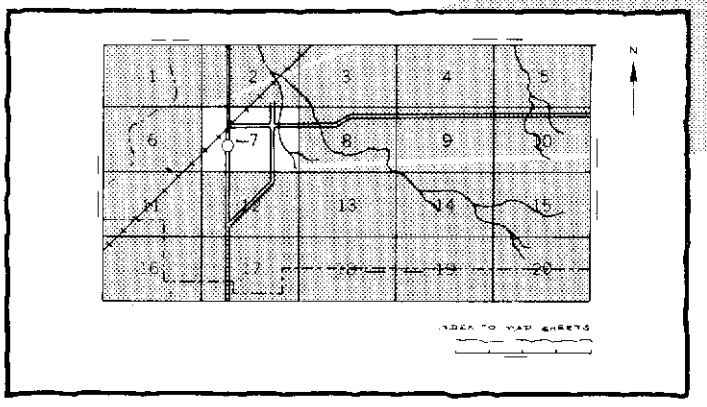
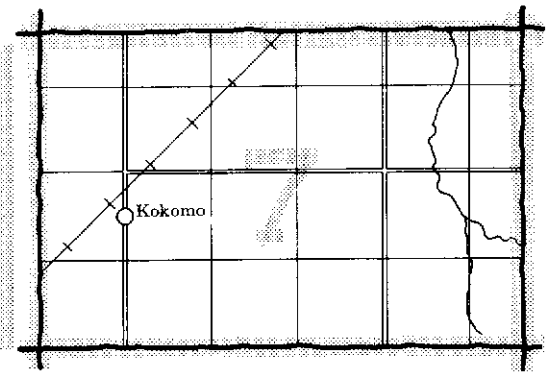
SOIL SURVEY OF

West Carroll Parish, Louisiana

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.

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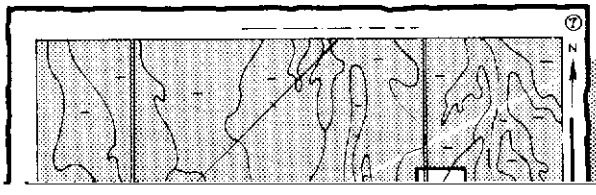
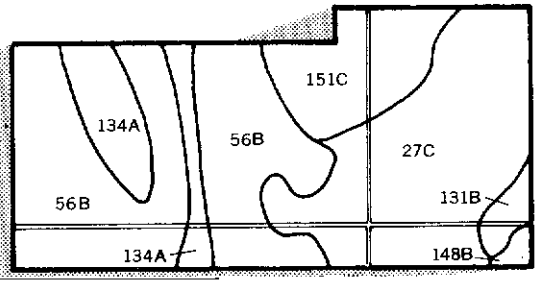




THIS SOIL SURVEY

5. Turn to "Index to Soil Mapping Units" which lists the name of each mapping unit and the

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

Major fieldwork for this soil survey was completed in the period 1972 to 1975. Soil names and descriptions were approved in 1975. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1975. This survey was made cooperatively by the Soil Conservation Service and the Louisiana Agricultural Experiment Station. It is part of the technical assistance furnished to the West Carroll Soil and Water Conservation District.

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

Cover: Soybeans on Grenada silt loam, 1 to 3 percent slopes.

Contents

	Page
Index to soil mapping units	iii
Summary of tables	v
Foreword	vii
General nature of the parish	1
History and development	1
Agriculture	1
Water resources	2
Climate	2
Landforms and surface geology	3
How this survey was made	6
Soil map for general planning	6
Descriptions and potentials of soil associations	6
1. Sharkey association	7
2. Grenada-Calhoun association	7
3. Calhoun-Grenada association	7
4. Dundee-Dubbs association	7
5. Forestdale-Perry association	8
Broad land use considerations	8
Soil maps for detailed planning	9
Soil descriptions and potentials	9
Use and management of the soils	17
Crops and pasture	18
Recreation	24
Wildlife habitat	24
Soil properties	26
Engineering properties	26
Physical and chemical properties	26
Classification of the soils	27
Soil series	27
Calhoun series	27
Calloway series	28
Commerce series	28
Deerford series	29
Dexter series	29
Dubbs series	29
Dundee series	30
Foley series	30
Forestdale series	31
Grenada series	31
Memphis series	32
Perry series	32
Sharkey series	33
Classification	33
Formation of the soils	34
Processes of soil formation	34

Summary of Tables

Page

Acreage and Proportionate Extent of the Soils (Table 5) 54
Area. Extent.

Building Site Development (Table 8) 58
Shallow excavations. Dwellings without basements. Small commercial buildings. Local roads and streets.

Classification of the Soils (Table 16) 74
Soil name. Family or higher taxonomic class.

Construction Materials (Table 10) 62
Roadfill. Sand. Gravel. Topsoil.

Engineering Properties and Classifications (Table 14) 69
Depth. USDA texture. Classification—Unified, AASHTO. Fragments greater than 3 inches. Percentage passing sieve number—4, 10, 40, 200. Liquid limit. Plasticity index.

Physical and Chemical Properties (Table 15) 72
Depth. Permeability. Available water capacity. Soil reaction. Shrink-swell potential. Risk of corrosion—Uncoated steel, Concrete. Erosion factors—K, T.

Potential of Soil Associations for Cropland, Pastureland, and Urban Land (Table 4) 53

Probabilities of Specified Low Temperatures (Table 2) 51
Probability. Minimum temperature—24 F. or lower, 28 F. or lower, 32 F. or lower.

Recreation Development (Table 12) 66
Camp areas. Picnic areas. Playgrounds. Paths and trails.

Relationships between Soils and Topography, Runoff, Drainage, and Water Table (Table 17) 75

Sanitary Facilities (Table 9) 60
Septic tank absorption fields. Sewage lagoon areas. Trench sanitary landfill. Area sanitary landfill. Daily cover for landfill.

Temperature and Precipitation (Table 1) 50

Water-Budget Deficits and Surpluses at Lake Providence (Table 3) 52
Deficit—Mean; Probability of equal to or greater than 0.1, 1, 2, 3, 4, 5, 6 inches. Surplus—Mean; Probability of equal to or greater than 0.1, 2, 4, 6, 8, 10, 12 inches.

Page

Water Management (Table 11) 64
Limitations for—Pond reservoir areas; Embankments, dikes, and levees. Features affecting—Drainage, Irrigation, Grassed waterways.

Wildlife Habitat Potentials (Table 13) 68
Potential for habitat elements—Grain and seed crops, Grasses and legumes, Wild herbaceous plants, Hardwood trees, Coniferous plants, Wetland plants, Shallow water areas. Potential as habitat for—Openland wildlife, Woodland wildlife, Wetland wildlife.

Woodland Management and Productivity (Table 7) 56
Suitability group. Management concerns—Erosion hazard, Equipment limitation, Seedling mortality. Potential productivity—Important trees, Site index. Trees to plant.

Yields Per Acre of Crops and Pasture (Table 6) 55
Cotton. Soybeans. Sweet potatoes. Common bermudagrass. Bahiagrass. Improved bermudagrass. Rice.

Foreword

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

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

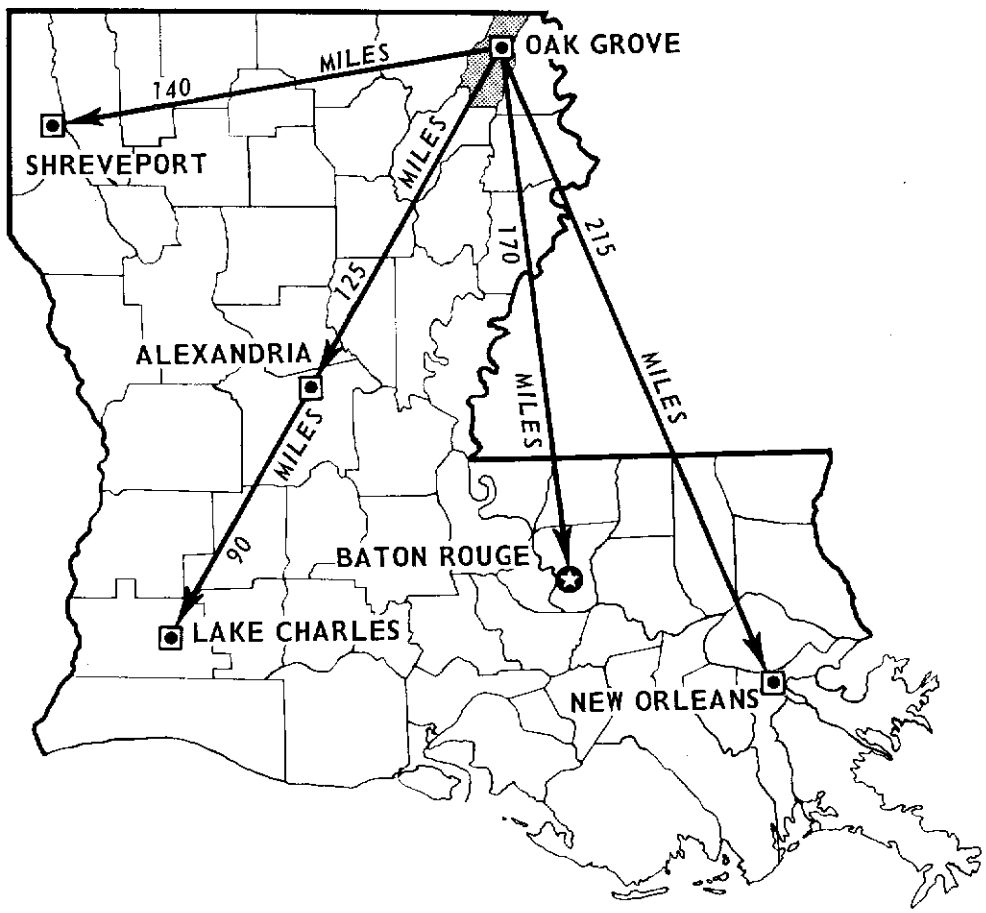
Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption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

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

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

Alton Marguru

State Conservationist
Soil Conservation Service



Location of West Carroll Parish in Louisiana. The State Agricultural Experiment Station is at Baton Rouge.

SOIL SURVEY OF WEST CARROLL PARISH, LOUISIANA

By Tracey A. Weems, Emmett E. Reynolds, E. Thurman Allen, Charles E. Martin and Ronnie L. Venson, Soil Conservation Service

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

WEST CARROLL PARISH is in the northeastern part of Louisiana, about 55 miles northeast of Monroe. The parish has a total area of 227,840 acres, or 356 square miles. In 1974 the population of the parish was 13,000. The parish is primarily an agricultural area. About 70 percent of the acreage is cropland.

Two major physiographic areas make up the parish: the nearly level to gently undulating upland terrace extending north and south through the central part of the parish and the level to nearly level alluvial plains along the eastern and western edges of the parish.

The nearly level to gently undulating upland terrace makes up about 75 percent of the parish. Most of the soils are in areas that have patterns of low ridges and swales with short irregular slopes. The soils formed in loess. These soils are loamy throughout and have a low sand content.

The level to nearly level alluvial plains make up about 25 percent of the parish. The soils formed in major river alluvium deposited in three main areas: along the eastern edge, along the southwestern edge, and along the northwestern edge of the parish.

Mississippi River alluvium is along the eastern edge of the parish. The soils in this area are loamy or clayey. The loamy soils are on the natural levees of Bayou Macon. The clayey soils are in broad, level areas adjacent to the natural levees.

Old river alluvium is along the southwestern edge of the parish. Most of the soils in this area are loamy; how-

History and Development

West Carroll Parish was made up from parts of Ouachita and Concordia Parishes in 1877. It is named in honor of Charles Carroll, one of the signers of the Declaration of Independence.

