slight	Severe: no water.	Not needed	Favorable	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
SaA: Savannah	Moderate: seepage.	Moderate: piping.	Severe: deep to water.	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
SaB2: Savannah	Moderate: seepage.	Moderate: piping.	Severe: deep to water.	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
SmD2, SmE, SmF, SmF3, So*: Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
SR:*						
Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
Ruston	Moderate: seepage.	Slight	Severe: no water.	Not needed	Favorable	Slope.
StA: Stough	Slight	Moderate: piping.	Severe: no water.	Percs slowly, wetness, slope.	Percs slowly, wetness.	Percs slowly, wetness.
SwB2, SwC2, SwD2, SwF, SX*: Sweatman	Moderate: seepage.	Slight	Severe: no water.	Complex slope	Slope, erodes easily.	Slope, erodes easily.
TlF:*						
Troup	Severe: seepage.	Severe: piping.	Severe: no water.	Not needed	Too sandy, slope.	Droughty, slope.
Lucy	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Not needed	Too sandy, slope.	Droughty, slope.
WmD2, WmF2: Williamsville	Severe: seepage.	Moderate: unstable fill, shrink-swell.	Severe: deep to water.	Not needed, slope.	Slope, percs slowly.	Slope, percs slowly.
WS:*						
Williamsville	Severe: seepage.	Moderate: unstable fill, shrink-swell.	Severe: deep to water.	Not needed, slope.	Slope, percs slowly.	Slope, percs slowly.
Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[Absence of an entry indicates that data were not estimated]

Map symbol and soil name	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	
Ar----------------- Ariel	0-30	Silt loam-------	ML, CL-ML	A-4	0	100	100	90-100	85-95	<30	NP-7
	30-60	Silt loam, loam	ML, CL, CL-ML	A-4	0	100	100	85-100	70-90	<30	NP-10
Bb----------------- Bibb	0-7	Sandy loam------	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	7-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
BM:* Bibb---------------	0-7	Sandy loam------	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	7-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
Mantachie----------	0-7	Loam------------	CL-ML, SM-SC, SM, ML	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	7-50	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
Gu----------------- Guyton	0-17	Silt loam-------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	17-64	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
Jo----------------- Johnston	0-27	Mucky loam------	OL	A-8	0	100	100	90-100	60-75	---	NP
	27-60	Stratified fine sandy loam to sandy loam.	SM, SP-SM	A-2, A-3	0	100	100	50-85	25-50	<35	NP-10
Kr----------------- Kirkville	0-8	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-2, A-4	0	100	100	60-85	30-65	<20	NP-5
	8-60	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-2, A-4	0	100	100	60-100	30-65	<20	NP-5
LA:* Lauderdale---------	0-3	Silt loam-------	ML, CL-ML, CL	A-4	0	85-100	77-98	75-98	60-90	<25	NP-10
	3-16	Clay loam, sandy clay loam, silty clay loam.	ML, CL	A-4, A-6	0-2	85-98	77-95	70-85	60-80	20-35	8-20
	16-20	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Arundel------------	0-9	Loam------------	ML, CL, CL-ML	A-4	0-6	85-100	77-98	75-98	60-90	<30	NP-10
	9-30	Silty clay loam, silty clay, clay.	CL, CH	A-7	0-15	85-98	75-95	80-95	65-90	44-65	22-40
	30-35	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	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	
Ma----------------- Mantachie	0-7	Loam------------	CL-ML, SM-SC, SM, ML	A-4	0-5	95-100	90-100	60-85	40-60	<20	NP-5
	7-50	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
NeB2, NeC2--------- Neshoba	0-5	Silt loam-------	CL-ML, CL	A-4	0	100	100	85-100	60-85	<30	4-10
