United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
the Louisiana Agricultural
Experiment Station and
the Louisiana Soil and
Water Conservation
Committee

Soil Survey of Richland Parish, Louisiana

How To Use This Soil Survey

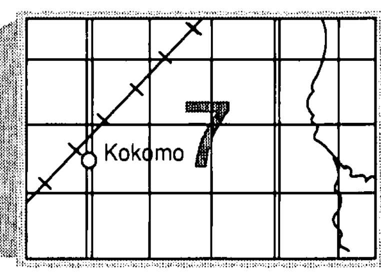
General Soil Map

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

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

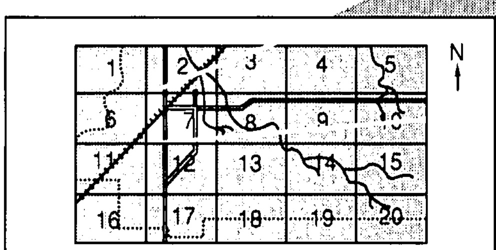
Detailed Soil Maps

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



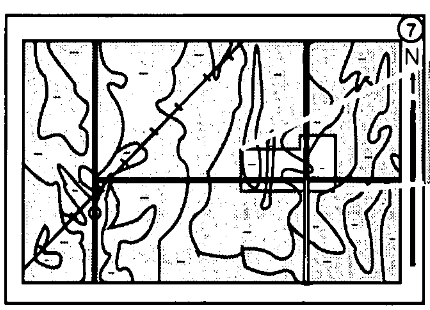
MAP SHEET

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

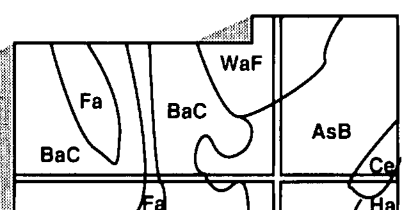


INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1987. Soil names and descriptions were approved in 1988. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1987. This soil survey was made cooperatively by the Soil Conservation Service, the Louisiana Agricultural Experiment Station, and the Louisiana Soil and Water Conservation Committee. Assistance was provided by the Richland Parish Police Jury. This soil survey is part of the technical assistance furnished to the Boeuf River and Northeast Soil and Water Conservation Districts.

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

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

Cover: Soybeans in an area of Dexter silt loam, 1 to 3 percent slopes. This soil is well suited to intensive cultivation.

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Issued September 1993

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Foreword

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

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

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

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

Donald W. Gohmert
State Conservationist
Soil Conservation Service

Soil Survey of Richland Parish, Louisiana

By E. Thurman Allen, Soil Conservation Service

Fieldwork by E. Thurman Allen and Teresa L. May, Soil Conservation Service, and Douglas Gillette, Louisiana Soil and Water Conservation Committee

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

RICHLAND PARISH is in northeastern Louisiana (fig. 1). It has a total area of 360,781 acres, or 564 square miles. Elevation ranges from about 55 to 100 feet above sea level. In 1978, the population of the parish was about 22,187, according to an estimate by the Bureau of the Census. Rayville is the parish seat.

Farming is the main economic enterprise in the parish. The climate is favorable for cultivated crops and livestock. The major crops are soybeans and cotton.

The parish consists generally of two major physiographic areas. They are the level to gently undulating terraces that extend from north to south through the central part of the parish and the level to gently undulating alluvial plains that extend along the eastern and western edges of the parish.

The terraces make up nearly half of the parish. The soils on the terraces are mainly loamy and formed in either thick loess or thin loess over stream deposits. The thick loess consists of 4 feet or more of silty, wind-laid deposits. The thin loess mantle is less than 4 feet thick. The soils are generally low or medium in natural fertility, but crops respond well to applications of fertilizer. Most of the acreage is used for cultivated crops. A small acreage is used for homesites, pasture, or woodland. Wetness is a limitation on many of the soils. The hazard of erosion is slight or moderate on some of the soils.

The flood plains make up the rest of the parish. The soils on the flood plains range from loamy to clayey and from well drained to poorly drained. Most of the acreage is used for crops, mainly soybeans and cotton. A small acreage is used for pasture, woodland, or homesites. The fertile, loamy soils in the higher areas have few limitations affecting crops. The clayey soils in the lower areas, however, are limited by wetness. Some of these

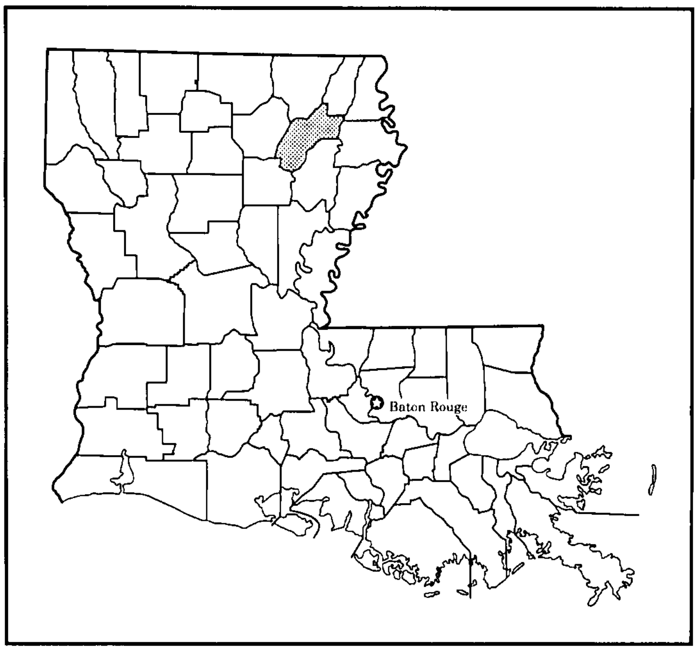

Figure 1.—Location of Richland Parish in Louisiana.

clayey soils are flooded by runoff. A drainage system is needed for most crops.

General Nature of the Parish

This section provides general information about the parish. It describes climate, history and development, agriculture, transportation facilities, and industry.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bastrop, Louisiana, in the period 1951 to 1973. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 49 degrees F and the average daily minimum temperature is 38 degrees. The lowest temperature on record, which occurred at Bastrop on January 12, 1962, is 4 degrees. In summer, the average temperature is 82 degrees and the average daily maximum temperature is 93 degrees. The highest recorded temperature, which occurred at Bastrop on September 5, 1951, is 110 degrees.

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

The total annual precipitation is 50.37 inches. Of this, 23.90 inches, or about 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 10.26 inches. The heaviest 1-day rainfall during the period of record was 6 inches at Bastrop on May 1, 1954. Thunderstorms occur on about 60 days each year.

Snowfall is rare. In 60 percent of the winters, there is no measurable snowfall. In 15 percent, the snowfall, usually of short duration, is more than 2 inches. The heaviest 1-day snowfall on record was more than 5 inches.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 70 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

History and Development

Richland Parish was created from parts of Carroll, Franklin, Morehouse, and Ouachita Parishes by the Louisiana Legislature in 1868. The name for the parish refers to the fertility of its soil, as the area was known for its "rich land." Rayville was immediately chosen as the seat of parish government. The town was named for a well known and respected shopkeeper, James Ray.

The Boeuf River was the main access route into the interior of the parish. The community of Alto was located on the banks of the Boeuf River and was a thriving port for steamboat trade. Girard, also located on the Boeuf River, is considered the oldest settlement in the parish. It was established in 1821.

A charter for an east-west railroad was granted as early as 1836. In 1861, the first train rolled through Richland Parish. A new era of economic activity began during the 1880's with the revival of cotton production. Areas near the railroad were cleared and cultivated for cotton. Some areas near bayous were abandoned in favor of those near railroads.

Road building was difficult because of the vast areas of backswamps in the parish. Many roads could only be used during dry periods and were not improved until the automobile was in general use.

In 1927, the city of Rayville was severely flooded. The floodwater remained for almost a month. In places it ranged in depth from 3 to 6 feet.

During the 1950's, the Louisiana Department of Public Works began the construction of an extensive drainage system, which made more land available for farming.

Agriculture

Agriculture is the dominant land use in the parish. Cotton and soybeans are the main crops. Other crops grown include rice, corn, grain sorghum, wheat, and oats. The production of beef and dairy cattle also is an important enterprise.

According to the Richland Parish office of the Agricultural Stabilization and Conservation Service, about 1,494 farms were in the parish in 1987. At that time the total amount of cropland was 250,921 acres. About 89,263 acres of cotton, 11,015 acres of rice, 1,777 acres of corn, 3,590 acres of grain sorghum, and 31,648 acres of soybeans were planted.

Only about 33,000 acres of woodland remains in the parish. About 2,500 acres of the woodland is in the Russel Sage Wildlife Refuge, which is managed by the Louisiana Department of Wildlife and Fisheries.

Transportation Facilities

Richland Parish is served by one major railroad that connects to every major railroad system in the country. An interstate highway and numerous other paved state and parish roads cross the survey area.

The parish is served by two airports that charter air service. Several private airstrips and commercial crop-dusting service strips are scattered throughout the parish. A bus company provides service for passengers and freight for most communities in the parish.

Industry

The major industry in Richland Parish is agriculture, which produces a variety of commodities. These include cotton, soybeans, rice, corn, and livestock.

Oil and gas are also produced in the parish. Petroleum products are supplied to local and national markets.

Manufacturing companies, which are a small but vital part of the economy, produce an array of products. These include storm doors, clothing, aluminum, boats, pipe, and various other items.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

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

The descriptions, names, and delineations of the soils in this soil survey do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or the extent of soils within the survey areas.

General Soil Map Units

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

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

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

Each map unit is rated for *cultivated crops, pasture, woodland, urban uses,* and *recreational areas.* Cultivated crops are those grown extensively in the survey area. Pasture refers to land that is producing either native grasses or tame grasses and legumes for livestock grazing. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreational areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic.

Areas Dominated by Level to Strongly Sloping Soils on Terraces

The four map units in this group consist mainly of loamy soils in swales and depressions and on broad flats, slight rises, low ridges, and knolls on terraces. One of the soils also is on escarpments. Slopes range from 0 to 5 percent in most of the soils. They range from 1 to 12 percent in the soil on escarpments.

The four map units make up about 47 percent of the parish. Most of the acreage is used for crops. Wetness, the slope, uneven topography, low fertility, and potentially toxic levels of aluminum or sodium are the main limitations for cultivated crops and pasture. In areas of woodland, equipment use is limited by the wetness. The wetness, the slope, moderate to very slow permeability, a moderate shrink-swell potential, and low strength on sites for local roads and streets are limitations for most urban uses.

1. Calhoun-Grenada

Poorly drained and moderately well drained, level to strongly sloping soils; formed in thick loess

This map unit consists of soils on broad flats, in swales and depressions, and on ridges and escarpments on terraces. The Calhoun soils are subject to rare flooding. Slopes range from 0 to 12 percent.

This map unit makes up about 11 percent of the parish. It is about 47 percent Calhoun soils, 27 percent Grenada soils, and 26 percent soils of minor extent.

The poorly drained Calhoun soils are level and are subject to flooding during unusually wet periods. They are on broad flats and in swales and narrow depressions. The surface layer is grayish brown silt loam. The subsurface layer is light gray silt loam. The subsoil is grayish brown, mottled silty clay loam and light brownish gray, mottled silt loam.

The moderately well drained Grenada soils are very gently sloping, gently undulating, moderately sloping, and strongly sloping. They are on ridges and escarpments. The surface layer is dark brown silt loam. The upper part of the subsoil is yellowish brown silt loam; mottled yellowish brown and light yellowish brown silt loam; and light brownish gray, mottled silt loam. The next part is light brownish gray silt loam. The lower part is a fragipan of brown, mottled silt loam.

Of minor extent in this map unit are Calloway and Loring soils. Calloway soils are somewhat poorly drained. They are on low ridges and knolls. Loring soils are moderately well drained and are on ridges.

Most areas of this map unit are used for crops, mainly cotton and soybeans. A small acreage is used for pasture, woodland, pecan orchards, wildlife habitat, or homesite development.

The soils in this map unit generally are moderately well suited to cultivated crops and well suited to pasture. The Grenada soils on escarpments are poorly suited to crops and only moderately well suited to pasture because of the slope. The wetness, low and medium fertility, the slope, and potentially toxic levels of exchangeable aluminum are the main limitations.

The Calhoun soils in this map unit are moderately well suited to the production of southern pine and southern hardwoods. The Grenada soils are well suited. The equipment limitation, seedling mortality, the risk of soil compaction, and plant competition caused by wetness are the main management concerns. Also, rooting depth is restricted by a fragipan or a seasonal high water table.

The Calhoun soils in this map unit are poorly suited to urban development and intensive recreational uses. The Grenada soils are moderately well suited. The wetness, slow permeability, the slope, low strength on sites for local roads and streets, and a moderate shrink-swell potential are the main limitations. Also, the rare flooding is a hazard in areas of the Calhoun soils, and erosion is a hazard in areas of the Grenada soils.

2. Gilbert-Gigger-Dexter

Poorly drained, moderately well drained, and well drained, level to gently undulating soils; formed in thin loess and in the underlying loamy or loamy and sandy sediments

This map unit consists of soils on broad flats, in swales and depressions, and on slight rises and low ridges. The Gilbert soils are subject to rare flooding. Slopes range from 0 to 5 percent.

This map unit makes up about 16 percent of the parish. It is about 40 percent Gilbert soils, 30 percent Gigger soils, 27 percent Dexter soils, and 3 percent soils of minor extent.

The poorly drained Gilbert soils are level and are subject to flooding during unusually wet periods. They are on broad flats and in swales and depressions along drainageways. The surface layer is dark grayish brown or dark brown, mottled silt loam. The subsurface layer is light brownish gray, mottled silt loam. The subsoil is light brownish gray silt loam and grayish brown, mottled silty clay loam. The lower part of the subsoil has a high content of sodium.

The moderately well drained Gigger soils are very gently sloping to gently undulating. They are on low ridges. The surface layer is dark brown or dark yellowish brown silt loam. In sequence downward, the subsoil is dark brown silt loam; brown silt loam; a fragipan of dark yellowish brown and dark brown, mottled silt loam; and dark brown loam.

The well drained Dexter soils are level, very gently sloping, or gently sloping. They are on slight rises and long, narrow ridges. The surface layer is brown or dark brown silt loam. The upper part of the subsoil is dark brown silt loam and silty clay loam. The lower part is dark brown clay loam, reddish brown clay loam and loam, and dark brown fine sandy loam. The substratum is dark brown loamy fine sand.

Of minor extent in this map unit are the somewhat poorly drained Deerford and poorly drained Foley soils on broad flats and in depressions and the somewhat poorly drained Egypt and Necessity and well drained Liddieville soils on ridges and knolls.

Most areas of this map unit are used for crops, mainly cotton and soybeans. A small acreage is used for pasture, hay, woodland, or homesite development.

The Gilbert soils in this map unit are moderately well suited to crops and pasture. The Gigger and Dexter soils are well suited. The wetness, the slope, low or medium fertility, and potentially toxic levels of exchangeable aluminum are the main limitations. Also, rooting depth is restricted by a fragipan, the sodium in the subsoil, or a seasonal high water table.

The Gilbert soils in this map unit are moderately well suited to woodland. The Gigger and Dexter soils are well suited. The equipment limitation, seedling mortality, the risk of soil compaction, and plant competition caused by the wetness and by the sodium in the subsoil are the main management concerns.