The early settlers of West Carroll Parish were primarily English, Scotch, and Scotch-Irish. The town of Floyd was the parish seat until 1915 when the parish government was moved to the town of Oak Grove. Agriculture has always been a major enterprise in the parish, and most of the working population is employed in some form of agricultural work. The number of people employed in industry, however, has increased in recent years.

The population of the parish decreased from 19,252 in 1940 to 13,000 in 1974. Oak Grove is the largest town; it has a population of 2,000.

Agriculture

West Carroll Parish in primarily an agricultural area. The principal crop is soybeans.

According to the U.S. Census of Agriculture, in 1969 there were 1,163 farms in the parish, and they comprised 196,855 acres. Most farms range from 30 to 200 acres in size. In 1969, soybeans were grown on 90,827 acres, cotton on 25,651 acres, and rice on 4,141 acres. Sweet potatoes and tomatoes are the principal truck crops; however, the

Water Resources

Data from the UNITED STATES GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, ALEXANDRIA, LOUISIANA, were used in preparing this section.

West Carroll Parish has about 1,500 acres of surface water, including Bayou Macon and Boeuf River. In 1970, about 1.5 million gallons of water per day were pumped from these streams mainly to irrigate rice.

Pleistocene age sand and gravel deposits are a potential source of large quantities of ground water. They now yield about 5 million gallons of water per day for domestic, livestock, and irrigation uses. About 90 percent of the ground water used in the parish comes from these deposits. Water in this aquifer is generally moderately hard to very hard. Some treatment is essential for domestic use and most domestic water systems are equipped with water softeners. The iron content is high, ranging from about 9.5 parts per million to about 15 parts per million. The chloride content is low and is acceptable for most uses. In most parts of the parish, irrigation wells that are screened in Pleistocene age sand and gravel can yield as much as 2,000 gallons or more per minute.

The Cockfield Formation, which is below the Pleistocene age deposits, is a potential source of moderate quantities of ground water. This formation contains fresh water to a depth of about 250 feet below sea level in the western part of the parish and about 400 feet in the southeastern part of the parish. Salt water is below these

peratures fall low enough to produce freezes. In the tropical air to the south of the cold front, however, January air temperatures may reach 70 degrees F, and cumulus clouds carry moisture northwards from the Gulf of Mexico.

Table 1 shows the annual regime of mean daily maximum and minimum temperatures by months, and the extreme temperatures which can be expected 2 years in 10. These temperature data are based on records kept from 1941 to 1970 at Lake Providence. The data are representative of conditions in West Carroll Parish. Temperatures near the top of a dense stand of crops or vegetation will be somewhat higher during sunny days and colder during clear, calm nights. Other small temperature variations over the parish are associated with slopes, drainage, and proximity to bodies of water.

Table 1 also shows monthly precipitation data for Lake Providence; the winter-spring precipitation maximum and the autumn minimum are representative of climate in West Carroll Parish. Precipitation is usually associated with the passage of warm and cold fronts over the parish. Heavy showers generally last no more than an hour or two and occur within vigorous squall lines that precede cold fronts during winter and spring. General rains of 24-hour duration are relatively uncommon. During summer, precipitation is usually widely scattered local thunderstorms that occur between noon and early evening; each shower normally covers a small area. The result is

rainfall of 4 to 5 inches can be expected in about every other year in northeastern Louisiana, and 6 to 7 inches can be expected once in 10 years. These rainfalls occur most often along stationary fronts in winter and spring and not very often during summer and fall.

Despite the average high rainfall, monthly and seasonal variations of precipitation are great enough to result in short-term droughts and wet spells which affect agricultural operations and crop yields. The water-budget concept is a useful tool to indicate relationships between climate, land use, and agriculture. Figure 1 is a graphical representation of some of the water-budget components that were calculated on a monthly basis from data recorded at Ryan Airport at Baton Rouge. Although Baton Rouge is located in southeastern Louisiana, these water-budget components are fairly representative of much of Louisiana. The graph for Baton Rouge serves here for illustrative purposes, and specific figures and tables for Lake Providence follow.

Potential evapotranspiration (PE), represented by the upper continuous curve, is defined as the maximum amount of evapotranspiration which would take place with a continuous vegetation cover and no shortage of soil moisture. Monthly PE depends on the amount of energy that is supplied to the interface, particularly solar radiation. The Thornthwaite system utilized in this analysis bases the estimates on air temperature and day length. The seasonal regime of PE is low in winter and high in summer, with relatively little variation from one year to the next.

Actual evapotranspiration (AE), based on rainfall and soil moisture storage during a particular month, is an index of water use and crop production. Monthly AE cannot be greater than monthly PE, but when AE is less than PE, the difference is the moisture deficit (D), which is an index of water shortage or the irrigation needed for maximum crop production. The calculations assume that a 6-inch moisture storage capacity is available to vegetation within the rooting zone; therefore, the deficits would be greater for shallow-rooted young plants and smaller for deeper rooted plants.

[redacted]

expected each summer and fall, but they very rarely occur during spring. During dry summers, deficits are large enough to reduce crop yields.

Figure 2 emphasizes the variability by seasons through the years and the tendency for clustering. For example, there were large winter surpluses of moisture during the late 40's, large spring surpluses during the middle 40's, large summer deficits at almost the same times during the late 40's and early 50's, and small summer deficits during the late 50's.

The data from figure 2 are reorganized in table 3 to show the probability of monthly deficits or surpluses that are equal to or greater than selected amounts. Random variation of deficits and surpluses over the decades was assumed (*8*).

Extremely severe weather conditions are associated with thunderstorms and squall lines, but the frequency of serious damage at any one location within the parish is very low. Hail and tornadoes occur infrequently during severe winter and spring thunderstorms and are usually embedded within squall lines. Heavy, wet snow and glaze occasionally do considerable damage to forest vegetation and powerlines.

Landforms and Surface Geology

DR. BOBBY J. MILLER, Department of Agronomy, Louisiana State University, and DR. R. B. DANIELS and WARREN L. COCKERHAM, soil scientists, Soil Conservation Service, prepared this section.

West Carroll Parish has four general areas of soils that formed in a different kind or age of unconsolidated sediment. The areas are narrow, elongated, generally parallel bands that trend in a northeast-southwest direction between the two major streams that drain the parish. Bayou Macon forms the boundary of the parish on the east, and the Boeuf River forms most of the western boundary. These parallel-flowing streams and their tributaries provide the surface drainage for the entire parish. They flow generally from northeast to southwest and are 10 to 15 miles apart.

The land surface features and the nature and distribu-

tire area, and local relief is generally less than 5 feet. Bayou Macon occupies a channel cut 15 to 20 feet below the adjacent alluvium.

Sediments carried by the Mississippi River are of varied origin and may have originated anywhere within the river's drainage area. Sorting of the sediments during deposition, as well as a diverse mineralogy, resulted in considerable differences in the deposits. Mineralogical studies of the alluvium indicate that smectite minerals are predominant in the clay-size fraction, and secondary amounts of micaceous clays also are present (*11*). Associated with these are lesser amounts of kaolinite, chlorite-vermiculite intergrade, and quartz minerals. The sand and silt-size fractions are mainly quartz, a sizable component of feldspars, and smaller amounts of a variety of other minerals, including the readily weatherable components biotite and hornblende.

Partial sorting of sediments occurs when a stream

areas of the old alluvium in which the Dubbs, Dundee, and Forestdale soils formed. At their margins the clayey Perry soils overlie buried soils that developed in the old alluvium. Dubbs, Dundee, and Forestdale soils occur at the higher elevations in the area, and the nature of the sediments underlying the clay in these soils is discussed in the section "Old Alluvium." Most of these underlying sediments occur in an area of braided-stream terrace composed of Arkansas River alluvium (*9*).

The time of deposition of the clayey sediments has not been established. That they are considerably younger than the underlying deposits is evident, because an unconformity separates them from the underlying materials, and soils had developed in the older deposits before they were buried under the clayey sediments. In addition, the clayey sediments are more leached in upper horizons than similar clays in other areas of Recent Mississippi River alluvium. They were probably deposited 2,000 to 4,000

lief except adjacent to stream channels. The western segment coincides approximately with the Calhoun-Grenada association as it is shown on the General Soil Map.

Geologic studies of the lower Mississippi Valley indicate that sediments forming the braided-stream terraces under the loess mantle are glacial outwash or valley train deposits laid down by the Arkansas River (*9*). The basal recognizable horizons of soils that developed in the braided-stream terrace deposits and were later buried by the overlying loess.

The characteristics and distribution of loess, its time of deposition, and the source of the loess sediments in the lower Mississippi Valley have been the subject of a number of studies. Generally the results indicate that

braided-stream terrace that was formed by the Arkansas River 30,000 to 40,000 years ago (*9*). Investigations conducted during the survey indicate they are younger than this, however, and overlie the older braided-stream terrace deposits. Possibly they are an extension of a younger braided-stream terrace, approximately 9,000 to 13,000 years old, that has been identified in the northwest part of the parish (*9*). Soils that formed in the old alluvial sediments are similar to soils that formed along old meander belts of the Mississippi River and some of its tributaries (*11*).

During soil formation, the sediments weathered considerably and distinct horizons of accumulated and translocated clay developed. The soil and sediment colors are dominantly gray. The older underlying sediments have redder colors than those characteristic of Mississippi River alluvium. This suggests that thin Mississippi River deposits may overlie older Arkansas River alluvium.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in parishes nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was

to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

Soil Map for General Planning

The General Soil Map at the back of this soil survey shows, in color, the five soil associations in West Carroll Parish. Each soil association is a unique natural landscape unit that has a distinctive pattern of soils, relief, and drainage features. It normally consists of one or more major soils and some minor ones, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

The map provides a broad perspective of the soils and landscapes in the parish. It provides a basis for comparing the potentials of the five associations in the parish for general kinds of land use. From the map, large areas that are generally suitable for a certain kind of farming or other land use can be identified. Likewise, large areas with soil properties distinctly unfavorable for certain land uses can be identified.

Because of the small scale of the map, the smallest unique soil area that can be delineated is about 1,000

1. Sharkey Association

Nearly level, poorly drained soils that have a clayey subsoil; formed in Mississippi River alluvium

This soil association is on an alluvial plain at the eastern edge of the parish. It is at a lower elevation than the adjacent upland terrace to the west.

This association makes up about 8 percent of the parish. About 90 percent of the association is Sharkey soils, and the rest is minor soils.

The Sharkey soils are at the slightly lower elevations. They are poorly drained and have a clay surface layer. They have a seasonal high water table during the months December through April.

The minor soils in this association are the somewhat poorly drained Commerce soils, and some soils that are similar to the Sharkey soils but have loamy material at a depth of about 27 inches. Also included in this association are soils in small areas at low elevations that are subject to flooding in winter and spring.

This association is used mainly as cropland. A small acreage is used as pastureland. Most of the acreage has been cleared and some surface drainage systems have been installed. Soil wetness and difficulty in working the Sharkey soils are the main limitations to use of the asociation for crops. Wetness also is a major limitation for nonfarm uses. A high shrink-swell potential and low strength are limitations for use of the Sharkey soils.

This association has good potential as cropland and pastureland, but to achieve this potential a good drainage system is required. The potential as urban land is poor because of the difficulty in overcoming wetness, high shrink-swell potential, and low [illegible]

This association is used mainly as cropland. A small acreage is used as pastureland. Most of the acreage has been cleared. Some drainage systems have been installed. Wetness of Calhoun soils is the main limitation to use of this association as cropland and to most other uses. Low strength is a limitation to some nonfarm uses.

This association has a good potential as cropland and pastureland, but to achieve this potential a good drainage system is required in the low areas. The potential as urban land is good, although soil wetness is difficult to overcome on the Calhoun soils. The good potential of this association as woodland and its fair potential for wildlife habitat are overshadowed by its value as cropland and pastureland.