	5-36	Silty clay loam, clay loam, clay.	CL, CH	A-6, A-7	0	95-100	80-100	75-100	60-90	40-60	20-36
	36-80	Sandy clay, silty clay, clay.	CL, CH	A-7	0	95-100	70-100	70-100	60-95	45-65	24-40
OrB2, OrC2, OrD2--- Ora	0-6	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4, A-2	0	100	95-100	65-85	30-65	<30	NP-5
	6-23	Clay loam, sandy clay loam, loam.	CL, ML	A-6, A-4, A-7	0	100	95-100	80-100	50-80	25-48	8-22
	23-60	Sandy clay loam, loam, sandy loam.	CL, ML	A-6, A-7, A-4	0	100	95-100	80-100	50-75	25-43	8-25
Po.* Pits											
PrA, PrB2---------- Providence	0-9	Silt loam-------	ML, CL, CL-ML	A-4	0	100	100	100	85-100	<30	NP-10
	9-24	Silty clay loam, silt loam.	CL	A-7, A-6	0	100	100	95-100	85-100	30-45	11-20
	24-32	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-90	25-40	11-20
	32-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	0	100	95-100	70-95	40-80	20-35	8-18
RA:* Rosebloom---------	0-8	Silt loam-------	CL	A-4, A-6	0	100	100	90-100	80-95	28-40	9-20
	8-60	Silty clay loam, silt loam.	CL	A-4, A-6	0	100	100	90-100	80-95	28-40	9-20
Arkabutla---------	0-4	Silt loam-------	CL, CL-ML	A-4, A-6	0	100	100	85-100	60-95	25-35	7-15
	4-65	Silty clay loam, loam, silt loam.	CL	A-6, A-7	0	100	100	85-100	70-90	30-45	12-25
RuB2, RuC2--------- Ruston	0-4	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	4-22	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	22-37	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	37-65	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
SaA, SaB2---------- Savannah	0-4	Silt loam-------	ML, CL-ML	A-4	0	100	100	80-100	60-90	<25	NP-7
	4-23	Sandy clay loam, clay loam, loam, silt loam.	CL, SC, CL-ML, ML	A-4, A-6	0	100	100	80-100	40-90	23-40	7-19
	23-65	Loam, clay loam, sandy clay loam, silt loam.	CL, SC, CL-ML, ML	A-4, A-6, A-7	0	100	100	80-100	40-90	23-43	7-19

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	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	
SmD2, SmE, SmF, SmF3, So*----------- Smithdale	0-13	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	13-43	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	43-80	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
SR:* Smithdale---------	0-13	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	13-43	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	43-80	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
Ruston-------------	0-4	Fine sandy loam	SM, ML	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<20	NP-3
	4-22	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	22-37	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2-4	0	85-100	78-100	65-100	30-75	<27	NP-7
	37-65	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
StA----------------- Stough	0-6	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4	0	100	100	65-85	35-65	<25	NP-7
	6-20	Loam, fine sandy loam.	ML, CL, CL-ML	A-4	0	100	100	75-95	50-75	<25	NP-8
	20-62	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	0	100	100	65-90	40-65	25-40	8-15
SwB2, SwC2, SwD2, SwF, SX*----------- Sweatman	0-6	Silt loam--------	CL-ML, CL, ML	A-4	0	100	100	90-100	55-90	<35	NP-10
	6-28	Clay, silty clay, silty clay loam.	MH	A-7	0	95-100	95-100	95-100	90-95	60-80	25-40
	28-32	Loam, clay loam	CL, ML	A-6, A-7	0	100	98-100	90-100	80-90	30-45	12-30
	32-45	Stratified weathered shale to fine sandy loam.	ML, MH	A-7	0	95-100	75-100	60-95	55-95	41-65	12-30
TlF:* Troup-------------	0-45	Loamy fine sand	SM	A-2, A-4	0	100	100	65-90	15-40	---	NP
	45-80	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Lucy--------------	0-28	Loamy fine sand	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	28-39	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	97-100	95-100	55-95	15-50	<30	NP-15