The Gilbert soils in this map unit are poorly suited to urban development and recreational uses. The Gigger and Dexter soils are moderately well suited or well suited. Wetness, slope, restricted permeability, low strength on sites for local roads and streets, and a moderate shrink-swell potential are the main limitations. Also, the rare flooding is a hazard in areas of the Gilbert soils.

3. Gilbert-Necessity-Egypt

Poorly drained and somewhat poorly drained, level to gently undulating soils; formed in thin loess and in the underlying loamy sediments

This map unit consists of soils on broad flats, in swales and depressions, and on low ridges and knolls on terraces. The Gilbert soils are subject to rare flooding. Slopes range from 0 to 3 percent.

This map unit makes up about 18 percent of the parish. It is about 45 percent Gilbert soils, 23 percent Necessity soils, 13 percent Egypt soils, and 19 percent soils of minor extent.

The poorly drained Gilbert soils are level and are subject to flooding during unusually wet periods. They are on broad flats and in swales and depressions along drainageways. The surface layer is dark grayish brown or dark brown silt loam. The subsurface layer is light brownish gray, mottled silt loam. The upper part of the subsoil is light brownish gray silt loam and grayish brown, mottled silty clay loam. The lower part is grayish brown, mottled silty clay loam. The lower part of the subsoil has a high content of sodium.

The somewhat poorly drained Necessity soils are level to very gently sloping. They are on low ridges and knolls. The surface layer is brown silt loam. In sequence downward, the subsoil is yellowish brown, mottled silty clay loam and light brownish gray, mottled silt loam; a fragipan of dark yellowish brown and yellowish brown, mottled silt loam; and yellowish brown, mottled loam.

The somewhat poorly drained Egypt soils are nearly level or very gently sloping. They are on low ridges and knolls. The surface layer is brown silt loam. The subsurface layer is light brownish gray, mottled silt loam. In sequence downward, the subsoil is strong brown and grayish brown, mottled silt loam; yellowish brown, mottled silty clay loam; brown and yellowish brown silt loam; and yellowish brown silt loam and yellowish brown and dark yellowish brown silty clay loam. The lower part of the subsoil has a high content of sodium.

Of minor extent in this map unit are the well drained Dexter soils on slight rises and narrow ridges, the moderately well drained Gigger soils on low ridges, the poorly drained Forestdale soils on alluvial plains along nearby drainageways, the somewhat poorly drained Deerford soils in landscape positions similar to those of the Egypt soils, and the poorly drained Foley soils on broad flats and in depressions.

Most areas of this map unit are used for crops, mainly cotton and soybeans. A small acreage is used for pasture, woodland, or homesite development.

The soils in this map unit generally are moderately well suited to cultivated crops and pasture. The wetness, the slope, low or medium fertility, and potentially toxic levels of exchangeable aluminum are the main limitations. Also, rooting depth is restricted by a fragipan, the sodium in the lower part of the subsoil, or a seasonal high water table.

The soils in this map unit are moderately well suited to woodland. The equipment limitation, seedling mortality, plant competition, and the risk of compaction caused by wetness and by the sodium in the lower part of the subsoil are the main management concerns.

The soils in this map unit generally are poorly suited to urban development and recreational uses. The wetness, the slope, slow or very slow permeability, low strength on sites for local roads and streets, a moderate shrink-swell potential, and the sodium in the subsoil are the main limitations. Also, the rare flooding is a hazard in areas of the Gilbert soils.

4. Foley-Deerford

Poorly drained and somewhat poorly drained, level and nearly level soils; formed in silty sediments

This map unit consists of soils on broad flats and in depressions on terraces. The Foley soils are subject to rare flooding. Slopes range from 0 to 2 percent.

This map unit makes up about 2 percent of the parish. It is about 55 percent Foley soils, 40 percent Deerford soils, and 5 percent soils of minor extent.

The poorly drained Foley soils are level and are subject to flooding during unusually wet periods. They are on broad flats and in depressions. The surface layer is dark grayish brown, mottled silt loam. The subsurface layer is light brownish gray, mottled silt loam. The subsoil is grayish brown, mottled silty clay loam and light brownish gray, mottled silt loam in the upper part and grayish brown, mottled silty clay loam and silt loam in the lower part. The substratum is brown, mottled silt loam. The middle and lower parts of the subsoil and the substratum have a high content of sodium.

The Deerford soils are somewhat poorly drained and nearly level. They are on broad flats. The surface layer is yellowish brown silt loam. The subsurface layer is pale brown, mottled silt loam. The next layer is light brownish gray and yellowish brown silt loam. The subsoil is yellowish brown, mottled silty clay loam and silt loam. The substratum is dark yellowish brown silt loam. The middle and lower parts of the subsoil and the substratum have a high content of sodium.

Of minor extent in this map unit are the poorly drained Forestdale and Perry soils on alluvial plains, the somewhat poorly drained Egypt soils on low ridges and knolls, and the poorly drained Gilbert soils on broad flats and in swales and depressions along drainageways.

Most areas of this map unit are used for crops, mainly cotton, soybeans, and rice. A small acreage is used for pasture, woodland, or homesite development.

The soils in this map unit are moderately well suited to cultivated crops and pasture. Seasonal wetness, low fertility, potentially toxic levels of aluminum, and the sodium in the subsoil are the main limitations. Also, droughtiness in late summer is a limitation.

The soils in this map unit are only moderately well suited to woodland because of the seasonal wetness and the sodium in the subsoil. The equipment limitation, seedling mortality, droughtiness, and the risk of compaction are management concerns.

The soils in this map unit are poorly suited to urban development and recreational uses. The wetness, slow or very slow permeability, a moderate shrink-swell potential, low strength on sites for local roads and streets, and the excess sodium in the subsoil are the main limitations. Also, the rare flooding is a hazard in areas of the Foley soils.

Areas Dominated by Level to Gently Undulating Soils on Alluvial Plains

The six map units in this group consist mainly of loamy and clayey soils on the alluvial plains of rivers, bayous, and small streams. Most of the soils are not flooded or are protected from flooding. Some are subject to rare or occasional flooding. Slopes range from 0 to 3 percent.

The six map units make up about 53 percent of the parish. Most of the acreage is used for crops. Areas that are occasionally flooded are used mainly as woodland. Seasonal wetness and the hazard of flooding are the main management concerns affecting most agricultural and urban uses.

5. Hebert-Rilla-Sterlington

Somewhat poorly drained and well drained, level and gently undulating soils; formed in loamy alluvium

This map unit consists of soils on broad or narrow flats and low ridges, on natural levees, and in swales or depressions on alluvial plains. In most areas the landscape is characterized by long, smooth slopes of 0 to 1 percent. In other areas it is characterized by low, parallel ridges and swales that have slopes of 0 to 3 percent.

This map unit makes up about 18 percent of the parish. It is about 46 percent Hebert soils, 34 percent Rilla soils, 10 percent Sterlington soils, and 10 percent soils of minor extent.

The somewhat poorly drained Hebert soils are level to gently undulating. They are on broad or narrow flats and low ridges, on natural levees, and in swales or depressions. In some areas they are occasionally flooded. The surface layer is dark grayish brown or grayish brown silt loam or dark brown silty clay loam. The next layer is grayish brown, mottled silt loam. The subsurface layer is light brownish gray, mottled silt loam. The subsoil is brown or pale brown, mottled silty clay loam in the upper part and reddish brown, mottled silt loam, silty clay loam, loam, and very fine sandy loam in the lower part.

The well drained Rilla soils are level, very gently sloping, or gently undulating. They are on narrow ridges and on natural levees. The surface layer is dark grayish brown or brown silt loam. The subsurface layer is brown, mottled silt loam. The subsoil is mottled reddish brown and yellowish red silty clay loam in the upper part and reddish brown silty clay loam and silt loam in the lower part. The substratum is brown and yellowish red very fine sandy loam.

The well drained Sterlington soils are level, very gently sloping, or very gently undulating. They are on narrow ridges or in the higher positions on natural levees. The surface layer is dark brown or brown silt loam. The subsurface layer is brown, mottled silt loam. The upper part of the subsoil is yellowish red silt loam. The lower part is brown and yellowish red silt loam. The substratum is brown and yellowish red very fine sandy loam.

Of minor extent in this map unit are the well drained Gallion soils on natural levees, the moderately well drained Mer Rouge soils on broad or narrow flats, the somewhat poorly drained Portland soils on slight rises, and the poorly drained Perry soils in backswamps, swales, and depressions.

Most areas of this map unit are used for crops, mainly cotton, corn, and soybeans. A small acreage is used for pasture, woodland, or homesite development.

The soils in this map unit are mainly well suited to cultivated crops and pasture, but the areas of Hebert soils that are occasionally flooded are poorly suited. Wetness, the slope, medium fertility, poor tilth, and potentially toxic levels of exchangeable aluminum are the main limitations.

The soils in this map unit are well suited to woodland. The equipment limitation caused by wetness and the risk of compaction are the main limitations. Competition from understory plants also is a concern.

The soils in this map unit generally are moderately well suited to urban development and recreational uses, but the areas of Hebert soils that are occasionally flooded are poorly suited to urban uses. The main limitations are the wetness, a moderate shrink-swell potential, low strength on sites for local roads and streets, and moderate or moderately slow permeability.

6. Gallion-Mer Rouge-Hebert

Well drained, moderately well drained, and somewhat poorly drained, level to gently undulating soils; formed in loamy alluvium

This map unit consists of soils on natural levees and narrow ridges, in swales and depressions, and on broad or narrow flats on alluvial plains. Slopes range from 0 to 3 percent.

This map unit makes up about 2 percent of the parish. It is about 64 percent Gallion soils, 13 percent Mer Rouge soils, 12 percent Hebert soils, and 11 percent soils of minor extent.

The Gallion soils are well drained and nearly level. They are on natural levees. The surface layer is dark brown or dark grayish brown silt loam. The subsoil is yellowish red silty clay loam, dark brown silt loam, and yellowish red, mottled silt loam. The substratum is yellowish red silt loam.

The Mer Rouge soils are moderately well drained and level. They are on broad or narrow flats on alluvial plains. The surface layer is very dark grayish brown silt loam. The upper part of the subsoil is very dark gray, very dark grayish brown, and brown silty clay loam. The lower part is brown and reddish brown, mottled silt loam and yellowish brown, mottled loam. The substratum is mottled. It is stratified reddish brown very fine sandy loam and brown silt loam.

The somewhat poorly drained Hebert soils are level to gently undulating. They are on broad or narrow flats, on narrow ridges, on the back slopes of natural levees, and in swales and depressions. In some areas they are subject to flooding. The surface layer is dark grayish brown silt loam or silty clay loam or dark brown silty clay loam. The subsurface layer is brown, mottled silt loam. The subsoil is mottled reddish brown and yellowish red silty clay loam in the upper part and reddish brown silty clay and silt loam in the lower part. The substratum is stratified brown and yellowish red very fine sandy loam.

Of minor extent in this map unit are the well drained Rilla and Sterlington soils on narrow ridges and in the higher positions on natural levees, the somewhat poorly drained Portland soils on slight rises, and the poorly drained Perry soils in backswamps and swales.

Most areas of this map unit are used for crops, mainly cotton, corn, and soybeans. A small acreage is used for pasture, woodland, or homesite development.

The soils in this map unit are mainly well suited to cultivated crops and pasture, but the areas of Hebert soils that are occasionally flooded are poorly suited. Wetness, medium fertility, and poor tilth are the main limitations.

The soils in this map unit are mainly well suited to woodland, but the areas of Hebert soils that are occasionally flooded are only moderately well suited. Equipment use is restricted in areas of the Hebert soils because of the wetness. Competition from understory plants and the risk of compaction are additional management concerns.

The soils in this map unit generally are moderately well suited to urban development and recreational uses, but the areas of Hebert soils that are occasionally flooded are poorly suited to most urban uses. The main limitations are the wetness, a moderate shrink-swell potential, low strength on sites for local roads and streets, and moderate or moderately slow permeability.

7. Forestdale-Perry

Poorly drained, level, rarely flooded soils; formed in loamy and clayey alluvium

This map unit consists of soils in swales, depressions, and backswamps on alluvial plains. The landscape in most areas is characterized by long, smooth slopes of 0 to 1 percent. Some areas have uneven surfaces. Most areas of these soils are subject to rare flooding.

This map unit makes up about 6 percent of the parish. It is about 75 percent Forestdale soils, 22 percent Perry soils, and 3 percent soils of minor extent.

The Forestdale soils are in depressions on alluvial plains along streams and drainageways that drain the terraces. In most areas they are subject to flooding during unusually wet periods. The surface layer is dark grayish brown silty clay loam. The subsoil is mottled. It is gray silty clay in the upper part and gray silty clay loam and grayish brown silt loam in the lower part.

The Perry soils are in backswamps and swales on alluvial plains. In most areas they are subject to flooding during unusually wet periods. The surface layer is dark gray, mottled clay or dark grayish brown silty clay loam. The subsoil is gray, mottled clay in the upper part and dark reddish brown and reddish brown clay in the lower part.

Of minor extent in this map unit are the somewhat poorly drained Portland soils on slight rises, the well drained Rilla and Sterlington soils on narrow ridges and natural levees, Yorktown soils in stream channel scars, and Arents on spoil banks along the channels of streams.

Most areas of this map unit are used for cultivated crops, mainly rice, soybeans, and grain sorghum. Some areas are used for pasture or woodland. A very small acreage is used for homesite development.

The soils in this map unit are moderately well suited to cultivated crops and well suited to pasture. Seasonal wetness and poor tilth are the main limitations. Medium fertility is a minor limitation.

The soils in this map unit are moderately well suited to woodland. The seasonal high water table severely restricts the use of equipment during wet seasons. Seedling mortality, the risk of soil compaction, and competition from understory plants also are management concerns.

The soils in this map unit are poorly suited to urban development and recreational uses. The main limitations are the wetness, a high or very high shrink-swell potential, very slow permeability, and low strength on sites for local roads and streets. Also, the rare flooding is a hazard affecting most urban uses.

8. Sharkey-Tensas

Poorly drained and somewhat poorly drained, level and very gently sloping soils; formed in clayey or clayey and loamy alluvium

This map unit consists of soils on broad or narrow flats, on narrow ridges, and in swales on alluvial plains. The Sharkey soils are subject to rare flooding. Slopes range from 0 to 3 percent.

This map unit makes up about 2 percent of the parish. It is about 57 percent Sharkey soils, 15 percent Tensas soils, and 28 percent soils of minor extent.

The Sharkey soils are level and are on broad flats and in swales. They are subject to flooding during unusually wet periods. The surface layer is dark grayish brown, mottled clay. The next layer is dark gray, mottled clay. The subsoil also is dark gray, mottled clay. The substratum is olive gray, mottled clay.

The Tensas soils are very gently sloping and are somewhat poorly drained. They are on narrow or broad flats, on low ridges, and in the lower positions on the landscape. The surface layer is dark grayish brown silty clay. The subsoil is grayish brown, mottled silty clay in the upper part and grayish brown, mottled silty clay loam and silt loam in the lower part. The substratum is grayish brown, mottled loam.

Of minor extent in this map unit are the somewhat poorly drained Dundee soils on low ridges and in the higher positions on natural levees.

Most areas of this map unit are used for crops. Soybeans are the main crop, but cotton, wheat, rice, corn, and grain sorghum also are grown in some areas. A small acreage is used for pasture or woodland.

The soils in this map unit are moderately well suited to crops and well suited to pasture. Wetness and poor tilth are the main limitations. Generally, a drainage system is needed for crops and pasture.