3. Calhoun-Grenada Association

Level to gently sloping, poorly drained and moderately well drained soils that have a loamy subsoil; formed in loess

This soil association is on the terrace uplands in the western half of the parish. It is at a lower elevation than the Grenada-Calhoun association to the east and at a higher elevation than the Dundee-Dubbs association to the west.

This association makes up about 40 percent of the parish. About 50 percent of the association is Calhoun soils, 35 percent is Grenada soils, and the rest is minor soils.

The Calhoun soils are level and poorly drained and are at lower elevations than the Grenada soils. The Grenada soils [illegible]

This soil association is on an alluvial plain at the southwestern edge of the parish. It is at a lower elevation than the Calhoun-Grenada association to the east.

This association makes up about 10 percent of the parish. About 45 percent of the association is Dundee soils, 40 percent is Dubbs soils, and the rest is minor soils.

The Dundee soils are at a slightly lower elevation than the Dubbs soils. Dundee soils are somewhat poorly

system is required. Its potential as urban land is poor because of the shrink-swell potential and low strength of these soils.

The soils in this association have good potential for woodland and for wetland wildlife habitat, but this is overshadowed by their value for crops and pasture.

Broad Land Use Considerations

Soil Maps for Detailed Planning

The kinds of soil (mapping units) shown on the detailed soil maps at the back of this publication are described in this section. The descriptions [illegible] soil mapping are recognized in the description of each mapping unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

This soil is friable but somewhat difficult to keep in good tilth because of surface crusting. Traffic pans develop easily but can be broken up by deep plowing or chiseling. A surface drainage system is generally needed for most cultivated crops and pasture plants. Land grading and smoothing improves drainage and increases the effectiveness of farm equipment. Proper management of crop residues improves tilth and reduces soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Lime and other fertilizers are generally needed.

The potential for urban use is poor. Wetness limits the use of the soil for septic tank absorption fields, sanitary landfills, homesites, and local roads and streets. Low strength limits its use for foundations or as construction material. Capability subclass IIIw.

2—**Calhoun-Calloway complex.** This complex consists of small areas of Calhoun and Calloway soils so intermingled that they could not be mapped separately at the scale selected (fig. 5). These soils are on narrow flats, in swales, and on very low ridges on the terrace uplands, mostly in the western part of the parish. Areas range from 20 to 250 acres in size. These soils formed in loess material more than 4 feet thick. Slopes are 0 to 2 percent. These soils are associated with the better drained Grenada and Memphis soils that occur at slightly higher elevations.

The Calhoun soil is in narrow flats and in swales and makes up about 60 percent of each mapped area. Typi-

through the soil. The seasonal high water table is perched above a depth of 2.5 feet during the months of December through April. The surface layer is wet for significant periods in winter and spring. Plants generally lack water during dry periods in summer and fall.

Included with this complex in mapping are a few small areas of Grenada soils at slightly higher elevations and Foley soils in narrow flats and swales. Also included are small areas of soils on narrow flats and in swales that are subject to flooding.

Most of the acreage is in crops. A small acreage is used for pasture, woodland, and homesites.

The potential of this complex for crops and pasture is fair. The uneven surface and excess water in the narrow flats and swales interfere with tillage operations. The main suitable crops are cotton, corn, soybeans, grain sorghum, wheat, oats, sweet potatoes, rice, and truck crops. The main suitable pasture plants are common bermudagrass, improved bermudagrasses, southern wild winter pea, Pensacola bahiagrass, tall fescue, dallisgrass, and ryegrass.

The soils in this complex are friable but are somewhat difficult to keep in good tilth because of surface crusting. Traffic pans develop easily but can be broken up by deep plowing or chiseling. A surface drainage system is needed to remove excess surface water from the narrow flats and swales if this complex is to be used for most cultivated crops and pasture plants. Land grading and smoothing improve surface drainage and increase the ef-

strongly acid, slightly brittle, grayish brown silty clay loam fragipan with yellowish brown mottles. Below this is medium acid, slightly brittle and compact yellowish brown silt loam.

Included with this soil in mapping are a few small areas of Sharkey clay. Also included are many small areas of Commerce soil that has a silt loam surface layer at slightly higher elevations.

for short periods in winter and spring. Sufficient water is available to plants in most years.

Included with this complex in mapping are a few small areas of Foley, Forestdale, and Deerford soils. Also included are small areas of soils that are similar to the Dundee and Dubbs soils but are alkaline below a depth of 30 inches, and small areas of soils that are similar to the Dundee soils but are brown below a depth of 30 inches.

soils that are similar to this soil but lack the high sodium saturation.

This soil is moderate in fertility. Plant roots penetrate it easily. Water and air move slowly through the subsoil, which generally remains dry even in wet periods. A high content of sodium is in the lower part of the subsoil. Runoff is slow to very slow. The seasonal high water table is perched above a depth of 1.5 feet and at times is at the

slowly through the soil. Runoff is slow to very slow. The seasonal high water table fluctuates between the surface and a depth of 1.5 feet during the months of December through April. The surface layer is wet for long periods in winter and spring. Plants generally lack water during dry periods in summer and fall.

Most of the acreage is in crops and pasture. Soybeans and cotton are the main crops.

The potential for crops and pasture is fair. Wetness is the main limitation. The main suitable crops are cotton, corn, rice, and soybeans. The main suitable pasture plants are common bermudagrass, Pensacola bahiagrass, dallisgrass, tall fescue, and white clover.

This soil is somewhat difficult to keep in good tilth. A surface drainage system is generally needed for most cultivated crops and pasture plants. Land grading and smoothing improve surface drainage and increase the effectiveness of farm equipment. Proper management of crop residues improves tilth and reduces soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Lime and other fertilizers are generally needed.

The potential for urban development is poor. Wetness is a limitation to use of this soil for septic tank absorption fields, sanitary landfills, homesites, and local roads and streets. Shrink-swell potential and low strength are limitations to use for foundations or as construction material. Capability subclass IIIw.

6—Grenada silt loam, 1 to 3 percent slopes. This soil is on ridges on the terrace uplands, mostly in the central and eastern part of the parish. Areas range from 10 to 40 acres in size. This soil formed in silty loess deposits. It is associated with the better drained Dexter and Memphis soils that occur on the higher ridges and with the more poorly drained Calhoun, Calloway, and Foley soils that occur at lower elevations.

Typically the surface layer is slightly acid, dark brown silt loam about 7 inches thick. The subsoil to a depth of 30 inches, is very strongly acid, yellowish brown silt loam. Below this, to a depth of 33 inches, it is strongly acid, light gray silt loam. The next layer extends to a depth of 54 inches and is a compact, brittle, strongly acid, yellowish brown silty clay loam fragipan mottled with shades of brown and gray (fig. 6). Below this is a compact, slightly brittle, strongly acid, yellowish brown silt loam fragipan.

Included with this soil in mapping are a few small areas generally lack water during dry periods in summer and fall.

Most of the acreage is in crops and pasture. A small acreage is used for truck crops and homesites.

The potential for crops and pasture is good; however, erosion is a concern where there is no vegetative cover on the soils.

The loamy texture, good natural surface drainage, and good response to fertilizer make this soil one of the best in the parish for crops. The main suitable crops are cotton, corn, oats, soybeans, grain sorghum, truck crops, sweet potatoes, and wheat. The main suitable pasture plants are common bermudagrass, improved bermudagrasses, crimson clover, ball clover, ryegrass, dallisgrass, Pensacola bahiagrass, and tall fescue.

This soil is friable and easy to keep in good tilth. It can be worked within a fairly wide range of moisture content. Traffic pans develop easily but can be broken up by deep plowing or chiseling. Natural drainage is good. Conservation practices such as contour farming, minimum tillage, and proper management of crop residues reduce soil losses from erosion. Most crops other than legumes respond well to nitrogen fertilizer. Lime and other fertilizers are generally needed.

The potential for urban development is good. Wetness is the principal limitation to use of the soil for septic tank absorption fields, sanitary landfills, homesites, and local roads and streets. Low strength is a limitation to its use for foundations or as construction material. Capability subclass IIe.

7—Grenada silt loam, 3 to 5 percent slopes. This loamy soil is on ridges on the terrace uplands mostly in the central and eastern part of the parish. Areas range from about 10 to 30 acres in size. This soil formed in loess material more than 4 feet thick. It is associated with the better drained Memphis soils on the higher parts of the ridges and with the more poorly drained Calhoun soils at lower elevations.

Typically the surface layer is slightly acid, dark brown silt loam about 7 inches thick. The subsoil, to a depth of 29 inches, is very strongly acid, yellowish brown silt loam with dark yellowish brown mottles. The next layer extends to a depth of 33 inches and is very strongly acid, very pale brown silt loam. Below this is a compact, brittle, strongly acid, yellowish brown silt loam fragipan mottled with shades of brown.

Included with this soil in mapping are a few small areas

spring. Plants generally lack water during dry periods in summer and fall.

Most of the acreage is in pasture. A small acreage is in crops.

The potential for crops and pasture is good; however, erosion is a concern where the soil is without a vegetative cover. The long, narrow ridges and short slopes make this soil somewhat difficult to cultivate. The main suitable crops are cotton, corn, oats, grain sorghum, sweet potatoes, truck crops, and wheat. The main suitable pasture plants are common bermudagrass, improved bermudagrasses, dallisgrass, crimson clover, Pensacola bahiagrass, ball clover, ryegrass, and tall fescue.

The Calhoun soil is in swales 100 to 200 feet wide and makes up about 40 percent of each mapped area. Typically the surface layer is medium acid, dark brown silt loam about 9 inches thick. The subsurface layer extends to a depth of 21 inches and is very strongly acid, light brownish gray silt loam with yellowish brown mottles. The subsoil to a depth of 30 inches is very strongly acid, light brownish gray silt loam with yellowish brown mottles.

The Calhoun soil is somewhat low in fertility. Water and air move slowly through the soil. Wetness causes poor aeration and restricts plant root development. Runoff is slow to very slow. The seasonal high water table is

Memphis silt loam, 0 to 2 percent slopes. This nearly level soil is on the terrace uplands in areas adjacent to the escarpment between the terrace uplands and the alluvial plain in the eastern part of the parish. Areas range from 10 to 300 acres in size. This soil formed in loess material more than 4 f[illegible]

the escarpment between the alluvial plain and the terrace uplands in the eastern part of the parish (fig. 10). Areas range from 100 feet to 600 feet wide and extend throughout the length of the escarpment. This soil formed in loess material. It is associated with the moderately well

small areas of Perry soil that have slopes of more than 2 percent.

This soil is moderately low in fertility. Plant roots penetrate the soil with difficulty, and water and air move very slowly through it. It has a very high shrink-swell potential. Deep cracks form when the soil is dry and close when it is wet. Runoff is slow to very slow. The seasonal high water table fluctuates between the surface and a depth of 2 feet during the months of December through April. The surface is wet for long periods in winter and spring. Plants generally lack water during dry periods in summer and fall.

Most of the acreage is in crops. A small acreage is in woodland and pasture.

The potential for crops and pasture is fair. Wetness and a clayey texture are the main limitations. The main suitable crops are cotton, rice, and soybeans. The main suitable pasture plants are common bermudagrass, tall fescue, dallisgrass, ryegrass, and white clover.

This soil is sticky when wet, hard when dry, and difficult to keep in good tilth. It can be worked only within a narrow range of moisture content and becomes cloddy if worked when wet. A surface drainage system is needed for most cultivated crops and pasture plants. Land grad-

can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate

truck crops. The acreage in cotton and pasture has decreased, and this is largely due to the significant increase in acreage planted to soybeans.

General Principles of Management for Crops and Pasture

Some tillage implements merely stir the surface and leave crop residues on the soil surface for protection from beating rains. This helps control erosion, reduces runoff, and increases infiltration of moisture.