	39-70	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	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	
WmD2, WmF2--------- Williamsville	0-12	Loamy sand------	SM	A-2	0	98-100	80-100	50-70	15-30	<20	NP-3
	12-48	Clay, sandy clay, clay loam.	CL, CH	A-6, A-7	0	98-100	80-100	80-100	50-80	40-60	20-36
	48-72	Sandy clay loam, loam, sandy loam.	SC, CL	A-4, A-6	0	98-100	80-100	60-90	36-65	25-40	8-20
	72-80	Loamy sand, sandy loam.	SM	A-2, A-4	0	98-100	80-100	60-75	15-45	<20	NP-3
WS:*											
Williamsville-----	0-12	Loamy sand------	SM	A-2	0	98-100	80-100	50-70	15-30	<20	NP-3
	12-48	Clay, sandy clay, clay loam.	CL, CH	A-6, A-7	0	98-100	80-100	80-100	50-80	40-60	20-36
	48-72	Sandy clay loam, loam, sandy loam.	SC, CL	A-4, A-6	0	98-100	80-100	60-90	36-65	25-40	8-20
	72-80	Loamy sand, sandy loam.	SM	A-2, A-4	0	98-100	80-100	60-75	15-45	<20	NP-3
Smithdale---------	0-13	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	13-43	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	43-80	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	In/hr	In/in	pH			
Ar----------------- Ariel	0-30	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.43	5
	30-60	0.2-0.6	0.16-0.20	4.5-5.5	Low------------	0.43	
Bb----------------- Bibb	0-7	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.20	5
	7-60	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.37	
BM:*							
Bibb--------------	0-7	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.20	5
	7-60	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.37	
Mantachie---------	0-7	0.6-2.0	0.16-0.20	4.5-5.5	Low------------	0.28	5
	7-50	0.6-2.0	0.14-0.20	4.5-5.5	Low------------	0.28	
Gu----------------- Guyton	0-17	0.6-2.0	0.20-0.23	3.6-6.0	Low------------	0.49	3
	17-64	0.06-0.2	0.15-0.22	3.6-6.0	Low------------	0.37	
Jo----------------- Johnston	0-27	2.0-6.0	0.20-0.26	4.5-5.5	Low------------	0.17	---
	27-60	6.0-20	0.06-0.12	4.5-5.5	Low------------	0.17	
Kr----------------- Kirkville	0-8	0.6-2.0	0.15-0.20	4.5-5.5	Low------------	0.28	5
	8-60	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.28	
LA:*							
Lauderdale--------	0-3	0.6-2.0	0.15-0.20	4.5-5.5	Low------------	0.37	2
	3-16	0.2-0.6	0.15-0.20	4.5-5.5	Moderate--------	0.32	
	16-20	---	---	---	----------------	----	
Arundel-----------	0-9	0.6-2.0	0.14-0.17	4.5-5.5	Low------------	0.37	3
	9-30	<0.06	0.12-0.18	4.5-5.5	High-----------	0.32	
	30-35	---	---	---	----------------	----	
Ma----------------- Mantachie	0-7	0.6-2.0	0.16-0.20	4.5-5.5	Low------------	0.28	5
	7-50	0.6-2.0	0.14-0.20	4.5-5.5	Low------------	0.28	
NeB2, NeC2-------- Neshoba	0-5	0.6-2.0	0.15-0.20	4.5-6.5	Low------------	0.32	5
	5-36	0.6-2.0	0.16-0.20	4.5-5.5	Moderate--------	0.24	
	36-80	0.2-0.6	0.15-0.18	4.5-5.5	Moderate--------	0.24	
OrB2, OrC2, OrD2- Ora	0-6	2.0-6.0	0.10-0.13	4.0-5.5	Low------------	0.32	3
	6-23	0.6-2.0	0.12-0.18	4.0-5.5	Low------------	0.37	
	23-60	0.2-0.6	0.05-0.10	4.0-5.5	Low------------	0.32	
Po.* Pits							
PrA, PrB2--------- Providence	0-9	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43	3
	9-24	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43	
	24-32	0.2-0.6	0.08-0.10	4.5-6.0	Moderate--------	0.32	
	32-60	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32	
RA:*							
Rosebloom---------	0-60	0.06-0.2	0.20-0.24	4.5-5.5	Moderate--------	0.37	3
Arkabutla---------	0-4	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.37	5
	4-65	0.6-2.0	0.18-0.21	4.5-5.5	Low------------	0.32	
RuB2, RuC2-------- Ruston	0-4	0.6-2.0	0.09-0.16	4.5-6.5	Low------------	0.32	5
	4-22	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	
	22-37	0.6-2.0	0.12-0.15	4.5-6.0	Low------------	0.32	