The soils in this map unit are moderately well suited to woodland, mainly mixed hardwoods. Because of the wetness and the clayey surface layer, equipment use is severely restricted and seedling mortality is a moderate hazard. Also, competition from understory plants is severe, and the soils are subject to compaction and the formation of ruts if heavy equipment is used during wet periods.

The soils in this map unit are poorly suited to urban development and recreational uses. The wetness, a very high shrink-swell potential, very slow permeability, and low strength on sites for local roads and streets are the main limitations. The rare flooding in areas of the Sharkey soils is a hazard affecting most urban uses.

9. Perry-Portland

Poorly drained and somewhat poorly drained, level soils; formed in loamy and clayey alluvium

This map unit consists of soils in backswamps and swales and on slight rises on alluvial plains. Some areas of these soils are subject to rare flooding. The landscape in most areas is characterized by long, smooth slopes of 0 to 1 percent. The soils are protected from flooding or are only rarely flooded.

This map unit makes up about 20 percent of the parish. It is about 53 percent Perry soils, 27 percent Portland soils, and 20 percent soils of minor extent.

The poorly drained Perry soils are in swales and backswamps. The surface layer is dark gray, mottled clay and dark grayish brown silty clay loam. The subsoil is gray, mottled clay in the upper part and dark reddish brown and reddish brown clay in the lower part.

The somewhat poorly drained Portland soils are on slight rises on alluvial plains. The surface layer is dark brown clay or silty clay loam. The subsoil is dark brown, mottled clay in the upper part and reddish brown, mottled clay in the lower part. The substratum is reddish brown clay.

Of minor extent in this map unit are the well drained Gallion, Rilla, and Sterlington soils, the moderately well drained Mer Rouge soils, and the somewhat poorly drained Hebert soils. All of these soils are higher on the landscape than the Perry and Portland soils. Other soils of minor extent are the very poorly drained Maurepas and Yorktown soils in old stream channel scars and Arents on spoil banks along the channels of some streams.

Most areas of this map unit are used primarily for crops, mainly soybeans, rice, grain sorghum, and wheat. A small acreage is used for woodland, pasture, or homesite development.

The soils in this map unit are moderately well suited to cultivated crops and well suited to pasture. Wetness and poor tilth are the main limitations. Medium fertility is a minor limitation. A drainage system is needed for crops and pasture.

The soils in this map unit generally are moderately well suited to woodland. They have high potential for the production of hardwoods, but the wetness severely restricts the use of equipment and causes moderate seedling mortality. Competition from understory plants and the risk of compaction are additional management concerns.

The soils in this map unit are poorly suited to urban development and recreational uses. The main limitations are the wetness, low strength on sites for local roads and streets, very slow permeability, and a high or very high shrink-swell potential. The rare flooding is a hazard affecting most urban uses.

10. Perry-Forestdale

Poorly drained, level, occasionally flooded soils; formed in clayey and loamy alluvium

This map unit consists of soils in backswamps and swales and on slight rises on alluvial plains. These soils are occasionally flooded. Slopes are dominantly less than 1 percent.

This map unit makes up about 5 percent of the parish. It is about 50 percent Perry soils, 45 percent Forestdale soils, and 5 percent soils of minor extent.

The Perry soils are poorly drained and are in backswamps and swales. The surface layer is dark grayish brown clay. The subsoil is gray, mottled clay in the upper part and yellowish red and reddish brown clay in the lower part.

The poorly drained Forestdale soils are in depressions on alluvial plains. The surface layer is dark grayish brown silty clay loam. The subsoil is gray, mottled silty clay in the upper part; gray, mottled silty clay loam in the next part; and light brownish gray, mottled silty clay loam in the lower part.

Of minor extent in this map unit are the somewhat poorly drained Hebert, Necessity, and Deerford soils on broad or narrow flats, in swales and depressions, and on low ridges and knolls; the well drained Rilla and Sterlington soils on narrow ridges and on natural levees; and the very poorly drained Maurepas and Yorktown soils in old stream channel scars.

Most areas of this map unit are used as woodland, pasture, or cropland. A small acreage is used as wildlife habitat.

The soils in this map unit are poorly suited to cultivated crops but are moderately well suited to pasture. Seasonal wetness and flooding are the main management concerns. Poor tilth and medium fertility are additional limitations. A drainage system is needed for most crops and pasture plants.

The soils in this map unit are moderately well suited to woodland, mainly hardwoods. The wetness, the flooding, and the sticky surface layer severely restrict the use of equipment and cause moderate seedling mortality. Competition from understory plants and the risk of compaction also are management concerns.

The soils in this map unit are poorly suited to urban development and recreational uses because of the wetness and the flooding. They are generally not suited to dwellings. Additional limitations are very slow permeability, a high or very high shrink-swell potential, the clayey surface layer, and low strength on sites for local roads and streets.

Detailed Soil Map Units

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the substratum. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Perry clay, occasionally flooded, is a phase of the Perry series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. The map unit Grenada-Calhoun silt loams, gently undulating, is an example.

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

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

AR—Arents, dredged. These soils are well drained to somewhat poorly drained. They are on spoil banks along the Bayou Lafourche Diversion Canal, Big Creek, and Bayou Macon. They consist of soil material dredged from the channels of streams. The soils range from clay to loamy sand. In most places they are stratified and contain remnants of the original soil material. Individual areas are 50 to 200 feet wide, 15 to 30 feet high, and 1 to 6 miles long. Some have been partially smoothed. Slopes range from 5 to 20 percent in unsmoothed areas and from 1 to 5 percent in partially smoothed areas.

Included with these soils in mapping are a few small areas of soils that have slopes of more than 20 percent. Included soils make up about 10 percent of the map unit.

The Arents are characterized by medium fertility. Water and air move through these soils at a moderate to very slow rate. Water runs off the surface at a slow to rapid rate. Depth to the water table is variable. The shrink-swell potential is dominantly moderate or high, but it is high in the clayey material.

The wetness, the slope, low strength on sites for roads, and the uneven surface are the main limitations affecting most uses. Onsite investigation is required to determine the limitations for specific uses.

A small acreage of these soils has been partially smoothed for use as pasture or for cultivated crops, such as wheat and soybeans. The remaining acreage is moderately steep and rough, and it is mostly used for annuals or small trees. Common bermudagrass is a suitable pasture plant.

Unless smoothed, these soils are not suited to cultivated crops because of the uneven surface and the slope. They are moderately well suited or poorly suited to pasture, woodland, and urban uses. In the smoothed areas, the soils can be used for crops. The erosion hazard and the medium fertility are management concerns in these areas.

The main limitations affecting urban uses are the slope, the variable textures, the restricted permeability, the shrink-swell potential, and low strength on sites for local roads and streets.

No interpretive groups are assigned.

Ca—Calhoun silt loam. This soil is level and poorly drained. It is on broad flats and in narrow depressions along drainageways on terraces. It is subject to rare flooding. Individual areas are irregular in shape and range from 10 to 500 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is grayish brown silt loam about 6 inches thick. The subsurface layer is light gray silt loam about 17 inches thick. The subsoil extends to a depth of about 60 inches. It is grayish brown, mottled silty clay loam in the upper part and light brownish gray, mottled silt loam in the lower part.

Included with this soil in mapping are a few small areas of Calloway, Gilbert, Grenada, and Loring soils. Calloway soils are slightly higher on the landscape than the Calhoun soil. They have a fragipan in the lower part of the subsoil. Gilbert soils are in landscape positions similar to those of the Calhoun soil. They have a high content of sodium in the lower part of the subsoil. Grenada and Loring soils are on ridges. They have a fragipan. Also included are a few small areas of Calhoun soils that are subject to occasional brief flooding after heavy rains. Included soils make up about 10 percent of the map unit.

The Calhoun soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow or very slow rate. Although flooding is rare, it can occur during unusually wet periods. A perched seasonal high water table is within a depth of 1.5 feet during the period December through April. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A small acreage is used for pasture, homesite development, pecan orchards, wildlife habitat, or woodland.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, and rice. The main limitations are wetness, the low fertility, and the potentially toxic level of exchangeable aluminum in the root zone. If a drainage system is provided, most climatically adapted crops can be grown. A flooding irrigation system is needed if rice is grown. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Most crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The main limitations are the wetness and the low fertility. The major suitable pasture plants are common bermudagrass, bahiagrass, tall fescue, southern winterpea, vetch, and white clover. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by field ditches. Applications of lime and fertilizer help to overcome the low fertility and increase forage production. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to woodland, but only a few areas support native trees. The main management concerns are a moderate equipment limitation and moderate seedling mortality caused by wetness. Competition from undesirable understory plants, the formation of ruts, and the risk of soil compaction are also concerns. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Planting and harvesting only during the drier periods help to prevent the formation of ruts and reduce the risk of soil compaction. The trees that are suitable for planting are loblolly pine, Shumard oak, cherrybark oak, and water oak. The seedling mortality rate can be reduced by bedding and by using containerized seedlings or seedlings that are larger than are normally used.

This soil has good potential as habitat for wetland wildlife. It has fair potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation along field borders. Leaving small patches of grain for food and leaving crop stubble on the surface in winter can benefit many species of wildlife. In areas of woodland, preserving mast-producing trees, such as oaks and hickories, improves the habitat for deer, turkeys, and squirrels. Constructing shallow ponds can improve the habitat for waterfowl, shore birds, and furbearers by providing open water areas.

This soil is poorly suited to intensive recreational uses. The main limitations are the wetness and the slow permeability. Flooding is a hazard in camp areas. Drainage can be improved by shaping the areas and providing shallow ditches. Flooding can be controlled by constructing levees and diversions. Maintaining an adequate plant cover by controlling traffic and applying fertilizer enhances the beauty of the area. Because of the high water table and the slow permeability, sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

This soil is poorly suited to urban uses. The main limitations are the wetness, the flooding, the slow permeability, and low strength on sites for local roads and streets. A drainage system is needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Flooding can only be controlled by building major structures, such as levees and diversions. Roads should be designed to offset the limited ability of the soil to support a load. Plans for homesite development should provide for the preservation of as many trees as possible. Foundations for buildings can be designed to prevent the structural damage caused by shrinking and swelling of the subsoil. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the slow permeability. If flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIIw, and the woodland ordination symbol is 9W.

Cc—Calhoun-Calloway silt loams, gently undulating. These soils are level and gently sloping. They are on terraces. The Calhoun soil is in swales and is poorly drained. It is subject to rare flooding. The Calloway soil is on low ridges and knolls and is somewhat poorly drained. Individual areas of this map unit range from 20 to 500 acres in size. They are about 50 percent Calhoun soil and 40 percent Calloway soil. A few well defined drainageways cross areas of these soils. Slopes are less than 1 percent in the swales and range from 0 to 3 percent on the ridges and knolls.

Typically, the surface layer of the Calhoun soil is grayish brown silt loam about 5 inches thick. The subsurface layer is light gray and gray, mottled silt loam about 15 inches thick. The subsoil extends to a depth of about 60 inches. It is grayish brown and mottled. It is silt loam in the upper part, silty clay loam in the next part, and silt loam in the lower part.

The Calhoun soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow or very slow rate. Although flooding is rare, it can occur during unusually wet periods. A perched seasonal high water table is within a depth of about 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is moderate.

Typically, the surface layer of the Calloway soil is dark brown silt loam about 10 inches thick. The next layer is yellowish brown and light brownish gray, mottled silt loam about 15 inches thick. The next 3 inches is light brownish gray, mottled silt loam. Below this to a depth of about 60 inches is a fragipan. It is mottled. It is yellowish brown silt loam in the upper part, yellowish brown and grayish brown silty clay loam in the next part, and yellowish brown silt loam in the lower part.

The Calloway soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. The effective rooting depth is limited by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a slow rate. A seasonal high water table is perched above the fragipan about 1 to 2 feet below the surface during the period January through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is low.

Included with these soils in mapping are a few small areas of Grenada and Loring soils. These included soils are higher on the landscape than the Calhoun and Calloway soils. They have a fragipan and do not have grayish mottles in the upper part of the subsoil. They make up about 10 percent of the map unit.

Most areas of the Calhoun and Calloway soils are used for cultivated crops. A small acreage is used for homesite development, pasture, or woodland.

These soils are moderately well suited to cultivated crops, mainly cotton, soybeans, and corn. The main limitations are the wetness, the low or medium fertility, the limited rooting depth, and the potentially toxic level of exchangeable aluminum in the root zone. Also, the Calloway soil is susceptible to erosion. Properly arranging rows and constructing field ditches and vegetated outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Waterways can be maintained by seeding grass and constructing drop structures in the waterway. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

These soils are well suited to pasture. The wetness is the main limitation. The low or medium fertility and the restricted rooting depth are additional limitations. Erosion can be a hazard on the Calloway soil before pasture grasses become established. The main suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, ryegrass, white clover, southern winterpea, and vetch. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Grasses and legumes grow well if adequate lime and fertilizer are used. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

These soils are moderately well suited to woodland, but only a few small areas support native trees. The main management concerns are a moderate equipment limitation, moderate or slight seedling mortality, moderate or severe plant competition, and the risk of soil compaction. Also, the limited rooting depth in the Calloway soil is a concern. The trees that are suitable for planting are loblolly pine, cherrybark oak, sweetgum, Shumard oak, and water oak. Conventional harvesting methods generally are suitable, but compaction can be a problem if heavy equipment is used during wet periods. Scheduling site preparation and harvesting activities only during the drier periods helps to prevent the formation of ruts and reduces the risk of soil compaction. The seedling mortality rate can be reduced by using containerized seedlings or seedlings that are larger than those normally used. Adequate site preparation helps to control initial plant competition, and spraying or girdling helps to control the subsequent growth of undesirable vegetation.

These soils have fair to good potential as habitat for openland, wetland, and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Providing vegetated field borders around cropland and leaving stubble and other crop residue on the surface in winter can improve the habitat for openland wildlife. In wooded areas, preserving oak, hickory, and beech trees improves the habitat for woodland wildlife. Constructing shallow ponds can improve the habitat for waterfowl and furbearers by providing open water areas.

These soils are poorly suited to recreational uses. The main limitations are the wetness and the slow permeability. Flooding on the Calhoun soil is a hazard in camp areas. A drainage system may be needed in intensively used areas, such as playgrounds and camp areas. Flooding can be controlled by constructing levees and diversions. Maintaining an adequate plant cover enhances the beauty of the area.

These soils are poorly suited to most urban uses. The main limitations are the wetness, the slow permeability, and low strength on sites for local roads and streets. Erosion is a hazard on the Calloway soil because of the slope. Both soils have a seasonal high water table. A drainage system may be needed on sites for buildings. Wetness can be reduced by mounding or shaping the site and by installing drainage tile around footings. Excess water also can be removed by using shallow ditches and providing the proper grade. Flooding can be controlled by building levees and diversions. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Roads should be designed to offset the limited ability of the soils to support a load. Strengthening the foundations and footings of buildings helps to prevent the structural damage caused by shrinking and swelling of the Calhoun soil. Because of the restricted permeability and the high water table, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification of the Calhoun soil is IIIw, and the woodland ordination symbol is 9W. The land capability classification of the Calloway soil is IIe, and the woodland ordination symbol is 8W.

Co—Calloway silt loam, 1 to 3 percent slopes. This soil is somewhat poorly drained and very gently sloping. It is on low ridges and knolls on terraces. Individual areas are irregular in shape and range from 10 to 100 acres in size.

Typically, the surface layer is silt loam about 8 inches thick. It is dark grayish brown in the upper part and brown in the lower part. The upper part of the subsoil is yellowish brown, mottled silt loam about 6 inches thick. The next layer is light brownish gray and pale brown, mottled silt loam about 3 inches thick. Below this to a depth of about 60 inches is a fragipan of yellowish brown, mottled silty clay loam. In places slopes are less than 1 percent.