Drainage needs. Many of the soils in West Carroll Parish need surface drainage to make them more suitable for crops. Early drainage methods in the parish involved construction of a complex pattern of drainage ditches, laterals, and field drains. The more recent approach to drainage in the parish is a combination of land leveling and grading and use of a minimum number of open ditches. These practices create larger, uniformly shaped fields which are better adapted to the use of modern, multirow farm equipment. Deep cutting of soils that have unfavorable subsoil characteristics, for example, a fragipan, should be avoided.

Water for plant growth. The available water-holding capacity of the soils in the parish is moderate to high, but in many years sufficient water is not available at the critical time for optimum plant growth unless irrigation is used. Large amounts of rainfall occur in winter and spring. Sufficient rainfall generally occurs in summer and fall of most years; however, plants lack water on most soils during dry periods in summer and fall. This rainfall pattern favors the growth of early-maturing crops.

Control of erosion. Erosion is a concern on soils on the upland terrace in West Carroll Parish, mainly because particles of the soils that formed in loess are easily detached and moved by water. Erosion is not a serious problem on soils on the alluvial plains, mainly because the topography is level and nearly level. Sheet erosion is

Capability Classes and Subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

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

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the

subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability subclass is identified in the description of each soil mapping unit in the section "Soil Maps for Detailed Planning."

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil or that a given crop is not commonly irrigated.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby parishes were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Pasture yields were estimated for the most productive varieties of grasses and legumes climatically suited to the area and the soil. A few farmers may be obtaining average yields higher than those shown in table 6.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is

West Carroll Parish was mostly covered with hardwood forest and a few scattered stands of pine. Most of the acreage has been cleared, and in 1975 woodland covered only 19,000 acres, or 9 percent of the parish.

The woodland is mostly on soils at the lower elevations throughout the parish. A small acreage is on scattered tracts at the higher elevations. The woodland is mostly of poor quality; however, a good stand of commercial timber is on a tract of about 1,200 acres.

Most of the soils in the parish are capable of producing high quality wood crops. Woodlands are also of value for wildlife, recreation, natural beauty, and soil and water conservation.

Table 7 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland suitability) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil, and *o* indicates insignificant limitations or restrictions.

In table 7 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well-managed woodland. The risk is *slight* if the

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land use

tions are affected by slope of the soil and the probability planning and design: and if *severe*. soil properties or site

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry weather. Soils that are loamy or silty are better than other soils. Clayey soils may be sticky and difficult to spread.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface

limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. Fine-grained soils are not suitable sources of sand and gravel. All the soils of West Carroll Parish are unsuited because they have excess fines.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, and slope. The ability of the

that major soil reclamation, special design, or intensive maintenance is required.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics.

Drainage of soil is affected by such soil properties as permeability, texture, depth to layers that affect the rate of water movement, depth to the water table, slope, stability of ditchbanks, and availability of outlets for drainage.

Irrigation is affected by such features as slope, hazard of water erosion, texture, presence of alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, presence of alkali, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as wetness, slope, and texture of the surface foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry.

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

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet. The surface is firm after rains and is not dusty when dry.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, and are not dusty when dry. They should have moderate slopes.

Wildlife Habitat

E. RAY SMITH, JR., biologist, Soil Conservation Service, helped prepare this section.

The wildlife population of West Carroll Parish is of medium to low density mainly because a large amount of cleared land is without permanent cover. The present woodland is mostly small tracts and is of poor quality.

The population of openland wildlife is composed of bobwhite quail, cottontail rabbit, and dove. The Louisiana Wildlife and Fisheries Commission rates the parish as one

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, inadequate, or inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 13, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

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

Grain and seed crops are seed-producing annuals used by wildlife. Examples are corn, grain sorghum, wheat, and oats. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, and slope. Soil temperature and soil moisture are also considerations.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Examples are tall fescue, ryegrass, rescuegrass, lovegrass, bromegrass, clover, and vetch. Major soil properties that affect the growth of grasses and legumes are texture of the surface layer, available water capacity, wetness, and slope. Soil temperature and soil moisture are also considerations.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Examples are bluestem, panicgrass, paspalum, goldenrod, beggarweed, and switchgrass. Major soil properties that affect the growth of these plants are texture of the surface layer, available water capacity, and wetness. Soil temperature and soil moisture are also considerations.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Examples of native plants are oak, cottonwood, cherry, sweetgum, wild plum, hawthorn, dogwood, hickory, blackberry, pecan, elm, and greenbrier. Examples of fruit-producing shrubs that are commercially available and suitable for planting on soils rated *good* are shrub lespedeza and crabapple. Major soil properties that affect growth of hardwood trees and shrubs are available water capacity and wetness.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Examples are pine, baldcypress, and eastern redcedar. Soil properties that have a major effect on the growth of coniferous plants are available water capacity and wetness.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Examples of wetland plants are smartweed, wild millet, rushes, sedges, and cattail. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, and slope.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control devices in streams. Examples are waterfowl feeding areas and ponds. Major soil properties affecting shallow water areas are wetness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed.

The kinds of wildlife habitat are briefly described in the following paragraphs.

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

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, wood ducks, woodcock, thrushes, woodpeckers, squirrels, grey fox, raccoon, and deer.

Wetland habitat consists of open, swampy shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, herons, and mink.

Soil Properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of

are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American

feet south of middle of pipeline right-of-way, NE1/4NE1/4 sec. 10, T. 19 N., R. 9 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; common fine faint grayish brown mottles; weak medium subangular blocky structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

A2g—4 to 16 inches; light brownish gray (10YR 6/2) silt loam; common medium faint brownish yellow (10YR 6/6) and few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; many fine roots; few fine pores; very strongly acid; abrupt irregular boundary.

B2'tg—16 to 31 inches; grayish brown (2.5YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) and few fine faint brownish yellow mottles; weak coarse subangular blocky structure; firm; common thick discontinuous clay films; common tongues of light brownish gray silt loam that are 2 to 10 centimeters wide; few fine brown concretions; strongly acid; clear smooth boundary.

B22tg—31 to 44 inches; grayish brown (2.5YR 5/2) silty clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; hard; thin patchy clay films on faces of peds; common light brownish gray silt loam tongues that are 2 to 5 centimeters wide; strongly acid; clear smooth boundary.

B3g—44 to 63 inches; light brownish gray (2.5YR 6/2) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; hard; common black stains on faces of peds; common fine brown concretions; slightly acid.

The Ap horizon is dark grayish brown, dark brown, or grayish brown. It ranges from medium acid through very strongly acid. The A2 horizon is light brownish gray, grayish brown, or gray. The A2 horizon ranges from medium acid through very strongly acid. The thickness of the A horizon ranges from 11 to 22 inches.

The B horizon is grayish brown, gray, or light brownish gray with brownish mottles. It is silty clay loam or silt loam. Tongues of A2 material extend into the B horizon. The B horizon is typically strongly acid or very strongly acid in the upper part and ranges from strongly acid through neutral in the lower part.

Calloway Series

The Calloway series consists of somewhat poorly

blocky structure; very friable; few fine roots; few fine black concretions; strongly acid; clear smooth boundary.

A'2—23 to 27 inches; light gray (10YR 7/2) silt loam; common medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; very friable; few fine roots; few fine black and brown concretions; strongly acid; clear irregular boundary.

B'x1—27 to 52 inches; grayish brown (10YR 5/2) silty clay loam; many medium faint yellowish brown (10YR 5/6) mottles; moderate very coarse prismatic and moderate coarse subangular blocky structure; firm; common fine pores; about 65 percent slightly brittle common fine pores; common patchy clay films; light gray silt coatings on faces of prisms; strongly acid; clear smooth boundary.

B'x2—52 to 70 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; firm; slightly brittle and compact; few thin patchy clay films on some ped faces; black stains in old root channels; medium acid.

The A horizon is brown, dark grayish brown, or pale brown silt loam. It is 4 to 10 inches thick. It is medium acid or strongly acid. Mottles are in shades of gray.

The B horizon is yellowish brown, dark yellowish brown, or light yellowish brown silt loam or silty clay loam. It is 8 to 16 inches thick. It is medium acid or strongly acid. Mottles are in shades of gray.

The A'2 horizon is light gray, light brownish gray, or pale brown silt loam. It is 2 to 12 inches thick. It is medium acid or strongly acid. Mottles are in shades of brown. The depth to the fragipan is 14 to 35 inches.

The B'x horizon is grayish brown, yellowish brown, or light olive brown silty clay loam or silt loam. It is strongly acid or medium acid in the upper part and ranges from slightly acid through strongly acid in the lower part. Mottles are in shades of gray or brown.

Commerce Series

The Commerce series consists of somewhat poorly drained, moderately slowly permeable, loamy soils that formed in alluvium deposited by the Mississippi River. These soils are in higher areas on the alluvial plain at the eastern edge of the parish.

Commerce soils are associated with Sharkey soils. Commerce soils are less clayey and better drained than Sharkey soils.

The A horizon is dark grayish brown, brown, or grayish brown silty clay loam or silt loam 5 to 10 inches thick. It ranges from medium acid through mildly alkaline. Mottles are in shades of brown.

The B horizon is grayish brown or dark grayish brown stratified silty clay loam and silt loam. It ranges from slightly acid through mildly alkaline. Mottles are in shades of brown.

The C horizon is grayish brown, dark grayish brown, or gray stratified layers of silt loam, silty clay loam, or very fine sandy loam. It ranges from neutral through moderately alkaline.

Deerford Series

The Deerford series consists of somewhat poorly drained, slowly permeable soils that are loamy throughout and have a low sand content. These soils have a high sodium saturation in the lower part of the subsoil. They formed in loess material. These soils are in nearly level areas and on low ridges on the terrace uplands in the western part of the parish.

Deerford soils are associated with Dundee, Dubbs, Foley, and Forestdale soils. They have a B2 horizon that is high in exchangeable sodium, which the B2 horizon in Dundee, Dubbs, and Forestdale soils lacks. They have lighter-colored ped interiors in the subsoil than the Foley soils.

Most of the acreage is in crops. A small acreage is in pasture.

Typical pedon of Deerford silt loam in a field 8 miles northwest of Forest, 33 feet north of center of gravel road, 28 feet east of light pole, SW1/4SW1/4 sec. 19, T. 21 N., R. 9 E.

Ap1—0 to 3 inches; dark brown (10YR 4/3) silt loam; weak fine platy structure; friable; common fine roots; medium acid; abrupt smooth boundary.

Ap2—3 to 8 inches; grayish brown (10YR 4/3) silt loam; weak coarse subangular blocky structure; very firm; common fine roots; medium acid; abrupt smooth boundary.

A2—8 to 14 inches; grayish brown (10YR 5/2) silt loam; common medium faint brown mottles; weak coarse subangular blocky structure; very firm; few fine roots; few fine pores; few discontinuous clay films on surface of peds; few black stains; medium acid; abrupt smooth boundary.

B21t—14 to 20 inches; brown (10YR 5/3) silty clay loam; common medium faint brown mottles; moderate coarse subangular blocky structure; very firm; few fine roots; few fine pores; few discontinuous clay films on surface of peds; few black stains; medium acid; clear smooth boundary.

B22t—20 to 28 inches; brown (10YR 5/3) silty clay loam; common medium faint brown mottles; moderate coarse subangular blocky structure; very firm; few fine roots; few fine pores; few discontinuous clay films on surface of peds; few black stains; slightly acid; clear smooth boundary.

B3—28 to 36 inches; brown (10YR 5/3) silt loam; common medium faint brown mottles; weak coarse subangular blocky structure; very firm; few fine roots; few fine pores; few discontinuous clay films on surface of peds; few black stains; slightly acid; clear smooth boundary.

C—36 to 60 inches; brown (10YR 5/3) silt loam; common medium faint brown mottles; massive; very firm; few fine roots; few fine pores; few black stains; slightly acid.