	37-65	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
SaA, SaB2-------- Savannah	0-4	0.6-2.0	0.16-0.20	4.0-5.5	Low------------	0.37	3
	4-23	0.6-2.0	0.13-0.20	4.0-5.5	Low------------	0.28	
	23-65	0.2-0.6	0.05-0.10	4.0-5.5	Low------------	0.24	
SmD2, SmE, SmF, SmF3, So*------- Smithdale	0-13	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	5
	13-43	0.6-2.0	0.15-0.17	4.5-5.5	Low------------	0.24	
	43-80	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	
SR:* Smithdale-------	0-13	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	5
	13-43	0.6-2.0	0.15-0.17	4.5-5.5	Low------------	0.24	
	43-80	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	
Ruston----------	0-4	0.6-2.0	0.09-0.16	4.5-6.5	Low------------	0.32	5
	4-22	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	
	22-37	0.6-2.0	0.12-0.15	4.5-6.0	Low------------	0.32	
	37-65	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.28	
StA-------------- Stough	0-6	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.37	3
	6-20	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.37	
	20-62	0.2-0.6	0.07-0.11	4.5-5.5	Low------------	0.37	
SwB2, SwC2, SwD2, SwF, SX*-------- Sweatman	0-6	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.37	3
	6-28	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-------	0.28	
	28-32	0.2-0.6	0.16-0.20	4.5-5.5	Moderate-------	0.28	
	32-45	0.2-0.6	0.10-0.18	4.5-5.5	Moderate-------	----	
TlF:* Troup-----------	0-45	6.0-20	0.05-0.10	4.5-5.5	Very low-------	0.17	5
	45-80	0.6-2.0	0.10-0.13	4.5-5.5	Low------------	0.20	
Lucy------------	0-28	6.0-20	0.06-0.10	4.5-5.5	Low------------	0.20	5
	28-39	2.0-6.0	0.10-0.12	4.5-5.5	Low------------	0.24	
	39-70	0.6-2.0	0.12-0.14	4.5-5.5	Low------------	0.28	
WmD2, WmF2------- Williamsville	0-12	6.0-20	0.06-0.10	4.5-5.5	Low------------	0.17	5
	12-48	0.2-0.6	0.14-0.20	4.5-5.5	Moderate-------	0.24	
	48-72	0.6-2.0	0.14-0.18	4.5-5.5	Low------------	0.24	
	72-80	2.0-6.0	0.06-0.12	4.5-5.5	Low------------	0.24	
WS:* Williamsville---	0-12	6.0-20	0.06-0.10	4.5-5.5	Low------------	0.17	5
	12-48	0.2-0.6	0.14-0.20	4.5-5.5	Moderate-------	0.24	
	48-72	0.6-2.0	0.14-0.18	4.5-5.5	Low------------	0.24	
	72-80	2.0-6.0	0.06-0.12	4.5-5.5	Low------------	0.24	
Smithdale-------	0-13	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	5
	13-43	0.6-2.0	0.15-0.17	4.5-5.5	Low------------	0.24	
	43-80	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Text explain terms such as "rare," "brief," "apparent," and "perched." Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
Ar----------------- Ariel	C	Occasional	Brief-----	Jan-Apr	2.0-3.0	Apparent	Jan-Apr	>60	---	Low------	Moderate.
Bb----------------- Bibb	C	Occasional	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Moderate.
BM:*											
Bibb--------------	C	Frequent----	Brief-----	Dec-May	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Moderate.
Mantachie---------	C	Frequent----	Brief-----	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	>60	---	High-----	High.
Gu----------------- Guyton	D	None--------	---	---	0-1.5	Perched	Dec-May	>60	---	High-----	Moderate.
Jo----------------- Johnston	D	Occasional--	Brief-----	Dec-May	+1-1.5	Apparent	Nov-Jun	>60	---	High-----	High.
Kr----------------- Kirkville	C	Occasional	Brief-----	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	>60	---	Moderate	High.
LA:*											
Lauderdale--------	D	None--------	---	---	>6.0	---	---	12-20	Rip-pable	Low------	Moderate.
Arundel-----------	C	None--------	---	---	>6.0	---	---	20-40	Rip-pable	High-----	High.
Ma----------------- Mantachie	C	Occasional	Brief-----	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	>60	---	High-----	High.