Included with this soil in mapping are a few small areas of Calhoun, Grenada, and Loring soils. The poorly drained Calhoun soils are slightly lower on the landscape than the Calloway soil. They do not have a fragipan. Grenada and Loring soils are in the higher positions on the landscape. They do not have gray mottles in the upper part of the subsoil. Included soils make up about 15 percent of the map unit.

The Calloway soil is characterized by medium fertility. Water and air move through this soil at a slow rate. Rooting depth is limited by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a slow rate. A seasonal high water table is perched above the fragipan at a depth of about 1 to 2 feet during the period January through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is low.

This soil is used mainly for cultivated crops. A small acreage is used as pasture or for homesite development.

This soil is moderately well suited to cultivated crops. The main suitable crops are cotton, corn, and soybeans. The main limitations are wetness and the hazard of erosion. The medium level of fertility, the restricted rooting depth, and a potentially toxic level of exchangeable aluminum in the root zone are additional limitations. The soil is friable and can be easily tilled throughout a wide range in moisture content. Proper row arrangement, field ditches, and vegetated outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Deep cuts made during grading and smoothing operations, however, can expose the fragipan. Seeding in early fall, using minimum tillage, and constructing terraces, diversions, and grassed waterways help to control erosion. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the water intake rate. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is well suited to pasture. The wetness is the main limitation. Erosion can be a hazard before pasture grasses become established. Rooting depth is restricted by the fragipan. Grazing when the soil is wet results in puddling of the surface layer, poor tilth, and excessive runoff. A seedbed should be prepared on the contour or across the slope if possible. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, ryegrass, white clover, and southern winterpea. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few small areas support native trees. The main management concerns are a moderate equipment limitation, soil compaction, moderate plant competition, and the limited rooting depth. Competing vegetation can be controlled by proper site preparation and by spraying, cutting, or girdling. Planting and harvesting only during the drier periods can minimize soil compaction. The trees that are suitable for planting are loblolly pine, cherrybark oak, Shumard oak, sweetgum, and water oak. Droughtiness increases the seedling mortality rate. The seedling mortality rate can be reduced by using containerized seedlings or seedlings that are larger than are normally used.

This soil has good potential as habitat for openland and woodland wildlife. In wooded areas, controlled burning can increase the palatable browse available to deer and the seed-producing plants available to quail, turkeys, and nongame birds. The habitat for most species of wildlife can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. Leaving patches of small grain in cropland or leaving stubble and crop residue on the surface in winter provides additional food for openland wildlife.

This soil is moderately well suited to recreational development. It is limited mainly by the wetness and the slow permeability. Also, it is susceptible to erosion in heavily used areas, such as playgrounds. A drainage system and an adequate plant cover can improve the soil for use as playgrounds or camp areas. The plant cover can be maintained by applying fertilizer and controlling traffic. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

The Calloway soil is poorly suited to most urban uses. The main limitations are the wetness, the slow permeability, and low strength on sites for roads and streets. A drainage system is needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Roads and streets should be designed to offset the limited ability of the soil to support a load. The hazard of erosion is increased if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Plants can be difficult to establish in areas where the fragipan is exposed. Mulching and applying fertilizer in cut areas help to establish plants. Septic tank absorption fields do not function properly because of the wetness and the slow permeability. Using sandy backfill for trenches and long absorption lines helps to compensate for the slow permeability. Also, sewage lagoons or self-contained sewage disposal units can be used.

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

Da—Deerford silt loam. This soil is nearly level and somewhat poorly drained. It is on broad flats on terraces. It has a high content of sodium in the subsoil. Individual areas are irregular in shape and range from 10 to 80 acres in size. Slopes are dominantly less than 1 percent, but they range to 2 percent.

Typically, the surface layer is yellowish brown silt loam about 6 inches thick. The subsurface layer is pale brown, mottled silt loam about 4 inches thick. The next layer is mottled light brownish gray and yellowish brown silt loam about 7 inches thick. The subsoil is about 34 inches thick. It is yellowish brown, mottled silty clay loam in the upper part and yellowish brown, mottled silt loam in the lower part. The substratum to a depth of about 60 inches is dark yellowish brown silt loam. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Dexter, Egypt, Foley, Gigger, and Gilbert soils. Dexter and Gigger soils are higher on the landscape than the Deerford soil. They have a low content of sodium in the subsoil. Egypt soils are in landscape positions similar to those of the Deerford soil. They contain less sodium in the subsoil than the Deerford soil. Gigger soils are in the higher positions on the landscape. They have a fragipan. Foley and Gilbert soils are in the lower positions on the landscape. They are more grayish in the surface layer and subsurface layer than the Deerford soil. Included soils make up about 15 percent of the map unit.

The Deerford soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. The high concentrations of sodium in the middle and lower parts of the subsoil restrict root development and limit the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. A perched seasonal high water table is at a depth of about 0.5 foot to 1.5 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

This soil is used mainly for cultivated crops, pasture, or woodland. A small acreage is used for homesite development.

This soil is moderately well suited to cultivated crops, mainly cotton and soybeans. The main limitations are the high content of sodium, the seasonal wetness, the low fertility, and droughtiness. In places deep cuts made during land grading and smoothing operations can expose the subsoil. Excessive surface water can be removed by using shallow ditches and providing the proper grade. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the water intake rate. Most crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to pasture. The main limitations are the wetness, the low fertility, and the high content of sodium in the subsoil. The main suitable pasture plants are common bermudagrass and ryegrass. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by shallow field ditches. Fertilizer is needed for optimum growth of grasses and legumes. The high content of sodium in the subsoil can limit the growth of some pasture plants. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is moderately well suited to woodland. The main management concerns are a moderate equipment limitation, moderate seedling mortality, severe plant competition, and compaction caused by the seasonal wetness, the high content of sodium, and the droughtiness. Carefully managed reforestation after trees are harvested reduces competition from undesirable understory plants. Planting and harvesting only during the drier periods can minimize soil compaction. The trees that are suitable for planting are loblolly pine, water oak, and cherrybark oak. The seedling mortality rate can be high in summer because of the droughtiness, the low fertility, and the high content of sodium in the subsoil. It can be reduced by using containerized seedlings or seedlings that are larger than are normally used.

This soil has good potential as habitat for openland and woodland wildlife. It has fair potential as habitat for wetland wildlife. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. In wooded areas, controlled burning increases the palatable browse available to deer and the seed-producing plants available to quail, turkeys, and nongame birds. Providing vegetated field borders around cropland and leaving patches of small grain as food can improve the habitat for openland wildlife, such as rabbits and quail.

This soil is poorly suited to recreational development. It is limited mainly by the wetness, the slow permeability, and the high content of sodium. A drainage system can improve the soil for use as playgrounds or camp areas. Plant cover can be maintained by applying fertilizer and controlling traffic. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

This soil is poorly suited to most urban uses. The main limitations are the wetness, the excess sodium, the slow permeability, and low strength on sites for local roads and streets. The moderate shrink-swell potential is a minor limitation. A drainage system is needed on sites for roads and around building foundations. Excess surface water can be removed by providing the proper grade and using shallow ditches. Selecting adapted species for planting is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Roads should be designed to offset the limited ability of the soil to support a load. Strengthening the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling. Septic tank absorption fields do not function properly because of the slow permeability and the wetness. Using sandy backfill for trenches and long absorption lines helps to compensate for the slow permeability. Also, sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIIw, and the woodland ordination symbol is 7W.

Dd—Dexter silt loam, 0 to 1 percent slopes. This soil is level and well drained. It is on long, narrow, slight rises on terraces. Individual areas range from about 10 to 250 acres in size.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil is about 31 inches thick. It is strong brown silt loam in the upper part, strong brown clay loam in the next part, and brown loam in the lower part. The substratum extends to a depth of about 60 inches. It is dark brown fine sandy loam in the upper part and brown loamy fine sand in the lower part.

Included with this soil in mapping are a few small areas of Foley, Forestdale, Gilbert, Gigger, and Liddieville soils. Foley, Forestdale, and Gilbert soils are lower on the landscape than the Dexter soil and are poorly drained. Also, Foley and Gilbert soils are grayish in the upper part of the profile. Forestdale soils have a clayey subsoil. Gigger soils are in the slightly lower positions on the landscape. They have a fragipan. Liddieville soils are in landscape positions similar to those of the Dexter soil. They contain more sand throughout than the Dexter soil. Included soils make up about 15 percent of the map unit.

The Dexter soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. The shrink-swell potential is low. An adequate supply of water is available to plants in most years.

Most areas are used for cultivated crops. A small acreage is used as pasture or for homesite development.

This soil is well suited to cultivated crops. The main limitations are the medium fertility and the potentially toxic level of exchangeable aluminum in the root zone. The main suitable crops are cotton, soybeans, wheat, corn, and truck crops. The soil is friable and can be easily tilled throughout a wide range in moisture content. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Maintaining crop residue on or near the surface helps to control runoff and helps to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is well suited to pasture. It has few major limitations. The medium fertility is a minor limitation. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, ball clover, and crimson clover. Applications of lime and fertilizer can overcome the medium fertility and increase forage production. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native trees. The trees that are suitable for planting are loblolly pine, cherrybark oak, Shumard oak, sweetgum, and water oak. Plant competition is moderate. Competing vegetation can be controlled by proper site preparation. Spraying, cutting, or girdling eliminates unwanted weeds, brush, and trees.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. Providing vegetation along field borders improves the habitat for rabbits, quail, and nongame birds. Planting crops in narrow strips and leaving crop residue on the surface in winter also benefit openland wildlife.

This soil is well suited to recreational development. Few limitations affect this use. Plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is generally well suited to urban uses. It has slight limitations on sites for buildings, moderate or severe limitations on sites for sanitary facilities, and severe limitations on sites for roads and streets. The main limitations are the restricted permeability and low strength on sites for local roads and streets. Seepage is a hazard on sites for sewage lagoons and sanitary landfills. Also, the cutbanks of shallow excavations cave easily. Plans for homesite development should provide for the preservation of as many trees as possible. Roads should be designed to offset the limited ability of the soil to support a load. Increasing the size of septic tank absorption fields helps to compensate for the restricted permeability in the subsoil.

The land capability classification is I, and the woodland ordination symbol is 12A.

De—Dexter silt loam, 1 to 3 percent slopes. This soil is very gently sloping and well drained. It is on long, narrow, convex ridges on terraces. Individual areas range from about 10 to 100 acres in size.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil is about 53 inches thick. In sequence downward, it is dark brown silt loam, dark brown silty clay loam, dark brown clay loam, reddish brown clay loam, reddish brown loam, and dark brown fine sandy loam. The substratum to a depth of about 60 inches is dark brown loamy fine sand.

Included with this soil in mapping are a few small areas of Foley, Forestdale, Gilbert, Gigger, and Liddieville soils. Foley, Forestdale, and Gilbert soils are lower on the landscape than the Dexter soil and are poorly drained. Also, Foley and Gilbert soils are grayish in the upper part of the profile. Forestdale soils have a clayey subsoil. Gigger soils are in the slightly lower positions on the landscape. They have a fragipan. Liddieville soils are in landscape positions similar to those of the Dexter soil. They are sandier throughout than the Dexter soil. Included soils make up about 15 percent of the map unit.

The Dexter soil is characterized by medium fertility. Water and air move through this soil at a moderate rate. The shrink-swell potential is low. An adequate supply of water is available to plants in most years.

Most areas are used for cultivated crops. A small acreage is used for pasture, hay, woodland, or homesite development.

This soil is well suited to cultivated crops. The main suitable crops are cotton, soybeans, wheat, corn, and truck crops. The main limitation is the slope. Other limitations are the medium fertility and a potentially toxic level of exchangeable aluminum in the root zone. The soil is friable and can be easily tilled throughout a wide range in moisture content. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling when the soil is dry. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The medium fertility and the hazard of erosion are the main management concerns. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, ball clover, and crimson clover. A seedbed should be prepared on the contour or across the slope if possible. Applications of lime and fertilizer help to overcome the medium fertility and increase forage production. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native trees. The trees that are suitable for planting are loblolly pine, cherrybark oak, sweetgum, Shumard oak, and water oak. Plant competition is moderate. Site preparation helps to control the initial growth of undesirable understory plants, and spraying helps to control subsequent growth.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Leaving areas of grain provides food for doves, quail, rabbits, and turkeys. In wooded areas, preserving large den- and mast-producing trees improves the habitat for deer, turkeys, and squirrels.

This soil is well suited to recreational development. It is limited mainly by the slope. Maintaining an adequate plant cover by applying fertilizer and controlling traffic helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to most urban uses. The main limitations are the restricted permeability and low strength on sites for local roads and streets. Seepage is a hazard on sites for sewage lagoons and sanitary landfills. Also, the cutbanks of shallow excavations cave easily. The hazard of erosion is increased if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Roads should be designed to offset the limited ability of the soil to support a load. Increasing the size of the septic tank absorption area helps to compensate for the restricted permeability in the subsoil. Unless septic tank absorption lines are installed on the contour, effluent can surface in downslope areas and create a hazard to health.

The land capability classification is IIe, and the woodland ordination symbol is 12A.

Df—Dexter silt loam, 3 to 5 percent slopes. This soil is gently sloping and well drained. It is on long, narrow, convex ridges on terraces. Individual areas range from about 10 to 100 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is about 34 inches thick. It is dark brown and brown silt loam in the upper part, yellowish red clay loam in the next part, and strong brown fine sandy loam in the lower part. The substratum to a depth of about 60 inches is strong brown fine sandy loam.

Included with this soil in mapping are a few small areas of Foley, Forestdale, Gigger, Gilbert, and Liddieville soils. Foley, Forestdale, Gigger, and Gilbert soils are lower on the landscape than the Dexter soil. The poorly drained Foley and Gilbert soils are grayish in the upper part of the profile. Forestdale soils have a clayey subsoil. Liddieville soils are in landscape positions similar to those of the Dexter soil. They are sandier throughout than the Dexter soil. Included soils make up about 15 percent of the map unit.

The Dexter soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The shrink-swell potential is low. An adequate supply of water is available to plants in most years.

Most areas are used for cultivated crops. A small acreage is used for pasture, hay, woodland, or homesite development.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, wheat, oats, corn, and vegetables. The main management concerns are the slope and a severe hazard of erosion. The medium fertility and the potentially toxic level of exchangeable aluminum in the root zone are additional limitations. The soil is friable and can be easily tilled throughout a wide range in moisture content. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling when the soil is dry. Farming on the contour or across the slope helps to control runoff and erosion. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility, help to maintain tilth, and help to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The medium fertility and the hazard of erosion are the main management concerns. The main suitable pasture plants are common bermudagrass, improved bermudagrass, ryegrass, bahiagrass, ball clover, and crimson clover. Fertilizer and lime are needed for optimum production of forage. A seedbed should be prepared on the contour or across the slope if possible. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native trees. The trees that are suitable for planting are loblolly pine, cherrybark oak, Shumard oak, water oak, and sweetgum. Plant competition is moderate, but adequate site preparation generally can control the initial growth of undesirable understory plants.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. In wooded areas, preserving large den- and mast-producing trees improves the habitat for squirrels, turkeys, and deer. Providing vegetation along field borders can improve the habitat for doves, quail, rabbits, and coyotes.