The Ap or A1 horizon is dark brown, brown, or grayish brown silt loam 4 to 8 inches thick. It is medium acid or strongly acid except where limed. The A2 horizon is grayish brown, pale brown, or brown silt loam 2 to 6 inches thick. The A2 horizon is medium acid or strongly acid. Mottles are in shades of brown and gray. Tongues of A2 material 1 to 3 inches thick extend to a depth of 25 to 40 inches.

The B2t horizon is yellowish brown, dark yellowish brown, brown, or pale brown silt loam or silty clay loam. It is strongly acid or medium acid in the upper part and ranges from neutral through moderately alkaline in the lower part. Mottles are in shades of gray and brown.

The B3 and C horizons are pale brown, brown, yellowish brown, or olive brown silt loam. They range from neutral through moderately alkaline.

Dexter Series

The Dexter series consists of well drained, moderately permeable, loamy soils that formed in loamy alluvium. These soils are on elongated, narrow, convex ridges that generally are in the western part of the parish.

The Dexter soils are associated with the Calhoun, Calloway, Dundee, Dubbs, Foley, and Grenada soils. Dexter soils have a redder subsoil and are better drained than Calhoun, Calloway, Dundee, Foley, and Grenada soils. They have redder ped exteriors than the Dubbs soils.

Most of the acreage is in crops. A small acreage is used for pasture and homesites.

Typical pedon of Dexter silt loam, 6.5 miles west of Darnell, 240 feet north of field fence, and 15 feet east of pasture fence, NE1/4NE1/4 sec. 29, T. 20 N., R. 9 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; many fine roots; medium acid; abrupt smooth boundary.

B21t—5 to 11 inches; dark brown (7.5YR 4/4) silty clay loam; few fine faint brown mottles; moderate medium subangular blocky structure; firm; discontinuous reddish brown clay films on surface of peds; medium acid; clear smooth boundary.

B22t—11 to 28 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; distinct discontinuous clay films on surface of peds; few black stains

Dubbs soils are associated with Dexter, Dundee, Forestdale, and Perry soils. They lack the reddish brown ped surfaces in the Bt horizon that are characteristic of the Dexter soils. Dubbs soils have a lighter-colored subsoil and are better drained than Dundee, Forestdale, and Perry soils.

Most of the acreage is in crops. A small acreage is used for pasture, woodland, and homesites.

Typical pedon of Dubbs silty clay loam in an area of Dundee-Dubbs complex, 3.5 miles south of Goodwill, 3/4 mile west of Clear Lake Baptist Church, 471 feet south of center of gravel road, 15 feet east of airstrip, NE1/4NW1/4 sec. 17, T. 20 N., R. 9 E.

Ap—0 to 8 inches; dark brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common fine and very fine roots; strongly acid; abrupt smooth boundary.

B21t—8 to 19 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and few fine distinct brown mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct patchy clay films on faces of peds; few medium black concretions; medium acid; clear smooth boundary.

B22t—19 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct dark brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; distinct discontinuous clay films on faces of peds; few medium black concretions; medium acid; clear smooth boundary.

B31—32 to 44 inches; brown (7.5YR 5/4) silt loam; few fine distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few thin patchy clay films on faces of peds; medium acid; clear smooth boundary.

B32—44 to 55 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct strong brown (7.5YR 5/6) and few fine faint light brownish gray mottles; weak medium subangular blocky structure; friable; medium acid; clear smooth boundary.

C—55 to 66 inches; yellowish brown (10YR 5/6) very fine sandy loam; few fine faint dark yellowish brown and light brownish gray mottles; massive; friable; medium acid.

The A horizon is brown or dark grayish brown silty clay loam, silt loam, or very fine sandy loam. The A horizon ranges from medium acid through very strongly acid.

The B2 horizon is brown, dark brown, yellowish brown, strong brown, or dark yellowish brown silty clay loam, loam, or clay loam. It ranges from medium acid through very strongly acid. The B3 horizon texture is silt loam, very fine sandy loam, or loam.

The C horizon is in shades of brown and is mottled in gray and brown. It is silt loam, very fine sandy loam, or loamy fine sand and ranges from medium acid through very strongly acid.

Dundee Series

The Dundee series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy alluvium. These soils are on nearly level ridges at the western edge of the parish.

Dundee soils are associated with Dexter, Dubbs, Forestdale, and Perry soils. They have a grayer subsoil and are more poorly drained than Dexter and Dubbs soils. They have a less clayey subsoil than Forestdale and Perry soils.

Most of the acreage is in crops. A small acreage is used for homesites and woodland

585, 36 feet north of center of gravel road, 27 feet east of powerline pole, SE1/4SW1/4 sec. 32, T. 21 N., R. 9 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

B21tg—4 to 12 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) and few fine faint brown mottles; moderate medium subangular blocky structure; firm; few fine roots; thick discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.

B22tg—12 to 23 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct dark brown (7.5YR 4/4) and few fine faint yellowish brown mottles; moderate medium subangular blocky structure; firm; few fine roots; thin patchy clay films on faces of peds; few fine black concretions; strongly acid; clear smooth boundary.

B3g—23 to 35 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few very fine roots; few thin patchy clay films on faces of peds; few fine black concretions; medium acid; clear smooth boundary.

IIC1g—35 to 51 inches; light brownish gray (10YR 6/2) silt loam; common medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium black masses; slightly acid; clear smooth boundary.

IIC2g—51 to 70 inches; light brownish gray (10YR 6/2) loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium black masses; neutral.

The A horizon is a dark grayish brown, grayish brown, or brown silty clay loam or silt loam 4 to 8 inches thick. It is strongly acid.

The Bt horizon is grayish brown or dark grayish brown silty clay loam or silt loam mottled in shades of brown and gray. It ranges from medium acid through very strongly acid.

The C horizon is light brownish gray, grayish brown, or gray silt loam, very fine sandy loam, or loam. It ranges from neutral through strongly acid. Mottles are in shades of brown.

Foley Series

The Foley series consists of poorly drained, very slowly permeable soils. They are loamy throughout and have a high sodium saturation in the lower part of the subsoil. Foley soils formed in loess more than 5 feet thick. They are in nearly level areas and slight depressions on the terrace upland in the western part of the parish.

Foley soils are associated with Calhoun, Calloway, Deerford, Dexter, Dundee, and Grenada soils. The Foley soils are more poorly drained than the Calloway, Deerford, Dexter, Dundee, and Grenada soils. They differ from the Calloway, Dexter, Dundee, Grenada, and Calhoun soils in not being acid in the lower part of the subsoil.

Most of the acreage is used for pasture and crops. A small acreage is used for woodland.

Typical pedon of Foley silt loam in a pasture, 3 miles west of Mitchner, 264 feet north of blacktop road, SE1/4SW1/4 sec. 34, T. 19 N., R. 9 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) silt loam; few fine faint light brownish gray and few fine faint yellowish brown mottles; weak medium subangular blocky structure; friable; many fine roots; neutral; abrupt smooth boundary.

A2—5 to 15 inches; light brownish gray (10YR 6/2) silt loam; common

B1g—15 to 21 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common fine roots; tongues of A2 material extend through this horizon; slightly acid; clear irregular boundary.

B21tg—21 to 27 inches; light brownish gray (2.5YR 6/2) silty clay loam; few fine faint light olive brown mottles; strong medium angular blocky structure; firm; few fine roots; common patchy clay films on faces of peds; tongues of A2 material extend through this horizon; neutral; clear irregular boundary.

B22tg—27 to 44 inches; light brownish gray (2.5Y 6/2) silty clay loam; few fine faint light olive brown mottles; strong medium angular blocky structure; firm; few fine roots between peds; thick continuous clay films on faces of peds; few black stains on faces of peds; common fine black concretions; strongly alkaline; clear smooth

roots; few fine pores; thin discontinuous clay films on faces of peds; medium acid; clear smooth boundary.

B22tg—14 to 24 inches; gray (10YR 6/1) silty clay loam; common fine distinct strong brown mottles; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; thin patchy clay films on faces of peds; few fine black concretions; medium acid; clear smooth boundary.

B23tg—24 to 36 inches; gray (10YR 6/1) silty clay loam; common medium distinct dark brown (7.5YR 4/4) and few fine distinct strong brown mottles; moderate medium subangular blocky structure; firm; few fine roots; few thin patchy clay films on faces of peds; few fine black concretions; medium acid; clear smooth boundary.

B3—36 to 60 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct strong brown mottles; weak medium subangular blocky structure; friable; common fine black concretions; medium acid

B'x1—33 to 44 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint light gray (10YR 7/2) mottles; moderate coarse prismatic parting to moderate coarse subangular blocky structure; firm, compact and brittle; thick discontinuous clay films on faces of peds; silt coatings 1 to 5 centimeters wide between prisms; strongly acid; clear smooth boundary.

B'x2—44 to 54 inches; yellowish brown (10YR 5/6) silty clay loam; few fine faint dark yellowish brown mottles; weak coarse prismatic parting to moderate medium subangular blocky structure; firm, compact and slightly brittle; thick discontinuous clay films on faces

B22t—17 to 33 inches; dark brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine pores; distinct discontinuous clay films on faces of peds; few pale brown silt coatings in lower part of horizon; strongly acid; clear smooth boundary.

B23t—33 to 47 inches; dark brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine pores; distinct discontinuous clay films on faces of peds; common pale brown silt coatings in lower part of horizon; strongly acid; clear smooth boundary.

The B2g horizon is gray or dark gray clay. It ranges from strongly acid through neutral. Mottles are in shades of brown.

The IIB horizon ranges from slightly acid through moderately alkaline. Mottles are in shades of gray and brown.

Sharkey Series

The Sharkey series consists of poorly drained, very slowly permeable soils that formed in clayey Mississippi River alluvium. These soils are in nearly level areas and slight depressions on the alluvial plain along Bayou Macon at the eastern edge of the parish.

soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 16, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differ[illegible]

stratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Formation of the Soils

DR. BOBBY J. MILLER, Department of Agronomy, Louisiana State University, prepared this section.

In this section, the processes of soil formation are discussed and related to the soils in the survey area.

Processes of Soil Formation

The processes of soil formation are those processes or events occurring in soils that influence the kind and degree of development of soil horizons. The rate and relative effectiveness of different processes is determined by the factors of soil formation: climate, living organisms, relief, parent material, and time.

Important soil forming processes include those that

strata in some of the Commerce soils are a result of these rapid accumulations. Accumulations of sediment are also indicated by the different parent materials in the Perry soils and by thin silt loam or silty clay loam lenses in lower horizons of some of the Sharkey soils.

Processes resulting in development of soil structure have occurred in all the soils. Plant roots and other organisms rearrange soil material into secondary aggregates. Organic residues and secretions of organisms help to cement and stabilize structural aggregates. Alternate wetting and drying and shrinking and swelling help to develop structural aggregates, particularly in clayey soils. An example is the Sharkey soils.

The poorly drained soils in the survey area have horizons in which reduction and segregation of iron, and perhaps manganese, compounds have been important processes. Because these poorly aerated horizons are favorable for reductions, soluble reduced forms of iron and manganese are more common than the much less soluble oxidized forms. Reduction of these elements results in the gray colors that are characteristic of the Bg

the Commerce, Perry, and Sharkey soils, have a B horizon characterized by an accumulation of clay.

Factors of Soil Formation

A soil is a natural, three-dimensional body that formed

Another important influence of climate on soil formation is expressed in the clayey soils that have large amounts of expanding-lattice minerals associated with large changes in volume that occur upon wetting and drying. Wetting and drying cycles and associated volume

soils that developed under the hardwood forest. The organic-matter content of cultivated soils is typically lower than that of similar uncultivated soils and can vary widely, depending on use and management.

Differences in the amount of organic matter that has

susceptibility to erosion. The soils in the parish developed in unconsolidated material deposited by water and wind. The characteristics, distribution, and deposit pattern of the parent materials are more thoroughly discussed in the section "Landforms and Surface Geology."

alluvium in this area is probably somewhat older than the Mississippi River alluvium along the eastern edge of the parish in which the Sharkey soils formed.