NeB2, NeC2--------- Neshoba	C	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
OrB2, OrC2, OrD2-- Ora	C	None--------	---	---	2.0-3.5	Perched	Feb-Apr	>60	---	Moderate	High.
Po.* Pits											
PrA, PrB2---------- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	Moderate.
RA:*											
Rosebloom---------	D	Frequent----	Brief to long.	Jan-Mar	1.0	Apparent	Jan-Mar	>60	---	High-----	Moderate.
Arkabutla---------	C	Frequent----	Brief to long.	Jan-Mar	1.5-2.5	Apparent	Jan-Apr	>60	---	High-----	High.
RuB2, RuC2--------- Ruston	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SaA, SaB2---------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
SmD2, SmE, SmF, SmF3, So*--------- Smithdale	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
SR:*											
Smithdale---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
Ruston------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
StA----------------- Stough	C	None---------	---	---	1.0-1.5	Perched	Jan-Apr	>60	---	Moderate	High.
SwB2, SwC2, SwD2, SwF, SX*---------- Sweatman	C	None---------	---	---	>6.0	---	---	>60	---	High------	High.
TlF:*											
Troup--------------	A	None---------	---	---	>6.0	---	---	>60	---	Low-------	Moderate.
Lucy---------------	A	None---------	---	---	>6.0	---	---	>60	---	Low-------	High.
WmD2, WmF2--------- Williamsville	C	None---------	---	---	>6.0	---	---	>60	---	High------	High.
WS:*											
Williamsville------	C	None---------	---	---	>6.0	---	---	>60	---	High------	High.
Smithdale----------	B	None---------	---	---	>6.0	---	---	>60	---	Low-------	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PARTICLE SIZE DISTRIBUTION

[Selected soils analyzed by Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station]

Soil series and laboratory number	Horizon	Depth from surface (inches)	Particle size distribution, sand fraction: Very coarse sand (2.0 to 1.0 mm)	Coarse sand (1.0 to 0.5 mm)	Medium sand (0.5 to 0.25 mm)	Fine sand (0.25 to 0.1 mm)	Very fine sand (0.1 to 0.05 mm)	Total sand (2.0 to 0.05 mm)	Silt (0.05 to 0.002mm)	Clay (0.002 mm)	Textural class
Guyton:											
RS13-11	A1	0-5	0.02	0.57	1.77	11.98	6.46	20.79	70.36	8.85	Silt loam.
RS13-12	A2g	5-10	.02	.08	1.36	14.63	8.88	24.97	70.26	4.77	Silt loam.
RS13-13	B&A	10-17	.00	.04	.95	10.94	6.60	18.53	57.44	24.03	Silt loam.
RS13-14	B21tg	17-30	.00	.03	.71	8.85	5.94	15.53	52.15	32.32	Silty clay loam.
RS13-15	B22tg	30-43	.18	.46	1.15	9.72	6.18	17.70	56.61	25.69	Silt loam.
RS13-16	B23tg	43-64	.01	.10	.77	10.26	7.09	18.23	57.54	24.23	Silt loam.
Savannah:											
RS13-5	Ap	0-4	.16	.57	3.26	13.16	5.43	22.60	66.56	10.84	Silt loam.
RS13-6	B21t	4-12	.07	.41	2.44	10.21	4.55	17.67	62.55	19.78	Silt loam.
RS13-7	B22t	12-23	.42	.53	1.91	7.47	3.42	13.76	61.04	25.20	Silt loam.
RS13-8	Bx1	23-33	.21	1.04	2.50	8.76	4.13	16.63	65.51	17.86	Silt loam.
RS13-9	Bx2	33-50	.32	.61	2.93	13.39	6.39	23.63	59.40	16.97	Silt loam.
RS13-10	Bx3	50-65	.09	.67	4.21	18.35	8.06	31.38	49.11	19.51	Loam.
Stough:											
RS13-17	Ap	0-6	.10	2.05	14.74	26.06	7.11	50.06	43.92	6.02	Fine sandy loam.
RS13-18	B21t	6-10	.19	1.97	13.09	20.70	5.39	41.34	46.31	12.35	Loam.