This soil is well suited to recreational development. It is limited mainly by the slope. Maintaining an adequate plant cover by applying fertilizer and controlling traffic helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to most urban uses. The main limitations are the restricted permeability, the slope, and low strength on sites for local roads and streets. Seepage is a hazard on sites for sewage lagoons and sanitary landfills. Also, the cutbanks of shallow excavations cave easily. Preserving the existing plant cover during construction and revegetating disturbed areas on construction sites as soon as possible help to control erosion. Roads should be designed to offset the limited ability of the soil to support a load. Increasing the size of septic tank absorption fields helps to compensate for the restricted permeability in the subsoil. Unless septic tank absorption lines are installed on the contour, effluent can surface in downslope areas and create a hazard to health.

The land capability classification is IIIe, and the woodland ordination symbol is 12A.

Do—Dundee silty clay loam. This soil is level and somewhat poorly drained. It is on natural levees on the alluvial plain of Bayou Macon. Individual areas are irregular in shape and range from about 10 to 200 acres in size. Slopes are generally less than 1 percent.

Typically, the surface layer is dark brown silty clay loam about 5 inches thick. The subsoil is about 38 inches thick. It is dark grayish brown, mottled silty clay loam in the upper part; grayish brown, mottled silt loam in the next part; and grayish brown, mottled silty clay loam in the lower part. The substratum to a depth of about 60 inches is grayish brown, mottled silt loam. In places the surface layer is silt loam or slopes are more than 1 percent.

Included with this soil in mapping are a few small areas of Sharkey and Tensas soils. These soils are lower on the landscape than the Dundee soil. They have a clayey subsoil. They make up about 10 percent of the map unit.

The Dundee soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is within a depth of 1.5 to 3.5 feet during the period January through April. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A few small areas are wooded.

This soil is well suited to cultivated crops, mainly cotton, corn, and soybeans. It is limited mainly by wetness, the medium fertility, and poor tilth. Tilth is somewhat difficult to maintain. The soil can be worked within only a narrow range in moisture content. It is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of fertilizer.

This soil is well suited to pasture. The main limitations are the wetness and the medium fertility. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by field ditches and suitable outlets. Applications of lime and fertilizer can overcome the medium fertility and increase forage production. Suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, tall fescue, white clover, red clover, southern winterpea, and vetch. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a moderate equipment limitation, the risk of soil compaction, and severe plant competition caused by wetness. Trees that are suitable for planting include cherrybark oak, pecan, sweetgum, Shumard oak, water oak, and willow oak. Planting and harvesting during dry periods can minimize the formation of ruts and reduce the risk of soil compaction.

This soil has good potential as habitat for woodland and openland wildlife. The habitat for woodland wildlife can be improved by planting or encouraging the growth of existing oak trees and suitable understory plants. Using a diversity of crops in rotation and planting crops in narrow strips improve the habitat for openland wildlife. Also, planting species of grasses and legumes that mature at different times can improve the habitat for ground-nesting birds by lengthening the harvest season.

This soil is moderately well suited to recreational development. The main limitations are the wetness, the moderately slow permeability, and the sticky surface layer. A drainage system can improve the soil for use as playgrounds or camp areas. In playground areas, loamy material can be added to the soil to reduce the stickiness of the surface layer. Sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields because of the restricted permeability and the wetness.

This soil is moderately well suited to urban uses. The main limitations are the wetness, the restricted permeability, low strength on sites for local roads and streets, and the shrink-swell potential. A drainage system is needed on sites for roads and around building foundations. Using shallow ditches and providing the proper grade help to remove excess water. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Increasing the size of the absorption field helps to overcome the restricted permeability. Because of the wetness, however, sewage lagoons or self-contained disposal units function better than septic tank absorption fields. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIw, and the woodland ordination symbol is 12W.

Ds—Dundee-Tensas complex, gently undulating. These somewhat poorly drained soils are in landscapes characterized by ridges and swales on the alluvial plain of Bayou Macon. Some areas have been smoothed or graded. The Dundee soil is on low ridges, and the Tensas soil is in the lower positions on the landscape.

Individual areas are about 50 percent Dundee soil and 40 percent Tensas soil. Slopes range from 0 to 3 percent.

Typically, the surface layer of the Dundee soil is dark grayish brown silt loam about 8 inches thick. The subsoil is silt loam about 32 inches thick. It is mottled. It is grayish brown in the upper part and brown and grayish brown in the lower part. The substratum to a depth of about 60 inches is grayish brown, mottled silt loam.

The Dundee soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a medium rate. A seasonal high water table is about 1.5 to 3.5 feet below the surface during the period January through April. The shrink-swell potential is moderate.

Typically, the surface layer of the Tensas soil is very dark grayish brown silty clay about 5 inches thick. The subsoil is dark grayish brown, mottled silty clay about 26 inches thick. The substratum to a depth of about 60 inches is dark grayish brown, mottled silty clay loam.

The Tensas soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow rate. A seasonal high water table is about 1 to 3 feet below the surface during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is very high in the subsoil.

Included with these soils in mapping are a few small areas of Sharkey soils. These included soils are lower on the landscape than the Dundee and Tensas soils. They are clayey throughout. They make up about 10 percent of the map unit.

Most areas of the Dundee and Tensas soils are used for cultivated crops. A small acreage is used as woodland.

These soils are moderately well suited to cultivated crops, mainly cotton, soybeans, corn, wheat, and grain sorghum. The main limitations are the wetness, poor tilth, and the hazard of erosion. The medium fertility is a minor limitation. The Dundee soil is friable and can be easily kept in good tilth. The Tensas soil is sticky when wet, hard when dry, and difficult to keep in good tilth. Excess surface water can be removed by field ditches and suitable outlets. Maintaining crop residue on or near the surface reduces runoff and helps to maintain tilth and the content of organic matter. Most crops respond well to applications of fertilizer.

These soils are well suited to pasture. The wetness is the main limitation. Erosion is a moderate hazard in areas of the Dundee soil. The medium fertility is a minor limitation. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, white clover, tall fescue, and ryegrass. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

These soils are moderately well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a moderate or severe equipment limitation, slight or moderate seedling mortality, the risk of soil compaction, and moderate or severe plant competition caused by wetness in both soils and by the clayey surface layer of the Tensas soil. Planting and harvesting during dry periods help to prevent the formation of ruts and reduce the risk of soil compaction. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Using containerized seedlings or special planting stock that is larger than normally used reduces the seedling mortality rate. The trees that are suitable for planting in areas of the Dundee soil are cherrybark oak, pecan, sweetgum, Shumard oak, and water oak. The trees that are suitable for planting in areas of the Tensas soil are Nuttall oak, green ash, willow oak, and water oak.

These soils have good potential as habitat for woodland wildlife. The Dundee soil has good potential as habitat for openland wildlife, and the Tensas soil has fair potential. The Tensas soil has good potential as habitat for wetland wildlife, and the Dundee soil has fair potential. The habitat for woodland wildlife can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for openland wildlife can be improved by planting appropriate vegetation along field borders. Leaving stubble from corn, grain sorghum, and similar crops on the surface in winter provides cover for wildlife. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as muskrat, nutria, and raccoon.

The Dundee soil is moderately well suited to recreational development, but the Tensas soil is poorly suited. The main limitations are the wetness, the clayey surface layer, and the restricted permeability. The hazard of erosion is a minor limitation in areas of the Dundee soil. A drainage system can improve this soil for most recreational uses. Where the soils are developed for intensively used areas, such as playgrounds and camp areas, adding loamy material to the surface reduces stickiness. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

The Dundee soil is moderately well suited to urban development, but the Tensas soil is poorly suited. The main limitations are the wetness, the restricted permeability, the shrink-swell potential, and low strength on sites for local roads and streets. The Dundee soil is better suited to homesite development than the Tensas soil because it is in the higher positions and is not so wet as the Tensas soil. Plans for homesite development should provide for the preservation of as many trees as possible. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling. Roads should be designed to offset the limited ability of the soils to support a load.

The land capability classification of the Dundee soil is IIe, and the woodland ordination symbol is 12W. The land capability classification of the Tensas soil is IIIw, and the woodland ordination symbol is 4W.

Eg—Egypt silt loam, 1 to 3 percent slopes. This soil is very gently sloping and somewhat poorly drained. It is on low ridges and knolls on terraces. Individual areas are irregular in shape and range from 10 to 100 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is brown, mottled silt loam about 5 inches thick. The subsurface layer is pale brown, mottled silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is strong brown, mottled silt loam in the upper part; strong brown, mottled silty clay loam in the next part; and strong brown and dark yellowish brown, mottled silty clay loam in the lower part. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Deerford, Dexter, Foley, Gigger, Gilbert, and Necessity soils. Deerford soils are in landscape positions similar to those of the Egypt soil. They have a high content of sodium in the middle and lower parts of the subsoil. Dexter and Gigger soils are higher on the landscape than the Egypt soil. They have a low content of sodium in the subsoil. Also, Gigger soils have a fragipan. Foley and Gilbert soils are in the lower positions on the landscape. They are grayish in the upper part of the profile. Necessity soils are in the slightly higher positions on the landscape. They have a fragipan. Included soils make up about 15 percent of the map unit.

The Egypt soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. The high content of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. A perched seasonal high water table is about 0.5 foot to 2.0 feet below the surface during the period December through April. The shrink-swell potential is moderate in the subsoil.

This soil is used mainly for cultivated crops. A small acreage is used for pasture, homesite development, or woodland.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, rice, and corn. The main limitations are the hazard of erosion, wetness, and the high content of sodium in the lower part of the subsoil. The low fertility and the potentially toxic level of exchangeable aluminum in the root zone are also concerns. A drainage system can improve this soil for most cultivated crops and pasture plants. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Properly designed irrigation systems are needed if rice is grown. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum. Measures that control erosion include seeding in early fall, minimizing tillage, and constructing terraces, diversions, and grassed waterways.

This soil is moderately well suited to pasture. The main limitations are the hazard of erosion, the wetness, and the high content of sodium in the subsoil, which can limit the choice of plants. Suitable pasture plants are common bermudagrass and improved bermudagrass. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by field drains, ditches, and suitable outlets. Applications of lime and fertilizer can improve fertility and increase forage production. The high content of sodium in the lower part of the subsoil can limit the growth of some pasture plants. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland. The trees that are suitable for planting are cherrybark oak, sweetgum, Shumard oak, water oak, swamp chestnut oak, and loblolly pine. The main management concerns are the equipment limitation, the risk of soil compaction, and moderate plant competition caused by wetness. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Planting and harvesting during dry periods reduce the risk of soil compaction and help to prevent the formation of ruts. Reforestation is limited mainly by the low fertility. The seedling mortality rate can be a problem in some years because of the wetness in spring and droughtiness in summer. Special site preparation, such as bedding and harrowing, can reduce the seedling mortality rate. Using containerized planting stock also reduces the seedling mortality rate.

This soil has good potential as habitat for openland, woodland, and wetland wildlife. The habitat for openland wildlife can be improved by planting appropriate vegetation along field borders or by promoting the natural establishment of desirable plants. Selective harvesting preserves oak, beech, and hickory trees and thus improves the habitat for woodland wildlife. The habitat for wetland wildlife can be improved by constructing shallow ponds and planting appropriate vegetation around the ponds.

This soil is poorly suited to recreational development. It is limited mainly by the wetness. Erosion is a hazard on sites for playgrounds and in camp areas. A drainage system can improve the soil for use as playgrounds or camp areas. Maintaining an adequate plant cover by applying fertilizer and controlling traffic helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is poorly suited to most urban uses. The main limitations are the wetness, low strength on sites for local roads and streets, the shrink-swell potential, and the slow permeability. A drainage system may be needed on sites for roads and around building foundations. Excess surface water can be removed by using shallow ditches and providing the proper grade. Installing drainage tile around footings also reduces the wetness. Excavation increases the hazard of erosion on sites for roads or buildings. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. In areas where deep cuts are made, establishing plants can be difficult because of the high content of sodium in the subsoil. Mulching and applying fertilizer help to establish plants in cut areas. Selecting adapted species for planting is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Roads should be designed to offset the limited ability of the soil to support a load. Because of the slow permeability and the high water table, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs for foundations and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIe, and the woodland ordination symbol is 6W.

Fe—Foley silt loam. This level and poorly drained soil is on broad flats and in depressions on terraces. It has a high content of sodium in the subsoil. It is subject to rare flooding. Individual areas are irregular in shape and range from 15 to 80 acres in size. Slopes are dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, mottled silt loam about 4 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 5 inches thick. The subsoil is about 43 inches thick. It is grayish brown silty clay loam and light brownish gray, mottled silt loam in the upper part; grayish brown, mottled silty clay loam in the next part; and grayish brown, mottled silt loam in the lower part. The substratum to a depth of about 60 inches is brown, mottled silt loam. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Deerford, Dexter, Egypt, Forestdale, and Gilbert soils. The somewhat poorly drained Deerford and Egypt soils are slightly higher on the landscape than the Foley soil. Also, Egypt soils have a high content of sodium in only the lower part of the subsoil. The well drained Dexter soils are in the higher positions on the landscape. They are acid throughout. The poorly drained Forestdale and Gilbert soils are lower on the landscape than the Foley soil. Also, Forestdale soils have a clayey subsoil. Included soils make up about 15 percent of the map unit.

The Foley soil is characterized by low fertility. Water and air move through this soil at a very slow rate. The high content of sodium in the subsoil restricts root development and limits the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a slow rate. Although flooding is rare, it can occur during unusually wet periods. A perched seasonal high water table is 0.5 foot to 1.5 feet below the surface during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A small

acreage is used for pasture, woodland, or homesite development.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, and rice. The main limitations are the seasonal wetness, droughtiness, the low fertility, and the high content of sodium in the subsoil. Deep cuts made during land grading and smoothing operations can expose the subsoil in places. A flooding irrigation system is needed if rice is grown. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the water intake rate. Most crops respond well to applications of fertilizer and lime. Using drop structures and seeding waterways with grass help to stabilize the flow of surface runoff.

This soil is moderately well suited to pasture. The main limitations are the seasonal wetness, the droughtiness, the low fertility, and the high content of sodium. The main suitable pasture plants are common bermudagrass, improved bermudagrass, and tall fescue. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by field ditches and suitable outlets. The sodium in the subsoil can limit the growth of some pasture plants. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Fertilizer is needed for optimum growth of grasses and legumes.

This soil is moderately well suited to woodland, but only a few small areas support native hardwoods. The main management concerns are the risk of soil compaction, the equipment limitation, and moderate seedling mortality. Plant competition is severe. Trafficability is poor when the soil is wet. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. The seedling mortality rate can be reduced by providing drainage, using specialized site preparation, such as bedding, and using containerized planting stock. Planting and harvesting during dry periods help to prevent the formation of ruts and reduce the risk of soil compaction. The trees that are suitable for planting are cherrybark oak, water oak, Shumard oak, and sweetgum.

This soil has fair potential as habitat for woodland and openland wildlife and good potential as habitat for wetland wildlife. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as mink, nutria, and raccoons. The habitat for woodland and openland wildlife can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. Leaving crop residue or the stubble of crops, such as corn or grain sorghum, on the surface in winter provides food and cover for quail, rabbits, turkeys, and nongame birds.

This soil is poorly suited to recreational development. The main limitations are the wetness, the excess sodium, and the very slow permeability. Flooding also is a hazard in camp areas. A drainage system can improve the soil for use as playgrounds or camp areas. Applying fertilizer and controlling traffic help to maintain the plant cover. Major structures, such as levees and diversions, are needed to control the flooding. If the flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used.