(9) Saucier, R. T. 1974. Quaternary geology of the Lower Mississippi Valley, Ark. Archeol. Surv. Res. Ser. 6. Univ. Ark., Fayetteville, Ark.

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 (or contour farming). 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.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant [illegible] specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

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.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

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

Piping. Formation by moving water of subsurface tunnels or pipelike cavities in the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Runoff. The precipitation discharged in stream channels from a

gregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

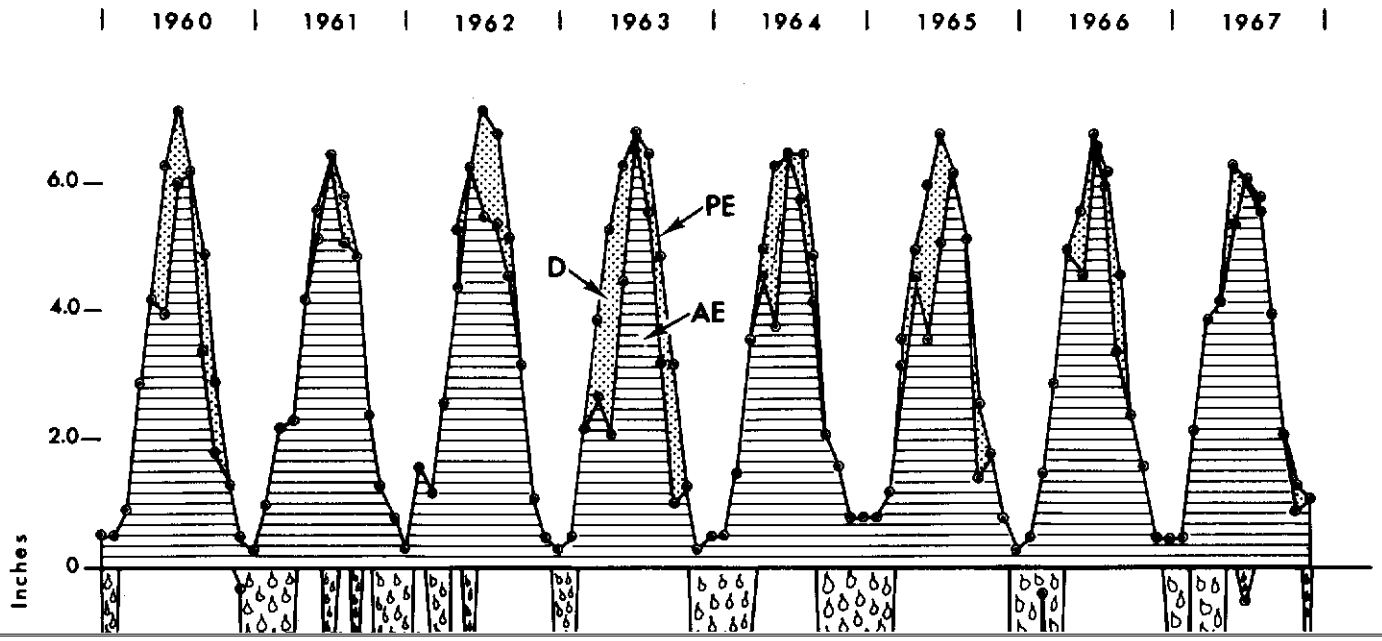
Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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 or management.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently

Illustrations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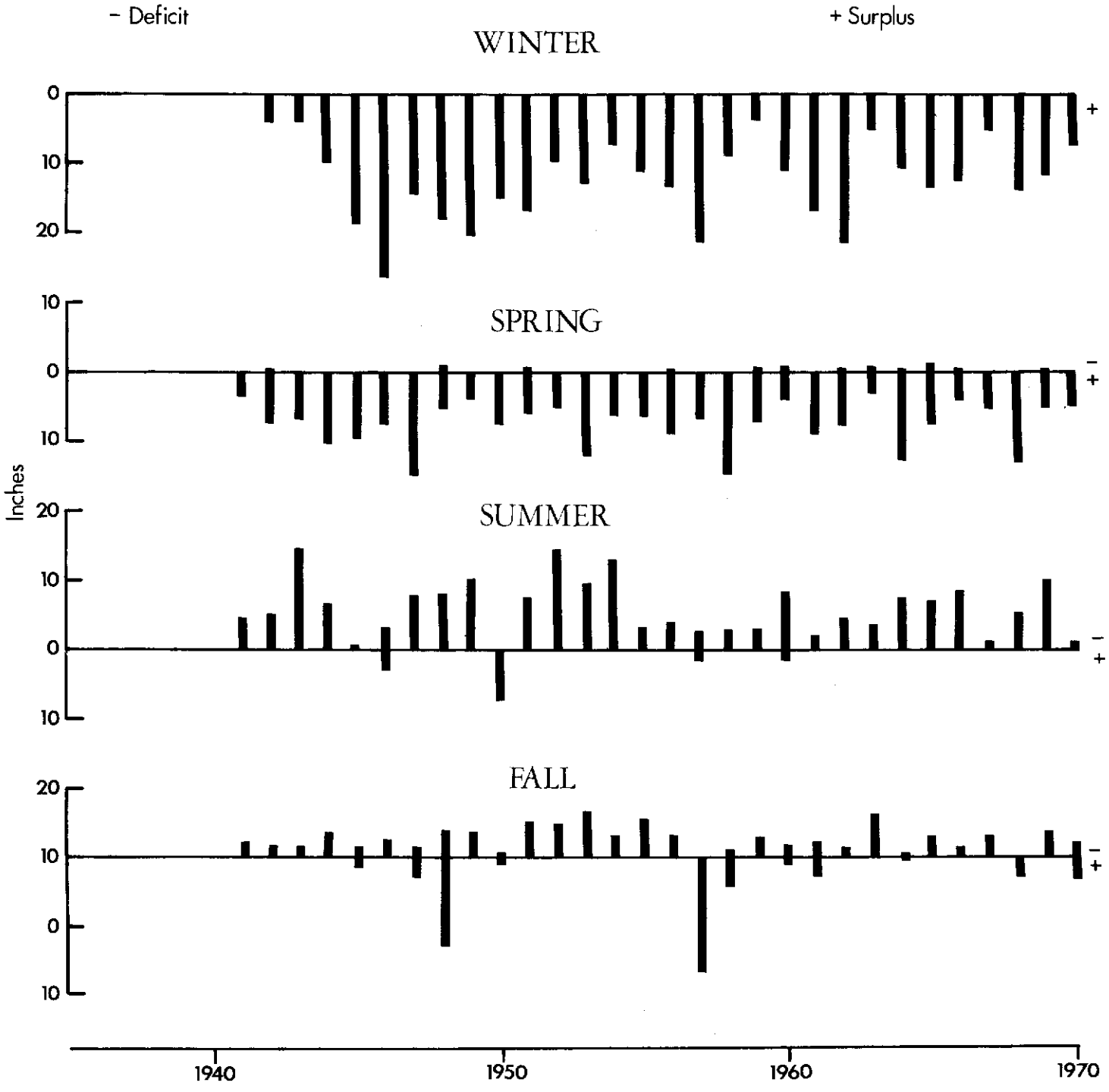

Figure 2.—Monthly water-budget surpluses and deficits in inches, by season of year. Data is for Lake Providence from 1941 through 1970.

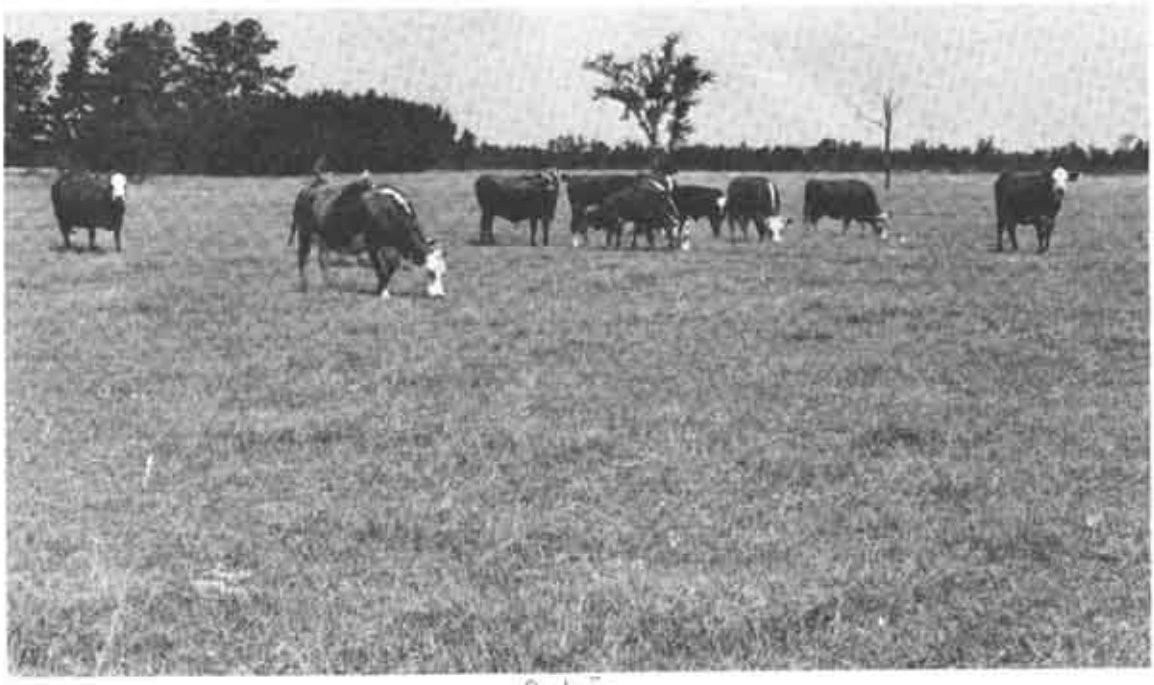

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Figure 8.—Cattle grazing in a pasture of Pensacola ~~bermuda~~grass and common bermudagrass on Grenada-Calhoun complex, gently undulating.