RS13-19	B22t	10-20	.25	1.90	11.53	18.52	4.99	37.19	47.90	14.91	Loam.
RS13-20	B23t	20-27	.59	2.37	12.39	18.91	5.03	39.29	48.08	12.63	Loam.
RS13-21	B24t	27-38	.05	1.67	13.34	22.76	5.76	43.58	36.03	20.39	Loam.
RS13-22	B25t	38-56	.04	1.86	16.14	25.87	6.66	50.57	30.35	19.08	Loam.
RS13-23	B26tg	56-62	.10	2.35	14.70	10.60	4.95	40.70	43.28	16.02	Loam.

TABLE 18.--CHEMICAL ANALYSIS

[Selected soils analyzed by the Soil Genesis and Morphology Laboratory of the Mississippi Agricultural and Forestry Experiment Station]

Soil series and laboratory number	Horizon	Depth from surface	Reaction 1:1 (soil to water)	Organic matter	Exchangeable cations						Base saturation by sum of cations
					Ca	Mg	K	Na	H	Sum cations	
		In	pH	Pct	-------Milliequivalents per 100 grams-------						Pct
Guyton:											
RS13-11	A1	0-5	5.1	3.5	2.29	.43	.12	0.10	5.69	8.63	34.1
RS13-12	A2g	5-10	5.3	0.5	.46	.16	.02	.07	1.59	2.30	30.9
RS13-13	B&A	10-17	5.1	1.8	1.99	1.71	.07	.65	11.07	15.49	28.5
RS13-14	B21tg	17-30	4.9	1.8	3.17	2.68	.10	2.08	10.87	18.90	42.5
RS13-15	B22tg	30-43	4.6	1.8	3.98	3.00	.11	5.04	8.35	20.48	59.2
RS13-16	B23tg	43-64	4.6	1.5	3.86	2.67	.11	3.17	5.23	15.04	65.2
Savannah:											
RS13-5	Ap	0-4	4.7	1.9	.43	.29	.05	.03	.53	1.33	60.2
RS13-6	B21t	4-12	4.7	2.3	.23	1.46	.09	.04	3.50	5.32	34.2
RS13-7	B22t	12-23	4.9	2.5	.14	1.70	.14	.08	8.33	10.39	19.8
RS13-8	Bx1	23-33	5.0	2.6	.11	1.60	.08	.09	5.88	7.76	24.2
RS13-9	Bx2	33-50	5.1	1.5	.12	1.69	.06	.16	5.63	7.66	26.5
RS13-10	Bx3	50-65	4.9	1.6	.10	1.93	.05	.20	6.04	8.32	27.4
Stough:											
RS13-17	Ap	0-6	6.3	1.2	2.12	1.39	.13	.04	2.24	5.92	62.2
RS13-18	B21t	6-10	4.8	1.3	1.60	1.43	.09	.07	3.67	6.86	46.3
RS13-19	B22t	10-20	4.4	1.4	1.18	.49	.07	.08	6.16	7.98	22.8
RS13-20	B23t	20-27	4.5	1.2	.81	.61	.07	.08	5.32	6.89	22.8
RS13-21	B24t	27-38	5.2	1.6	.93	1.33	.13	.65	9.51	12.55	24.2
RS13-22	B25t	38-56	5.2	1.2	1.04	1.78	.11	.88	8.61	12.42	30.7
RS13-23	B26tg	56-62	5.3	1.2	.78	2.14	.08	1.19	8.63	12.82	32.7

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Ariel	Coarse-silty, mixed, thermic Fluventic Dystrochrepts
Arkabutla	Fine-silty, mixed, acid, thermic Aeric Fluvaquents
Arundel	Clayey, montmorillonitic, thermic Typic Hapludults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kirkville	Coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Lauderdale	Loamy, mixed, thermic, shallow Typic Hapludults
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Neshoba	Clayey, mixed, thermic Rhodic Paleudults
Ora	Fine-loamy, siliceous, thermic Typic Fragiudults
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
*Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Sweatman	Clayey, mixed, thermic Typic Hapludults
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Udorthents	Udorthents
Williamsville	Clayey, mixed, thermic Typic Hapludults

* A taxadjunct to the series.

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