This soil is poorly suited to most urban uses. The main limitations are the wetness, the very slow permeability, the shrink-swell potential, and low strength on sites for local roads and streets. Flooding is a hazard on sites for dwellings. The high content of sodium in the subsoil can restrict the growth of some lawn grasses and ornamentals. A drainage system can improve the soil on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Major structures, such as levees and diversions, are needed to control the flooding. Topsoil can be stockpiled and used to reclaim areas disturbed by cutting and filling. Selecting adapted species for planting is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Roads and streets should be designed to offset the limited ability of the soil to support a load. Strengthening the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling. Because of the very slow permeability and the high water table, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIIw, and the woodland ordination symbol is 5W.

Fr—Forestdale silty clay loam. This level and poorly drained soil is in depressions on the alluvial plains of streams and small drainageways that drain the terraces. It is subject to rare flooding. Individual areas are irregular in shape and range from about 10 to 500 acres in size. Slopes are mainly less than 1 percent.

Typically, the surface layer is dark grayish brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 60 inches. It is mottled. It is gray silty clay in the upper part and gray silty clay loam and grayish brown silt loam in the lower part.

Included with this soil in mapping are a few small areas of Egypt, Foley, Gilbert, Necessity, and Perry soils. Egypt, Foley, Gilbert, and Necessity soils are silty or loamy throughout. Perry soils crack to a depth of 20 inches or more in most years. Egypt and Necessity soils are higher on the landscape than the Forestdale soil. Gilbert and Foley soils are in the slightly higher positions on the landscape. Also included, along drainageways, are a few small areas of Forestdale soils that are occasionally flooded or that have slopes of more than 1 percent. Included soils make up about 10 percent of the map unit.

The Forestdale soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs very slowly off the surface. Although flooding is rare, it can occur during unusually wet periods. A seasonal high water table is about 0.5 foot to 2.0 feet below the surface during the period January through April. The shrink-swell potential is high. The surface layer is sticky when wet and hard when dry, and it dries slowly after heavy rains. An adequate supply of water is available to plants in most years.

Most areas are used for cultivated crops, pasture, or woodland. A small acreage is used for homesite development.

This soil is moderately well suited to cultivated crops, mainly soybeans, rice, grain sorghum, and wheat. The main limitations are wetness and poor tilth. The medium fertility is a minor limitation. Good tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. It is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. Properly designed irrigation systems are needed if rice is grown. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. Leaving crop residue on or near the surface conserves moisture and helps to maintain tilth and fertility. Most crops respond well to applications of lime and fertilizer.

This soil is well suited to pasture. The wetness and the medium fertility are the main limitations. Suitable pasture plants are common bermudagrass, bahiagrass, Johnsongrass, tall fescue, white clover, vetch, and southern winterpea. Excess surface water can be removed by using shallow ditches if suitable outlets are available. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Fertilizer and lime are needed for optimum production of forage.

This soil is moderately well suited to woodland. The main management concerns are the equipment limitation, moderate seedling mortality, the risk of soil compaction, and severe plant competition caused by wetness. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Unless a drainage system is provided, specialized site preparation, such as bedding and harrowing, is needed to reduce the seedling mortality rate. Using planting stock that is larger than normally used also increases the rate of seedling survival. Planting and harvesting only during dry periods can reduce the risk of compaction and help to prevent the formation of ruts. The trees that are suitable for planting include green ash, sweetgum, willow oak, and Nuttall oak.

This soil has good potential as habitat for wetland wildlife and fair potential as habitat for woodland and openland wildlife. Management practices that enhance the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer, turkeys, and squirrels. Constructing shallow ponds can improve the habitat for waterfowl and furbearers. The habitat for openland wildlife species, such as rabbits, quail, and dove, can be improved by providing small, undisturbed areas of appropriate vegetation near cropland.

This soil is poorly suited to recreational development. The main limitations are the wetness, the flooding, and the very slow permeability. A drainage system can improve the soil for use as playgrounds or camp areas. Applying fertilizer and controlling traffic help to maintain the plant cover. Adding loamy material to the surface reduces stickiness and improves sites for playgrounds and camp areas. Major structures, such as levees, are needed to control the flooding. If the flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used.

This soil is poorly suited to most urban uses. The main limitations are the wetness, the flooding, the high shrink-swell potential, the very slow permeability, and low strength on sites for local roads and streets. Dwellings should be constructed on mounds to raise the site above the expected level of flooding. Buildings and roads should be designed to overcome the adverse effects of shrinking and swelling. Roads should be designed to offset the limited ability of the soil to support a load. Sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

The land capability classification is IIIw, and the woodland ordination symbol is 9W.

Ft—Forestdale silty clay loam, occasionally flooded. This level and poorly drained soil is in depressions on alluvial plains of streams that drain the terraces. It is occasionally flooded for brief to long periods. Individual areas are irregular in shape and range from 10 to 500 acres in size. Slopes are mainly less than 1 percent.

Typically, the surface layer is dark grayish brown silty clay loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is mottled. It is gray silty clay in the upper part, gray silty clay loam in the next part, and light brownish gray silty clay loam in the lower part.

Included with this soil in mapping are a few small areas of Egypt, Foley, Gilbert, Necessity, and Perry soils. Egypt, Foley, Gilbert, and Necessity soils are silty or loamy throughout. Perry soils crack to a depth of 20 inches or more in most years. Egypt and Necessity soils are higher on the landscape than the Forestdale soil. Foley and Gilbert soils are in the slightly higher positions on the landscape. Included soils make up about 15 percent of the map unit.

The Forestdale soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a very slow rate. A seasonal high water table is about 0.5 foot to 2.0 feet below the surface during the period January through April. The soil is occasionally flooded for brief to long periods. The floodwater is typically 0.5 foot to 3.0 feet deep, but it is more than 3.0 feet deep in places. The surface layer is sticky when wet and hard when dry. It dries slowly after heavy rains. The shrink-swell potential is high. An adequate supply of water is available to plants in most years.

Most areas are used for woodland, wildlife habitat, pasture, or cultivated crops.

This soil is poorly suited to cultivated crops. The main limitations are wetness and poor tilth. The occasional flooding is a hazard. The medium fertility is a minor limitation. Soybeans and grain sorghum are the main crops. Good tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. The surface layer is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Planting is delayed and crops are damaged by flooding in some years. Major structures, such as levees, are needed to control the flooding. Returning crop residue to the soil improves tilth and fertility. Most crops respond well to applications of lime and fertilizer.

This soil is moderately well suited to pasture. The wetness is the main limitation, and the flooding is a hazard. The medium fertility is a minor limitation. Suitable pasture plants are common bermudagrass, bahiagrass, Johnsongrass, tall fescue, white clover, vetch, and southern winterpea. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by using shallow ditches if suitable outlets are available. Major structures, such as levees and diversions, help to control the flooding. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland. The main management concerns are the equipment limitation, moderate seedling mortality, severe plant competition, and the risk of soil compaction caused by wetness and flooding. Special site preparation, such as bedding and harrowing, can improve the seedling survival rate. Using planting stock that is larger than normally used can also improve the seedling survival rate. Proper site preparation helps to control competing vegetation. Cutting or girdling eliminates unwanted weeds, brush, and trees. Planting and harvesting during dry periods can reduce the risk of compaction and help to prevent the formation of ruts. The trees that are suitable for planting include green ash, sweetgum, Nuttall oak, and willow oak.

This soil has good potential as habitat for wetland wildlife and fair potential as habitat for woodland and openland wildlife. Management practices that enhance the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer, turkeys, and squirrels. Constructing shallow ponds improves the habitat for waterfowl and furbearers. The habitat for openland wildlife species, such as rabbits, quail, and dove, can be improved by providing small, undisturbed areas of appropriate vegetation near cropland. Leaving stubble and other crop residue on the surface in winter also improves the habitat for openland wildlife.

This soil is poorly suited to recreational development. The main limitations are the wetness and the very slow permeability. The flooding is a hazard in camp areas. A drainage system can improve the soil for use as playgrounds or camp areas. Applying fertilizer and controlling traffic help to maintain the plant cover. Major structures, such as levees, help to control flooding.

This soil is poorly suited to most urban uses. The flooding is a major hazard, and the main limitations are the wetness, the high shrink-swell potential, low strength on sites for local roads and streets, and the very slow permeability. Major flood-control structures, such as levees, are needed. Excess water can be removed by using shallow ditches and providing the proper grade. Buildings and roads should be designed to overcome the adverse effects of shrinking and swelling. Roads should be designed to offset the limited ability of the soil to support a load. If the flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IVw, and the woodland ordination symbol is 9W.

Ga—Gallion silt loam. This soil is nearly level and well drained. It is on natural levees on alluvial plains along former distributary channels of the old Arkansas River. Individual areas range from about 10 to 300 acres in size. Slopes range from 0 to 2 percent.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil is about 33 inches thick. It is yellowish red silty clay loam in the upper part, dark brown silt loam in the next part, and yellowish red, mottled silt loam in the lower part. The substratum to a depth of about 60 inches is yellowish red silt loam. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Hebert, Mer Rouge, Perry, Rilla, and Sterlington soils. Hebert and Perry soils are lower on the landscape than the Gallion soil. Hebert soils have grayish mottles in the upper part of the profile. Perry soils have a clayey subsoil. Mer Rouge soils are in the slightly lower positions on the landscape. They have a very dark grayish brown surface layer and a subsoil that is very dark gray in the upper part. Rilla and Sterlington soils are slightly higher on the landscape than the Gallion soil. They have a subsoil that is very strongly acid or strongly acid. Included soils make up about 10 percent of the map unit.

The Gallion soil is characterized by high fertility. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A few small areas are used for homesite development, pasture, or woodland.

This soil is well suited to cultivated crops. Cotton is the main crop, but soybeans, corn, small grain, and truck crops also are suitable. The soil is friable and can be easily tilled throughout a wide range in moisture content. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Returning crop residue to the soil or regularly adding other organic material improves fertility, minimizes crusting, and increases the water intake rate. Nitrogen, phosphate, and potash fertilizers are needed for optimum crop production.

This soil is well suited to pasture. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, white clover, red clover, vetch, and southern winterpea. Grasses and legumes grow well if adequate fertilizer is used. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native hardwoods. Plant competition is moderate. The trees that are suitable for planting are cherrybark oak, green ash, pecan, water oak, and sweetgum. Adequate site preparation helps to control the initial growth of undesirable understory plants, and cutting or girdling helps to control subsequent growth.

This soil has good potential as habitat for openland and woodland wildlife. Management practices that enhance the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer and squirrels. The habitat for rabbits, quail, and doves can be improved by creating small, undisturbed areas of appropriate vegetation near cropland.

This soil is well suited to recreational development. Few limitations affect this use.

This soil is moderately well suited to urban uses. The main limitations are the shrink-swell potential, the restricted permeability, and low strength on sites for local roads and streets. Increasing the size of septic tank absorption fields helps to compensate for the moderate permeability in the subsoil. Buildings and roads should be designed to overcome the adverse effects of shrinking and swelling. Roads should be designed to offset the limited ability of the soil to support a load. Plans for homesite development should provide for the preservation of as many trees as possible.

The land capability classification is I, and the woodland ordination symbol is 9A.

Ge—Gigger silt loam, 1 to 3 percent slopes. This soil is very gently sloping and moderately well drained. It is on low ridges on terraces. Individual areas are long and narrow and range from 10 to 150 acres in size.

Typically, the surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil extends to a depth of about 60 inches. The upper part is brown, mottled silty clay loam. The next part is mottled strong brown and yellowish brown silty loam. The lower part is a fragipan of strong brown, mottled silt loam. In places slopes are more than 3 percent.

Included with this soil in mapping are a few small areas of Dexter, Egypt, Foley, Gilbert, and Necessity soils. Dexter soils are higher on the landscape than the Gigger soil. They do not have a fragipan. Egypt and Necessity soils are in the slightly lower positions on the landscape and are somewhat poorly drained. Also, Egypt soils do not have a fragipan. Foley and Gilbert soils are in the lower positions on the landscape and are poorly drained. They have a high content of sodium in the subsoil. Included soils make up about 10 percent of the map unit.

The Gigger soil is characterized by medium fertility. Water and air move through this soil at a slow rate. The fragipan restricts roots. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate. A seasonal high water table is perched above the fragipan at a depth of about 2 to 3 feet during the period January through March. The shrink-swell potential is low.

Most areas are used for cultivated crops. A few small areas are used for homesite development, pasture, or woodland.

The Gigger soil is well suited to cultivated crops, mainly cotton, corn, and soybeans. The major management concerns are the hazard of erosion and the restricted rooting depth. The medium fertility is a minor limitation. The soil is friable and can be easily tilled throughout a wide range in moisture content. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. A tillage pan forms easily if the soil is tilled when wet, but chiseling or subsoiling can break up the pan. Leaving crop residue on or near the surface conserves moisture, helps to maintain tilth, and helps to control erosion. Seeding in early fall, minimizing tillage, and constructing terraces, diversions, and grassed waterways also help to control erosion. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of fertilizer. Lime is generally needed.

This soil is well suited to pasture. Erosion can be a hazard, however, before the pasture grasses are established. The medium fertility is a minor limitation. Suitable pasture plants are improved bermudagrass, bahiagrass, and common bermudagrass. Grazing when the soil is wet results in puddling of the surface layer, poor tilth, and excessive runoff. A seedbed should be prepared on the contour or across the slope if possible. Fertilizer and lime are needed for optimum production of forage.

This soil is well suited to woodland. Soil compaction can be a minor problem if heavy equipment is used when the soil is wet. Plant competition is moderate. Adequate site preparation helps to control competition from undesirable understory plants. Seedling mortality can be a minor problem in summer because of the restricted rooting depth and an inadequate supply of moisture in the soil. Using special planting stock that is larger than normally used reduces the seedling mortality rate. Planting and harvesting during the drier periods reduce the risk of soil compaction. The trees that are suitable for planting are cherrybark oak, pecan, Shumard oak, water oak, swamp chestnut oak, and loblolly pine.

This soil has good potential as habitat for openland and woodland wildlife. Generally, wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. Leaving patches of grain food plots or leaving stubble and other crop residue on the surface in winter can improve the habitat for rabbits, quail, doves, and nongame birds.

This soil is moderately well suited to recreational development. The hazard of erosion and the wetness caused by the slow permeability in the fragipan are management concerns. A drainage system can improve the soil for use as playgrounds or camp areas. Excess water can be removed by using shallow ditches and providing the proper grade. Maintaining an adequate plant cover by applying fertilizer and controlling traffic helps to control erosion and sedimentation and enhances the beauty of the area. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units can be used.

This soil is moderately well suited to urban uses. It has moderate limitations if used as a site for buildings and severe limitations if used as a site for local roads and streets or for septic tank absorption fields. The main limitations are the wetness, the slow permeability, and low strength on sites for local roads and streets. Erosion is a minor hazard. Because of the seasonal high water table, a drainage system may be needed on building sites. Excess water can be removed by using shallow ditches and providing the proper grade. Excavation increases the hazard of erosion on sites for roads and buildings. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Applying fertilizer, seeding, mulching, and shaping the slopes help to establish and maintain the plant cover. Roads should be designed to offset the limited ability of the soil to support a load. Sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

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

Gg—Gigger-Gilbert silt loams, gently undulating. These soils are in landscapes characterized by ridges and swales on terraces. The very gently sloping, moderately well drained Gigger soil is on low ridges. The level, poorly drained Gilbert soil is in swales. It is subject to rare flooding. In places a few well defined drainageways cross areas of these soils. Individual areas range from about 20 to 500 acres in size. They are about 55 percent Gigger soil and 35 percent Gilbert soil. Slopes are generally short and irregular. They are less than 1 percent in the swales and range from 1 to 3 percent on the ridges.