Figure 11.—Typical profile of Memphis silt loam, 8 to 20 percent slopes.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

WEST CARROLL PARISH, LOUISIANA

TABLE 2.--PROBABILITIES OF SPECIFIED LOW TEMPERATURES

[Data recorded at Lake Providence, 1962-1966]

Probability	Minimum temperature		
	24 F. or lower	28 F. or lower	32 F. or lower
SPRING:			
1 year in 10 later than--	February 26	March 16	April 1
2 years in 10 later than--	February 18	March 8	March 24
5 years in 10 later than--	February 4	February 21	March 9
FALL:			
1 year in 10 earlier than--	November 20	November 4	October 25
2 years in 10 earlier than--	November 22	November 11	October 30
5 years in 10 earlier than--	December 9	November 26	November 9

TABLE 3.--WATER-BUDGET DEFICITS AND SURPLUSES AT LAKE PROVIDENCE

[Recorded in the period 1941-70]

Month	Deficit								Surplus							
	Mean	Probability of deficit equal to or greater than--							Mean	Probability of surplus equal to or greater than--						
		.1 in	1 in	2 in	3 in	4 in	5 in	6 in		.1 in	2 in	4 in	6 in	8 in	10 in	12 in
	In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	In	Pct	Pct	Pct	Pct	Pct	Pct	Pct
January	---	---	---	---	---	---	---	---	4.7	100	73	50	27	13	13	---
February	---	---	---	---	---	---	---	---	4.8	100	87	50	33	20	3	---
March	---	---	---	---	---	---	---	---	4.2	97	90	47	17	---	---	---
April	---	17	---	---	---	---	---	---	2.4	80	47	17	10	---	---	---
May	0.3	63	10	---	---	---	---	---	1.0	37	23	13	3	---	---	---
June	1.4	83	53	30	10	---	---	---	0.3	10	7	---	---	---	---	---
July	2.0	83	63	43	27	20	10	---	0.2	3	3	3	---	---	---	---
August	2.5	93	73	57	30	23	13	3	---	3	---	---	---	---	---	---
September	1.7	77	63	40	23	7	---	---	0.2	7	3	3	---	---	---	---
October	0.7	60	33	13	---	---	---	---	0.2	10	3	---	---	---	---	---
November	---	10	---	---	---	---	---	---	1.4	33	20	7	7	7	7	7
December	---	---	---	---	---	---	---	---	3.0	80	53	27	10	7	7	---
Year	8.6	---	---	---	---	---	---	---	22.1	---	---	---	---	---	---	---

TABLE 4.--POTENTIAL OF SOIL ASSOCIATIONS FOR CROPLAND, PASTURELAND, AND URBAN LAND

[Soil associations ranked vertically in order of choice within the parish]

Cropland	Pastureland	Urban land
Sharkey association:	Dundee-Dubbs association:	Grenada-Calhoun association:
Good--high fertility, restricted choice of crops, multirow equipment adapted, surface layer stays wet for long periods, needs drainage, difficult to work and prepare seedbed.	Good--moderate fertility, good response to fertilizers, adapted to growing winter grazing plants, low areas need drainage.	Good--high elevation, no probability of flooding within 100 years, fair engineering qualities, has perched seasonal high water table.
Dundee-Dubbs association:	Sharkey association:	Dundee-Dubbs association:
Good--wide choice of crops, multirow equipment adapted, moderate fertility but responds well to fertilizers, low areas need drainage.	Good--high fertility, good response to nitrogen fertilizer, requires drainage, grazing may need to be restricted during wet periods, seedbed preparation is difficult.	Fair--low elevations, some probability of flooding within 100 years, fair engineering qualities, some areas have seasonal high water table.
Grenada-Calhoun association:	Grenada-Calhoun association:	Calhoun-Grenada association:
Good--wide choice of crops, multirow equipment adapted, moderately low fertility but responds well to fertilizers, low areas need drainage, erosion control practices needed, somewhat droughty in summer and fall.	Good--moderately low fertility, good response to fertilizers, low areas need drainage, somewhat droughty in late summer and fall.	Poor--intermediate elevations, little probability of flooding within 100 years, fair engineering qualities, has perched seasonal high water table.
Calhoun-Grenada association:	Calhoun-Grenada association:	Sharkey association:
Fair--moderately low fertility, good response to fertilizers, multirow equipment adapted, surface layer stays wet for long periods, needs drainage, somewhat droughty in summer and fall.	Fair--moderately low fertility, fair response to fertilizers, most areas need drainage, somewhat droughty in late summer and fall, grazing may need to be restricted during wet periods.	Poor--low elevations, some probability of flooding within 100 years, poor engineering qualities, high shrink-swell potential, low strength, has seasonal high water table, difficult to work.
Forestdale-Perry association:	Forestdale-Perry association:	Forestdale-Perry association:
Fair--moderately low fertility, fair response to fertilizers, multirow equipment adapted, surface layer stays wet for long periods, needs drainage, difficult to work and prepare seedbeds, droughty.	Fair--moderately low fertility, good response to fertilizers, requires drainage, seedbed preparation difficult, grazing may need to be restricted during wet periods.	Poor--low elevations, some probability of flooding within 100 years, poor engineering qualities, high shrink-swell potential, low strength, has seasonal high water table, difficult to work.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Area	Extent
		Acres	Pct
1	Calhoun silt loam	36,754	16.2
2	Calhoun-Calloway complex	11,612	5.1
3	Calloway silt loam	465	.2
17	Commerce silty clay loam	951	.4
19	Deerford silt loam	128	.1
4	Dexter silt loam, 1 to 3 percent slopes	1,757	.8
21	Dundee-Dubbs complex	22,250	9.8
5	Foley silt loam	1,280	.6
15	Forestdale silty clay loam	10,905	4.8
6	Grenada silt loam, 1 to 3 percent slopes	5,319	2.4
7	Grenada silt loam, 3 to 5 percent slopes	879	.4
8	Grenada-Calhoun complex, gently undulating	108,913	48.1
9	Memphis silt loam, 0 to 2 percent slopes	1,384	.6
14	Memphis silt loam, 8 to 20 percent slopes	1,779	.8
16	Perry clay	4,213	1.9
11	Sharkey clay	17,751	7.8
	Total	226,340	100.0
	Water	1,500	
	Total land area	227,840	

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1974. Absence of a yield figure indicates the crop is seldom grown or is not suited]

Soil name and map symbol	Cotton	Soybeans	Sweet potatoes	Common bermudagrass	Bahiagrass	Improved bermudagrass	Rice
	Lbs	Bu	Bu	AUM[1]	AUM[1]	AUM[1]	Bu
Calhoun:							
1	450	30	225	4.5	6.0	---	110
[2]2:							
Calhoun part	450	30	225	5.0	6.0	10.5	105
Calloway part	575	35	250	5.5	6.5	10.5	---
Calloway:							
3	525	35	250	5.5	6.5	10.5	---
Commerce:							
17	800	37	---	7.5	10.0	15.0	---
Deerford:							
19	500	28	---	5.5	6.0	---	---
Dexter:							
4	650	35	260	7.0	9.0	15.0	---
Dundee:							
[2]21:							
Dundee part	750	35	---	6.5	9.0	15.0	---
Dubbs part	775	35	---	6.5	9.0	15.0	---
Foley:							
5	575	28	---	5.5	5.5	---	110
Forestdale:							
15	600	35	---	6.5	8.5	---	120
Grenada:							
6	600	35	260	6.0	6.5	11.0	---
7	550	30	250	6.0	6.5	11.0	---
[2]8:							
Grenada part	575	35	240	5.0	6.0	11.0	---
Calhoun part	450	30	225	4.5	6.0	---	---
Memphis:							
9	750	35	260	7.0	9.0	15.0	---
14	---	---	---	5.0	7.5	12.0	---
Perry:							
16	475	33	---	6.0	8.5	---	120
Sharkey:							
11	600	40	---	6.5	8.5	---	130

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

[2]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry in a column means the information was not available]

Soil name and map symbol	Suitability group	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Calhoun:							
1	2w	Slight	Severe	Moderate	Cherrybark oak	---	Loblolly pine, slash pine.
					Water oak	---	
					Sweetgum	---	
					Loblolly pine	90	
					Slash pine	90	
[1]2:							
Calhoun part	2w	Slight	Severe	Moderate	Cherrybark oak	---	Loblolly pine, slash pine.
					Water oak	---	
					Sweetgum	---	
					Loblolly pine	90	
					Slash pine	90	
Calloway part	2w	Slight	Moderate	Slight	Cherrybark oak	90	Loblolly pine, slash pine.
					Loblolly pine	90	
					Sweetgum	90	
					Watergum	90	
					Slash pine	---	
Calloway:							
3	2w	Slight	Moderate	Slight	Cherrybark oak	90	Loblolly pine, slash pine.
					Loblolly pine	90	
					Sweetgum	90	
					Water oak	90	
					Slash pine	---	
Commerce:							
17	1w	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood, American sycamore.
					Eastern cottonwood	120	
					Nuttall oak	90	
					Water oak	110	
					Pecan	---	
					American sycamore	---	
					Sweetgum	---	
Deerford:							
19	2w	Slight	Moderate	Slight	Sweetgum	86	Loblolly pine, slash pine.
					Loblolly pine	92	
					Slash pine	92	
					Water oak	82	
					Cherrybark oak	90	
Dexter:							
4	1o	Slight	Slight	Slight	Loblolly pine	105	Loblolly pine, slash pine.
					Slash pine	105	
					Cherrybark oak	---	
					Water oak	---	
					Sweetgum	---	
Dundee:							
[1]21:							
Dundee part	2w	Slight	Moderate	Slight	Cherrybark oak	105	American sycamore, slash pine.
					Slash pine	105	
					Cherrybark oak	---	
					Water oak	---	
					Sweetgum	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Suitability group	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Dundee:							
Dubbs part-------	2o	Slight	Slight	Slight	Cherrybark oak------	100	Eastern cottonwood, American sycamore.
					Eastern cottonwood--	100	
					Green ash----------	80	
					Nuttall oak---------	95	
					Shumard oak---------	100	
					Sweetgum-----------	95	
					Water oak----------	90	
					Willow oak---------	95	
Foley:							
5----------	3w	Slight	Severe	Moderate	Sweetgum-----------	80	Loblolly pine, slash pine.
					Cherrybark oak------	80	
					Water oak----------	80	
					Loblolly pine-------	60	
					Slash pine---------	---	
Forestdale:							
15----------	1w	Slight	Severe	Moderate	Green ash----------	80	Eastern cottonwood, American sycamore.
					Eastern cottonwood--	95	
					Cherrybark oak------	95	
					Nuttall oak---------	95	
					Water oak----------	90	
					Willow oak---------	95	
					Sweetgum-----------	95	
Grenada:							
6, 7----------	2o	Slight	Slight	Slight	Cherrybark oak------	85	Loblolly pine, slash pine.
					Water oak----------	80	
					Loblolly pine-------	95	
					Slash pine---------	95	
18:							
Grenada part-----	2o	Slight	Slight	Slight	Cherrybark oak------	85	Loblolly pine, slash pine.
					Water oak----------	80	
					Loblolly pine-------	95	
					Slash pine---------	95	
Calhoun part-----	2w	Slight	Severe	Moderate	Cherrybark oak------	---	Loblolly pine, slash pine.
					Water oak----------	---	
					Sweetgum-----------	---	
					Loblolly pine-------	90	
					Slash pine---------	90	
Memphis:							
9, 14----------	1o	Slight	Slight	Slight	Cherrybark oak------	100	Loblolly pine, slash pine.
					Loblolly pine-------	105	
					Sweetgum-----------	90	
					Water oak----------	90	
Perry:							
16----------	2w	Slight	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 8.--BUILDING SITE DEVELOPMENT

["Shrink-swell" and other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Calhoun: 1	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.
[1]2: Calhoun part	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Calloway part	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Moderate: wetness, shrink-swell.
Calloway: 3	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Moderate: wetness, shrink-swell.
Commerce: 17	Severe: wetness.	Moderate: wetness, low strength, shrink-swell.	Moderate: wetness, low strength, shrink-swell.	Moderate: wetness, low strength, shrink-swell.
Deerford: 19	Severe: wetness, cutbanks cave.	Moderate: wetness, low strength, shrink-swell.	Moderate: wetness, low strength, shrink-swell.	Moderate: low strength, shrink-swell.
Dexter: 4	Slight	Slight	Slight	Moderate: low strength.
Dundee: [1]21: Dundee part	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.
Dubbs part	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.
Foley: 5	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.
Forestdale: 15	Severe: too clayey, wetness.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.	Severe: shrink-swell, wetness.
Grenada: 6, 7	Moderate: wetness.	Moderate: wetness, low strength.	Moderate: corrosive, wetness, low strength.	Moderate: low strength, wetness.
[1]8: Grenada part	Moderate: wetness.	Moderate: wetness, low strength.	Moderate: corrosive, wetness, low strength.	Moderate: low strength, wetness.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets
Grenada: Calhoun part	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Memphis: 9	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
14	Moderate: slope.	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.
Perry: 16	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.
Sharkey: 11	Severe: wetness, too clayey.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 9.--SANITARY FACILITIES