Typically, the surface layer of the Gigger soil is dark brown silt loam about 6 inches thick. The subsoil extends to a depth of about 60 inches. The upper part is dark brown and brown silt loam. The next part is a fragipan of dark yellowish brown and dark brown, mottled silt loam. The lower part is dark brown loam. In some areas the surface layer is silty clay loam. In other areas slopes are more than 3 percent.

The Gigger soil is characterized by medium fertility. Water and air move through this soil at a slow rate. Rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate. A seasonal high water table is perched above the fragipan at a depth of about 2 to 3 feet during the period January through March. The shrink-swell potential is low.

Typically, the surface layer of the Gilbert soil is dark brown, mottled silt loam about 7 inches thick. The subsurface layer is gray, mottled silt loam about 11 inches thick. The next 7 inches is dark grayish brown silty clay loam and grayish brown, mottled silt loam. The subsoil to a depth of about 60 inches is mottled silty clay loam. It is dark gray in the upper part and grayish brown in the lower part.

The Gilbert soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur during unusually wet periods. Water runs off the surface at a very slow rate and stands in low areas for long periods after heavy rains. A perched seasonal high water table is within a depth of 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The lower part of the subsoil has a high content of sodium, which restricts root development and limits the amount of water available to plants.

Included with these soils in mapping are a few small areas of Dexter, Egypt, Foley, and Necessity soils. Dexter soils are higher on the landscape than the Gigger soil. They do not have a fragipan. Egypt and Necessity soils are slightly higher on the landscape than the Gilbert soil and slightly lower than the Gigger soil. They are somewhat poorly drained. Egypt soils do not have a fragipan. Necessity soils have grayish mottles in the upper part of the subsoil. Foley soils have a high content of sodium in the subsoil. They are in landscape positions similar to those of the Gilbert soil. Included soils make up about 15 percent of the map unit.

Most areas of the Gigger and Gilbert soils are used for cultivated crops. A few small areas are used for pasture or as woodland, and a very small acreage is used for homesite development.

These soils are moderately well suited to cultivated crops, mainly cotton (fig. 2), soybeans, corn, and truck crops. The main limitations are wetness in the Gilbert soil and the hazard of erosion in areas of the Gigger soil. The medium fertility in the Gigger soil, the low fertility in the Gilbert soil, and the potentially toxic level of exchangeable aluminum in the root zone of the Gilbert soil are additional limitations. The effective rooting depth is restricted by the high content of sodium in the lower part of the subsoil or by a fragipan. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Also, land grading and smoothing can improve drainage and permit more efficient use of farm equipment. Moving large amounts of earth can expose the fragipan in the Gigger soil. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. In some areas installing drop structures in grassed waterways helps to prevent gullying. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

These soils are well suited to pasture. The main management concerns are the wetness in areas of the Gilbert soil and the hazard of erosion in areas of the Gigger soil. The medium or low fertility is a minor limitation. Also, the high content of sodium in the lower part of the subsoil in the Gilbert soil and the fragipan in the Gigger soil can restrict the growth of some pasture plants. Suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue,

Figure 2.—Skip-row cotton in an area of Gigger-Gilbert silt loams, gently undulating.

and bahiagrass. The wetness limits the choice of plants and the period of grazing. Grazing when the soil is wet results in puddling of the surface layer, poor tilth, and excessive runoff. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Excess surface water can be removed by field ditches and suitable outlets. Maintaining a good cover of grasses and legumes helps to control erosion.

The Gigger soil is well suited to woodland, and the Gilbert soil is moderately well suited. The trees that are suitable for planting are loblolly pine, pecan, cherrybark oak, Shumard oak, willow oak, water oak, swamp chestnut oak, and sweetgum. In areas of the Gilbert soil, the wetness severely limits the use of equipment and causes moderate seedling mortality. The risk of soil compaction is a management concern in areas of both soils. Competition from understory plants also is a management concern. Planting and harvesting during dry periods help to prevent the formation of ruts and reduce the risk of soil compaction. The seedling mortality rate can be reduced by using planting stock that is larger than normally used or by using containerized planting stock. Competing vegetation can be controlled by proper site preparation. Cutting or girdling eliminates unwanted weeds, brush, and trees.

The Gigger soil has good potential as habitat for openland and woodland wildlife, and the Gilbert soil has fair potential. The Gilbert soil has good potential as habitat for wetland wildlife. The habitat for woodland wildlife can be improved by planting or promoting the natural establishment of oak, beech, and hickory trees. Planting appropriate vegetation along field borders can improve the habitat for doves, quail, rabbits, and other species of openland wildlife. Constructing small ponds improves the habitat for waterfowl and furbearers.

The Gigger soil is moderately well suited to recreational development, but the Gilbert soil is poorly suited. The main limitations are the restricted permeability in both soils, the wetness in the Gilbert soil, and the hazard of erosion in areas of the Gigger soil. Flooding is a hazard in areas of the Gilbert soil used for campsites. A drainage system can improve the soils for use as playgrounds or camp areas. Maintaining the plant cover by applying fertilizer and controlling traffic helps to control erosion and sedimentation and enhances the beauty of the area. Flooding can be controlled by constructing levees or diversions or by adding fill material, which raises the site above the expected level of flooding.

The Gigger soil is moderately suited to urban uses, but the Gilbert soil is poorly suited. The Gilbert soil is severely limited by the wetness, the flooding, low strength on sites for roads, the shrink-swell potential, and the restricted permeability. Dwellings in areas of the Gigger soil can be affected by the wetness, and low strength is a severe limitation on sites for local roads and streets. A drainage system may be needed on sites for roads and around building foundations. The wetness can be reduced by installing shallow ditches and providing the proper grade. Flooding can be controlled by constructing levees and diversions. Preserving the existing plant cover during construction helps to control erosion. Establishing plants can be difficult in areas where the upper layers have been removed, thus exposing the fragipan in the Gigger soil or the sodium in the Gilbert soil. Mulching and applying fertilizer can help to establish plants in cut areas. Reinforcing the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling of the subsoil. Roads should be designed to offset the limited ability of the soils to support a load. Septic tank absorption fields may not function properly because of the restricted permeability and the high water table. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification of the Gigger soil is IIe, and the woodland ordination symbol is 7A. The land capability classification of the Gilbert soil is IIIw, and the woodland ordination symbol is 6W.

Gk—Gilbert silt loam. This level and poorly drained soil is on broad flats and in depressions along drainageways on terraces. It is subject to rare flooding. Individual areas are irregular in shape and range from 10 to 300 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 10 inches thick. The next 7 inches is grayish brown, mottled silty clay loam and light brownish gray silt loam. The subsoil extends to a depth of about 60 inches. It is grayish brown, mottled silty clay loam. In some places the surface layer is silty clay loam. In other places the soil is very strongly acid or strongly acid throughout.

Included with this soil in mapping are a few small areas of Egypt, Foley, Gigger, and Necessity soils. Egypt, Gigger, and Necessity soils are higher on the landscape than the Gilbert soil. They have a brownish subsoil. Also, Gigger and Necessity soils have a fragipan. Foley soils are in landscape positions similar to those of the Gilbert soil. They have a high content of sodium in the middle and lower parts of the subsoil. Included soils make up about 10 percent of the map unit.

The Gilbert soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur during unusually wet seasons. Water runs very slowly off the surface and stands in low areas for long periods after heavy rains. A perched seasonal high water table is within a depth of 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The high content of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A few small areas are used for pasture, woodland, or homesite development.

This soil is moderately well suited to cultivated crops, mainly cotton, rice, and soybeans. The main limitations are the wetness, the low fertility, and the potentially toxic level of aluminum in the root zone. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Deep cuts made during grading and smoothing operations, however, can expose the lower part of the subsoil, which has a high content of sodium. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. A flooding irrigation system is needed if rice is grown. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Maintaining crop residue on or near the surface helps to control runoff and helps to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the level of exchangeable aluminum.

This soil is moderately well suited to pasture. The wetness limits the choice of plants and the period of grazing. The low fertility is an additional limitation.

Grazing when the soil is wet causes puddling of the surface layer and damages the plant community. The main suitable pasture plants are common bermudagrass, bahiagrass, ryegrass, tall fescue, white clover, and southern winterpea. Excess surface water can be removed by using field ditches and providing the proper grade. Fertilizer and lime are needed for optimum production of forage. The sodium in the lower part of the subsoil can limit the growth of some pasture plants.

This soil is moderately well suited to woodland. The main limitations are the equipment limitation, moderate seedling mortality, and the risk of soil compaction caused by the wetness and the high content of sodium in the lower part of the subsoil. Plant competition is severe. Carefully managed reforestation after trees are harvested reduces competition from undesirable understory plants. Planting and harvesting during dry periods reduce the risk of soil compaction and help to prevent the formation of ruts. Seedling mortality can be a problem in spring because of the wetness and in summer because of droughtiness. Special site preparation, such as bedding and harrowing, can reduce the seedling mortality rate. Using planting stock that is larger than normally used can also improve seedling survival. The trees that are suitable for planting are sweetgum, water oak, cherrybark oak, Shumard oak, willow oak, and loblolly pine.

This soil has fair potential as habitat for openland and woodland wildlife and good potential as habitat for wetland wildlife. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as muskrat, nutria, and mink. Providing vegetation along field borders and in areas around cropland can improve the habitat for doves, fox, quail, rabbits, and other species.

This soil is poorly suited to recreational development. The main limitations are the wetness and the very slow permeability. The flooding is a hazard in camp areas. A drainage system can improve the soil for use as playgrounds or camp areas. Using shallow ditches or providing the proper grade can reduce surface wetness. Flooding can be controlled by building major structures, such as levees. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained disposal units function better than septic tank absorption fields.

This soil is poorly suited to most urban uses because of the wetness, the flooding, the very slow permeability, the shrink-swell potential, and low strength on sites for local roads and streets. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the very slow permeability. If the flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used. Constructing levees or diversions can help to control the flooding. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIIw, and the woodland ordination symbol is 6W.

Gm—Gilbert-Egypt silt loams, gently undulating. These soils are on terraces. The poorly drained, level Gilbert soil is in swales and depressions. The somewhat poorly drained Egypt soil is nearly level and very gently sloping. It is on low knolls and ridges. The two soils occur in an irregular pattern on the landscape. Individual areas range from about 20 to 500 acres in size. They are about 50 percent Gilbert soil and 30 percent Egypt soil. Slopes are 0 to 1 percent in the swales and depressions and range from 0 to 3 percent on the knolls and ridges.

Typically, the surface layer of the Gilbert soil is grayish brown, mottled silt loam about 5 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 7 inches thick. The next 8 inches is grayish brown silty clay loam and light brownish gray, mottled silt loam. The subsoil extends to a depth of about 60 inches. It is grayish brown, mottled silty clay loam. In places the surface layer is silty clay loam.

The Gilbert soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur during unusually wet periods. Runoff is very slow. A perched seasonal high water table is within a depth of about 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is moderate in the subsoil. The high content of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years.

Typically, the surface layer of the Egypt soil is brown silt loam about 6 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 10 inches thick. The next layer is strong brown and grayish brown silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. In sequence downward, it is yellowish brown, mottled silty clay loam; brown and yellowish brown silt loam; yellowish brown silt loam; and yellowish brown and dark yellowish brown silty clay loam.

The Egypt soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. The high content of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. A perched seasonal high water table is at a depth of about 0.5 foot to 2.0 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

Included with these soils in mapping are a few small areas of Dexter, Foley, Gigger, and Necessity soils. The well drained Dexter soils are higher on the landscape than the Egypt soil. They do not have grayish mottles in the upper part of the subsoil. The poorly drained Foley soils are lower on the landscape than the Egypt soil. They have a high content of sodium in the middle and lower parts of the subsoil. Gigger and Necessity soils are in the slightly higher positions on the landscape. They have a fragipan. Included soils make up about 15 percent of the map unit.

The Gilbert and Egypt soils are used mainly for cultivated crops. A small acreage is used for pasture, homesite development, or woodland.

These soils are moderately well suited to cultivated crops. The main limitations are the seasonal wetness, the low fertility, the potentially toxic level of aluminum in the root zone, droughtiness, and an uneven topography. Erosion is a moderate hazard in areas of the Egypt soil. Proper row arrangement, field ditches, and suitable outlets can remove excess surface water from the swales. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. If deep cuts are made, however, the sodium in the subsoil may be exposed. Properly designed irrigation systems are needed if rice is grown. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years (fig. 3). Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion in areas of the Egypt soil on ridges. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

These soils are moderately well suited to pasture. The main limitations are the wetness, the low fertility, and the high content of sodium in the lower part of the subsoil. Also, the Egypt soil is susceptible to erosion before the pasture grasses become established. Suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue, bahiagrass, and southern winterpea. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by using shallow ditches. A seedbed should be prepared on the contour or across the slope if possible. Applications of lime and fertilizer help to overcome the low fertility and increase forage production. The high content of sodium in the lower part of the subsoil can limit the growth of some pasture plants. Rotation grazing helps to maintain the quality of forage. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

These soils are moderately well suited to woodland, but only a few small areas support native hardwoods. The main management concerns are the equipment limitation, the risk of soil compaction, and slight or moderate seedling mortality caused by wetness. Competition from understory plants is moderate or severe. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Planting and harvesting during dry periods can help to prevent the formation of ruts and reduce the risk of soil compaction. Preparing the site by chopping, burning, applying herbicide, or bedding reduces the amount of debris, minimizes immediate plant competition, and facilitates mechanical planting. The seedling mortality rate can be reduced by using planting stock that is larger than normally used or by using containerized seedlings. The trees that are suitable for planting are sweetgum, cherrybark oak, Shumard oak, water oak, willow oak, and loblolly pine.

These soils have good or fair potential as habitat for openland and woodland wildlife. The Gilbert soil has good potential as habitat for wetland wildlife. Low-level weirs, level ditches, controlled burning, and controlled harvesting improve wildlife habitat. Also, the habitat for woodland wildlife can be improved by planting or promoting the natural establishment of oak, beech, and hickory trees and other desirable plants. Planting desirable grasses and legumes along field borders provides food and cover for openland wildlife.

These soils are poorly suited to recreational development. The main limitations are the wetness and the restricted permeability. Flooding on the Gilbert soil is a hazard in camp areas. The Egypt soil is susceptible

Figure 3.—Irrigated cotton in an area of Gilbert-Egypt silt loams, gently undulating.

to erosion in intensively used areas. A drainage system can improve the soils for use as playgrounds or camp areas. Excess water can be removed by using shallow ditches and providing the proper grade. Seeding or mulching cuts and fills helps to control erosion. The plant cover can be maintained by applying fertilizer and controlling traffic. Flooding can be controlled by constructing levees and diversions.

These soils are poorly suited to urban uses. The main limitations are the wetness, low strength on sites for roads, the restricted permeability, and the shrink-swell potential. Flooding is also a hazard. A drainage system is needed on sites for roads and around building foundations. Preserving the existing plant cover during construction or revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Selecting adapted species for planting is critical for the establishment of lawns, shrubs, trees, and vegetable gardens because of the seasonal wetness, droughtiness, and the high content of sodium in the subsoil. Unless irrigation is provided, plants that tolerate droughtiness should be selected. Because of the high water table and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Roads should be designed to offset the limited ability of the soils to support a load. Strengthening the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling of the subsoil.

The land capability classification of the Gilbert soil is IIIw, and that of the Egypt soil is IIe. The woodland ordination symbol of both soils is 6W.