["Percs slowly" and other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms used to rate soils]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Calhoun: 1	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
[1]2: Calhoun part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Calloway part	Severe: percs slowly, wetness.	Slight	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
Calloway: 3	Severe: percs slowly, wetness.	Slight	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
Commerce: 17	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Moderate: too clayey.	Fair: too clayey.
Deerford: 19	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Dexter: 4	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Dundee: [1]21: Dundee part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Dubbs part	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: too clayey.
Foley: 5	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Forestdale: 15	Severe: wetness, percs slowly.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: wetness.
Grenada: 6, 7	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
[1]8: Grenada part	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
Calhoun part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Memphis:					
9	Slight	Moderate: seepage.	Slight	Slight	Fair: ~~too clayey~~. thin lay
14	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: ~~too clayey~~, slope. thin lay
Perry:					
16	Severe:	Slight	Severe:	Severe:	Poor:

TABLE 10.--CONSTRUCTION MATERIALS

["Shrink-swell" and other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor"]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Calhoun:				
1-----------	Poor:	Unsuited:	Unsuited:	Poor:

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Memphis:				
9	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: ~~too clayey~~. thin layer
14	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: ~~too clayey~~, thin layer slope.
Perry:				
16	Poor: wetness, low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
Sharkey:				
11	Poor: low strength, shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 11.--WATER MANAGEMENT

["Seepage," "slope," and other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Grassed waterways

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Grassed waterways
Grenada: [1]8:					
Grenada part	Slight	Moderate: piping, low strength.	Not needed	Percs slowly, complex slope.	Favorable.
Calhoun part	Slight	Moderate: piping, erodes easily, low strength.	Percs slowly, cutbanks cave.	Wetness, percs slowly.	Wetness.
Memphis: 9, 14	Moderate: seepage.	Moderate: piping, compressible, erodes easily.	Not needed	Erodes easily, slope.	Slope.
Perry: 16	Slight	Moderate: shrink-swell, low strength, compressible.	Percs slowly	Slow intake, wetness, percs slowly.	Wetness.
Sharkey: 11	Slight	Moderate: low strength, compressible, shrink-swell.	Percs slowly	Percs slowly, slow intake, wetness.	Wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 12.--RECREATION DEVELOPMENT

["Percs slowly" and other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Calhoun:				
1	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
[1]2:				
Calhoun part	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Calloway part	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Calloway:				

TABLE 12.--RECREATION DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Memphis: 14	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Perry: 16	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.
Sharkey: 11	Severe: too clayey, percs slowly, wetness.	Severe: too clayey, wetness.	Severe: too clayey, percs slowly, wetness.	Severe: too clayey, wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor"]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Calhoun:										
1	Poor	Fair	Fair	Good	Good	Good	Good	Fair	Fair	Good

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[NP means nonplastic]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Calhoun:											
1	0-16	Silt loam	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	16-63	Silty clay loam, silt loam.	CL	A-6	0	100	100	100	95-100	32-40	12-18
[1]2:											
Calhoun part	0-24	Silt loam	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	24-63	Silty clay loam, silt loam.	CL	A-6	0	100	100	100	95-100	32-40	12-18
Calloway part	0-34	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	34-54	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	54-81	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Calloway:											
3	0-27	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	27-52	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	52-70	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Commerce:											
17	0-14	Silty clay loam	CL	A-6, A-7-6	0	100	100	100	90-100	32-50	11-25
	14-77	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL, ML	A-4, A-6, A-7-6	0	100	100	100	75-100	23-45	3-23
Deerford:											
19	0-14	Silt loam	ML, CL-ML	A-4	0	100	100	100	95-100	<28	NP-7
	14-54	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	95-100	32-45	11-21
	54-88	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	100	95-100	25-40	5-17
Dexter:											
4	0-5	Silt loam	ML, SM, CL-ML, SC-SM	A-4	0	100	100	85-100	45-75	<25	NP-4
	5-39	Silty clay loam, clay loam, silt loam, loam.	CL	A-6, A-4	0	100	100	90-100	70-90	32-40	8-18
	39-76	Sandy clay loam, fine sandy loam, loamy fine sand, loam.	SC, SM, CL	A-6, A-4	0	100	100	75-95	35-60	<38	NP-16
Dundee:											
[1]21:											
Dundee part	0-4	Silt loam, silty clay loam.	CL, CL-ML, CL	A-6, A-4	0	100	100	90-100	75-98	20-35	4-14
	4-35	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	90-100	70-95	28-44	12-22
	35-70	Silt loam, very fine sandy loam, loam.	CL, ML, CL-ML	A-4	0	100	100	85-100	60-90	<30	NP-8

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Dundee:											
Dubbs part-------	0-8	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4	0	100	100	100	85-100	20-30	5-10
	8-32	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	100	100	100	85-100	35-50	15-25
	32-66	Very fine sandy loam to loamy fine sand.	ML, CL-ML, CL	A-4, A-6	0	100	100	85-95	55-90	20-35	5-14
Foley:											
5----------	0-15	Silt loam-------	ML, CL, CL-ML	A-4, A-6, A-7-6	0	100	100	95-100	70-100	25-45	5-20
	15-44	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	30-49	11-25
	44-73	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	95-100	85-100	30-45	11-20
Forestdale:											
15----------	0-6	Silty clay loam	CL	A-6, A-7-6	0	100	100	95-100	90-100	30-58	12-30
	6-36	Silty clay loam, silty clay.	CL, CH	A-7-6	0	100	100	95-100	75-100	40-65	20-40
	36-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	75-100	20-40	5-19
Grenada:											
6, 7----------	0-7	Silt loam-------	ML, CL-ML	A-4	0	100	100	100	90-100	27-31	4-6
	7-30	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-100	35-40	13-15
	30-33	Silt loam-------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	20-30	5-10
	33-60	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	90-100	35-42	15-21
18:											
Grenada part-----	0-7	Silt loam-------	ML, CL-ML	A-4	0	100	100	100	90-100	27-31	4-6
	7-30	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-100	35-40	13-15
	30-60	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	90-100	35-42	15-21
Calhoun part-----	0-21	Silt loam-------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	21-63	Silty clay loam, silt loam.	CL	A-6	0	100	100	100	95-100	32-40	12-18
Memphis:											
9, 14----------	0-8	Silt loam-------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<30	NP-10
	8-33	Silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	90-100	35-48	15-25
	33-65	Silt loam-------	ML, CL	A-4, A-6	0	100	100	100	90-100	30-40	6-15
Perry:											
16----------	0-5	Clay------------	CH	A-7-6	0	100	100	100	95-100	60-80	33-50
	5-31	Clay------------	CH	A-7-6	0	90-100	85-100	75-100	70-100	45-80	22-50
	31-70	Clay, silty clay.	CH, CL	A-7-6	0	100	100	100	95-100	45-80	22-50

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and	Depth	USDA texture	Classification	Frag-ments	Percentage passing sieve number--	Liquid	Plas-ticity

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES

[The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Calhoun:									
1	0-16	0.2-0.6	0.21-0.23	4.5-6.0	Low	High	Moderate	0.49	3
	16-63	0.06-0.2	0.20-0.22	4.5-7.3	Low	High	Moderate	0.43	
1_2:									
Calhoun part	0-24	0.2-0.6	0.21-0.23	4.5-6.0	Low	High	Moderate	0.49	3
	24-63	0.06-0.2	0.20-0.22	4.5-7.3	Low	High	Moderate	0.43	
Calloway part	0-34	0.6-2.0	0.20-0.23	4.5-6.0	Low	High	Moderate	0.49	3
	34-54	0.06-0.2	0.09-0.12	4.5-6.0	Moderate	High	Moderate	0.43	
	54-81	0.06-0.2	0.09-0.12	5.1-7.8	Low	High	Moderate	0.43	
Calloway:									
3	0-27	0.6-2.0	0.20-0.23	4.5-6.0	Low	High	Moderate	0.49	3
	27-52	0.06-0.2	0.09-0.12	4.5-6.0	Moderate	High	Moderate	0.43	
	52-70	0.06-0.2	0.09-0.12	5.1-7.8	Low	High	Moderate	0.43	
Commerce:									
17	0-14	0.2-0.6	0.20-0.22	5.6-7.8	Moderate	High	Low	0.32	5
	14-77	0.2-2.0	0.20-0.23	6.6-8.4	Low	High	Low	0.37	
Deerford:									
19	0-14	0.6-2.0	0.21-0.23	4.5-6.0	Low	High	Moderate	0.49	3
	14-54	0.06-0.2	0.12-0.18	5.1-8.4	Moderate	High	Low	0.43	
	54-88	0.2-0.6	0.12-0.15	6.6-8.4	Low	High	Low	0.49	
Dexter:									
4	0-5	0.6-2.0	0.15-0.24	5.1-6.5	Low	Low	Moderate	0.37	5
	5-39	0.6-2.0	0.15-0.24	4.5-6.0	Low	Moderate	Moderate	0.32	
	39-75	0.6-6.0	0.08-0.18	4.5-5.5	Low	Low	Moderate	0.24	
Dundee:									
1_{21}:									
Dundee part	0-4	0.6-2.0	0.15-0.20	4.5-6.5	Low	High	Moderate	0.37	5
	4-35	0.2-0.6	0.15-0.20	4.5-7.3	Moderate	High	Moderate	0.32	
	35-70	0.6-2,0	0.14-0.18	4.5-7.3	Low	High	Moderate	0.32	
Dubbs part	0-8	0.6-2.0	0.20-0.22	4.5-6.0	Low	Moderate	Moderate	0.37	5
	8-32	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	Moderate	Moderate	0.37	

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES--Continued

TABLE 16.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Calhoun	Fine-silty, mixed, thermic Typic Glossaqualfs
Calloway	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Commerce	Fine-silty, mixed, nonacid, thermic Aeric Fluvaquents
Deerford	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Dexter	Fine-silty, mixed, thermic Ultic Hapludalfs
Dubbs	Fine-silty, mixed, thermic Typic Hapludalfs
Dundee	Fine-silty, mixed, thermic Aeric Ochraqualfs
Foley	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Forestdale	Fine, montmorillonitic, thermic Typic Ochraqualfs
Grenada	Fine-silty, mixed, thermic Glossic Fragiudalfs
Memphis	Fine-silty, mixed, thermic Typic Hapludalfs
Perry	Very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Sharkey	Very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts

TABLE 17.--RELATIONSHIPS BETWEEN SOILS AND TOPOGRAPHY, RUNOFF, DRAINAGE, AND WATER TABLE

Soil series grouped by parent material	Topography	Runoff	Internal drainage class	Seasonal high water table	
				Depth	Duration
				Feet	
Soils that formed in loess:					
Calhoun	Nearly level and depressional.	Slow and very slow.	Poorly drained	0.0-2.0	Dec.-Apr.
Calloway	Nearly level	Slow	Somewhat poorly drained.	1.0-2.5	Dec.-Apr.
Deerford	Nearly level	Slow	Somewhat poorly drained.	0.5-1.5	Dec.-Apr.
Foley	Nearly level and depressional.	Slow and very slow.	Poorly drained	0.0-1.5	Dec.-Apr.
Grenada	Nearly level and gently sloping.	Medium and rapid.	Moderately well drained.	1.5-2.5	Jan.-Mar.
Memphis	Moderately sloping and steeply sloping.	Medium and rapid.	Well drained	>6.0	None
Soils that formed in old alluvium:					
Dubbs	Nearly level ridges.	Medium	Well drained	>6.0	None
Dundee	Nearly level	Slow and medium	Somewhat poorly drained.	1.5-3.5	Dec.-Apr.
Forestdale	Nearly level and depressional.	Slow and very slow.	Poorly drained	0.0-1.5	Dec.-Apr.
Soils that formed in recent alluvium:					
Commerce	Nearly level ridges.	Medium and slow	Somewhat poorly drained.	1.5-4.0	Dec.-Apr.
Perry	Nearly level and depressional.	Slow and very slow.	Poorly drained	0.0-2.0	Dec.-Apr.
Sharkey	Nearly level and depressional.	Slow and very slow.	Poorly drained	0.0-2.0	Dec.-Apr.
Soils that formed in braided-stream terrace deposits:					
Dexter	Narrow convex ridges.	Medium	Well drained	>6.0	None

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