Gr—Grenada silt loam, 1 to 3 percent slopes. This soil is very gently sloping and moderately well drained. It is on ridges on terraces. Individual areas are irregular in shape and range from 10 to 250 acres in size.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The subsoil extends to a depth of about 29 inches. It is silt loam. The upper part is dark yellowish brown and yellowish brown and the lower part is yellowish brown and mottled. The next layer is light gray silt loam about 4 inches thick. Below this to a depth of about 60 inches is a fragipan of mottled silt loam. It is yellowish brown in the upper part, dark yellowish brown in the next part, and brown in the lower part. In places slopes are more than 3 percent.

Included with this soil in mapping are a few small areas of Calhoun, Calloway, and Loring soils. The poorly drained Calhoun soils are in swales and depressions. They do not have a fragipan. Calloway soils are slightly lower on the landscape than the Grenada soil. They have grayish mottles in the upper part of the subsoil. Loring soils are in landscape positions similar to those of the Grenada soil. They have only one zone of clay accumulation in the subsoil above the fragipan. Included soils make up about 15 percent of the map unit.

The Grenada soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate above the fragipan and at a slow rate in the fragipan. Rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate. A seasonal high water table is perched above the fragipan at a depth of about 1.5 to 2.5 feet during the period January through April. The shrink-swell potential is low.

This soil is used mainly for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

This soil is well suited to cultivated crops, mainly cotton, corn, and soybeans. It is limited mainly by the slope, the medium fertility, and the potentially toxic level of exchangeable aluminum in the root zone. The soil is friable and can be easily tilled throughout a wide range in moisture content. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum. Minimizing tillage, constructing terraces, and farming on the contour help to control erosion. Using drop structures and seeding waterways with grass help to stabilize the flow of surface runoff.

This soil is well suited to pasture. The main suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue, and legumes. The medium fertility is a minor limitation. Also, erosion can be a hazard before the pasture grasses become established. A seedbed should be prepared on the contour or across the slope if possible. Fertilizer and lime are needed for optimum production of forage. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland. Few limitations affect this use. Competition from understory plants is moderate. Compaction of the surface layer may be a problem if heavy equipment is used when the soil is wet. Carefully managed reforestation after trees are harvested reduces competition from undesirable understory plants. Planting and harvesting only during the drier periods can reduce the risk of soil compaction. The trees that are suitable for planting are cherrybark oak, pecan, sweetgum, southern red oak, water oak, and loblolly pine.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Leaving stubble and crop residue on the surface in winter improves the habitat for doves, quail, rabbits, and nongame birds. In wooded areas, preserving mature oaks and other mast-producing trees improves the habitat for white-tailed deer, squirrels, and turkeys.

This soil is moderately well suited to recreational development. The main limitation is the wetness caused by the slow permeability in the fragipan. Erosion can be a hazard in intensively used areas, such as playgrounds. A drainage system can improve the soil for use as playgrounds or camp areas. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to urban uses. The main limitations are the wetness, the slope, the slow permeability, and low strength on sites for local roads and streets. A drainage system may be needed on building sites. Using shallow ditches or shaping the site can improve drainage. The hazard of erosion is increased if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Roads should be designed to offset the limited ability of the soil to support a load. Because of the high water table and the slow permeability, septic tank absorption fields may not function properly. Increasing the size of the absorption field helps to overcome the slow permeability. Sewage lagoons or self-contained sewage disposal units can also be used.

The land capability classification is IIe, and the woodland ordination symbol is 10A.

Gs—Grenada silt loam, 8 to 12 percent slopes. This moderately sloping and strongly sloping, moderately well drained soil is on the terrace escarpment above the alluvial plains. It occurs mainly as one continuous, narrow area that extends the length of the parish along Macon Ridge. Individual areas range from about 40 to 500 acres in size.

Typically, the surface layer is dark brown silt loam about 4 inches thick. The subsoil extends to a depth of about 32 inches. It is yellowish brown silt loam in the upper part and yellowish brown, mottled silt loam in the lower part. The next layer is light gray silt loam about 4 inches thick. Below this to a depth of about 60 inches is a fragipan of mottled silt loam. It is brown in the upper part and strong brown in the lower part. In places slopes are less than 8 percent or more than 12 percent.

Included with this soil in mapping are a few small areas of Calhoun, Calloway, and Loring soils. The poorly drained Calhoun soils are in depressions along drainageways. They have a fragipan. Loring soils are on convex ridgetops. They have only one zone of clay accumulation in the subsoil above the fragipan. Calloway soils are on very gentle slopes. They have more grayish mottles in the upper part of the subsoil than the Grenada soil. Included soils make up about 15 percent of the map unit.

The Grenada soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the fragipan at a slow rate. Rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a rapid rate. A seasonal high water table is perched above the fragipan at a depth of about 1.5 to 2.5 feet during the period January through April. The shrink-swell potential is low.

Most areas are used for woodland or pasture.

This soil is poorly suited to cultivated crops. The main limitations are the slope and a severe hazard of erosion. The medium fertility and the potentially toxic level of exchangeable aluminum in the root zone are additional limitations. If cultivated crops are grown, close-grown crops, such as small grain, are better suited than row crops. Tilling on the contour or across the slope helps to control erosion. Fertilizer and lime improve fertility and reduce the high level of exchangeable aluminum.

This soil is moderately well suited to pasture. The main limitations are the slope, the severe hazard of erosion, and the medium fertility. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, white clover, southern winterpea, and vetch. All adapted pasture plants can be grown, but bunch-type species planted alone generally are not suitable because of the hazard of erosion. Native grasses are best suited to the more steeply sloping areas, where seedbed preparation is difficult. Fertilizer and lime are needed for optimum production of forage. Rotation grazing and weed control improve the quality of the forage.

This soil is well suited to woodland. The main limitations are the slope and moderate plant competition. Management practices that minimize the risk of erosion during harvest are essential. Maintaining the plant cover and providing water bars on yarding paths, skid trails, and fire breaks help to control erosion. Plant competition can delay natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. In places the slope and gullies restrict the use of equipment. The trees that are suitable for planting are cherrybark oak, pecan, sweetgum, loblolly pine, water oak, and southern red oak.

This soil has good potential as habitat for openland and woodland wildlife. Generally, wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Selective harvesting preserves mast-producing trees, such as oaks and hickory, and thus improves the habitat for turkeys, deer, and squirrels. Controlled burning increases the palatable browse available to deer and the seed-producing plants available to quail and turkeys.

This soil is moderately well suited to recreational development. It is limited mainly by the slope, the erosion hazard, the slow permeability, and wetness. In places, use is limited mainly to a few paths and trails because of the slope. The paths and trails should extend across the slope. Maintaining and adequate cover of vegetation helps to control erosion. If sanitary facilities are installed in recreational areas, self-contained sewage disposal units function better than septic tank absorption fields because of the slope, the slow permeability, and the seasonal high water table.

This soil is moderately well suited to urban uses. The main limitations are the slope, the slow permeability, low strength on sites for local roads and streets, and the wetness. Preserving the existing plant cover during construction and revegetating disturbed areas on construction sites as soon as possible help to control erosion. Applying the proper kinds and amounts of fertilizer, shaping the slopes, seeding, and mulching help to establish and maintain the plant cover. Roads should be designed to offset the limited ability of the soil to support a load. Because of the seasonal high water table and the slow permeability, septic tank absorption fields may not function properly. Also, the effluent from absorption fields can surface in downslope areas and create a hazard to health. Self-contained sewage disposal units can be used.

The land capability classification is IVe, and the woodland ordination symbol is 10A.

Gu—Grenada-Calhoun silt loams, gently undulating. These soils are in landscapes characterized by ridges and swales on terraces. The moderately well drained, very gently sloping Grenada soil is on long, narrow ridges. The poorly drained, level Calhoun soil is in swales. It is subject to rare flooding. Individual areas of these soils range from about 20 to 800 acres in size. They are about 50 percent Grenada soil and 40 percent Calhoun soil. In places many well defined drainageways cross areas of these soils. Slopes range from 1 to 3 percent on the ridges and from 0 to 1 percent in the swales.

Typically, the surface layer of the Grenada soil is dark brown silt loam about 6 inches thick. The subsoil extends to a depth of about 23 inches. It is silt loam. It is yellowish brown in the upper part and mottled yellowish brown and light yellowish brown in the lower part. The next layer is light brownish gray silt loam about 4 inches thick. Below this to a depth of about 60 inches is a fragipan of brown, mottled silt loam.

The Grenada soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the fragipan at a slow rate. Rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate. A seasonal high water table is perched above the fragipan at a depth of about 1.5 to 2.5 feet during the period January through April. The shrink-swell potential is low.

Typically, the surface layer of the Calhoun soil is grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is light brownish gray and light gray, mottled silt loam about 10 inches thick. The subsoil is about 27 inches thick. It is gray, mottled silty clay loam in the upper part and grayish brown, mottled silt loam in the lower part. The substratum to a depth of about 60 inches is gray, mottled silt loam.

The Calhoun soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Although flooding is rare, it can occur during unusually wet periods. Water runs off the surface at a slow or very slow rate. A seasonal high water table is within a depth of about 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is moderate in the subsoil.

Included with these soils in mapping are a few small areas of Calloway and Loring soils. Calloway soils are slightly lower on the landscape than the Grenada soil and slightly higher than the Calhoun soil. They have a fragipan and have grayish mottles in the upper part of the subsoil. Loring soils are in landscape positions similar to those of the Grenada soil. They do not have a double zone of clay accumulation in the subsoil above the fragipan. Included soils make up about 10 percent of the map unit.

Most areas of the Grenada and Calhoun soils are used for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

These soils are moderately well suited to cultivated crops, mainly cotton, corn, soybeans, sweet potatoes, and wheat. The main limitations are wetness in the swales, the hazard of erosion on the ridges, uneven topography, the low or medium fertility, and the potentially toxic level of exchangeable aluminum in the root zone. The soils are friable and can be easily tilled throughout a wide range in moisture content. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water from the swales. Land grading and smoothing also improve surface drainage and permit more efficient use of farm equipment. On the ridges, however, deep cuts made during grading and smoothing operations can expose the fragipan. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum. Early seeding of fall grain or winter pasture grasses, using stubble-mulch tillage, and tilling and seeding on the contour or across the slope can help to control erosion on the ridges. Also, waterways can be shaped and seeded to perennial grasses. Installing drop structures in grassed waterways can help to prevent gullying in some areas.

These soils are well suited to pasture. The main limitations are the wetness, uneven topography, and the low or medium fertility. Also, the Grenada soil is susceptible to erosion. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, white clover, and vetch. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. A surface drainage system is needed to remove excess water from the swales. The use of equipment is limited by the uneven topography. Fertilizer is needed for optimum growth of grasses and legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Maintaining a good cover of grasses helps to control erosion.

These soils are well suited to woodland, but only a few areas support native trees. The Grenada soil has few limitations affecting woodland management, but the Calhoun soil has moderate or severe limitations. Because of the wetness in the Calhoun soil, equipment use is limited and seedling mortality is moderate. The risk of soil compaction and plant competition are management concerns on both soils. Planting and harvesting during dry periods can prevent the formation of ruts and reduce the risk of soil compaction. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. The trees that are suitable for planting are sweetgum, pecan, Shumard oak, water oak, southern red oak, cherrybark oak, and loblolly pine.

The Grenada soil has good potential as habitat for openland and woodland wildlife, and the Calhoun soil has fair potential. The Calhoun soil has good potential as habitat for wetland wildlife, but the Grenada soil has very poor potential. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as muskrat, nutria, and mink.

The Grenada soil is moderately well suited to recreational development. The Calhoun soil is poorly suited. The wetness and the slow permeability are the main limitations. Flooding is a hazard in camp areas on the Calhoun soil. The Grenada soil is susceptible to erosion in intensively used areas. A drainage system can improve the soils for use as playgrounds or camp areas. Excess surface water can be removed by using shallow ditches and providing the proper grade. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area. Flooding can be controlled by constructing levees and diversions.

The Grenada soil is moderately well suited to urban uses. The Calhoun soil is poorly suited. The main limitations are the wetness, the shrink-swell potential, low strength on sites for local roads and streets, and the slow permeability. Flooding is a hazard on the Calhoun soil, and the Grenada soil is susceptible to erosion. A drainage system may be needed on sites for roads and around building foundations. Excess surface water can be removed by using shallow ditches and providing the proper grade. Preserving the existing plant cover during construction helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Because of the seasonal high water table and the slow permeability, septic tank absorption fields may not function properly. If flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used. Roads should be designed to offset the limited ability of the soils to support a load. Strengthening the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling of the subsoil. Flooding can be controlled by constructing levees and diversions.

The land capability classification of the Grenada soil is IIe, and the woodland ordination symbol is 10A. The land capability classification of the Calhoun soil is IIIw, and the woodland ordination symbol is 9W.

Hb—Hebert silt loam. This soil is level and somewhat poorly drained. It is on broad flats and on the back slopes of natural levees on the alluvial plains of the Boeuf River and other former channels and distributaries of the Arkansas River. Individual areas range from about 10 to 1,000 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 2 inches thick. The next layer is grayish brown, mottled silt loam about 3 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is mottled. In sequence downward, it is brown silty clay loam, pale brown silty clay loam, reddish brown silty clay loam, reddish brown loam, reddish brown very fine sandy loam, and reddish brown silt loam. In places the subsoil is extremely acid.

Included with this soil in mapping are a few small areas of Mer Rouge, Perry, Portland, Rilla, and Sterlington soils. Mer Rouge soils are in landscape positions similar to those of the Hebert soil. They have a very dark grayish brown surface layer and a subsoil that is very dark gray in the upper part. Perry and Portland soils are in the lower positions on the landscape. They have a clayey subsoil. Rilla and Sterlington soils are higher on the landscape than the Hebert soil and are well drained. Included soils make up about 15 percent of the map unit.

The Hebert soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.5 to 3.0 feet during the period December through April. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, and grain sorghum. It is limited mainly by wetness. The medium fertility is a minor limitation. The soil is friable and can be easily tilled throughout a wide range in moisture content. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the water intake rate. Most crops respond well to applications of lime and fertilizer.

This soil is well suited to pasture. The wetness is the main limitation, and the medium fertility is a minor limitation. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, white clover, red clover, vetch, and southern winterpea. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Fertilizer and lime are needed for optimum production of forage.

This soil is well suited to woodland, but only a few areas support native hardwoods. The main management concerns are moderate plant competition, the equipment limitation, and the risk of soil compaction. Plant competition can delay natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Competing vegetation can be controlled by proper site preparation. Spraying, cutting, or girdling eliminates unwanted weeds, brush, and trees. The trees that are suitable for planting are green ash, sweetgum, Shumard oak, cherrybark oak, and water oak. Planting and harvesting during dry periods can reduce the risk of soil compaction.

This soil has good potential as habitat for woodland and openland wildlife and fair potential as habitat for wetland wildlife. Few limitations affect management or development. The habitat for woodland wildlife can be improved by planting oak trees or suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for openland wildlife can be improved by planting appropriate vegetation along field borders and by leaving patches of small grain in fields as food plots. The habitat for wetland wildlife can be improved by creating small ponds and planting suitable vegetation around the ponds.

This soil is moderately well suited to recreational development. It is limited mainly by the wetness and the restricted permeability. Excess surface water can be removed by using shallow ditches and providing the proper grade. Septic tank absorption fields may not function properly because of the seasonal high water table and the restricted permeability. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units can be used.

This soil is moderately well suited to urban uses. Limitations on sites for dwellings without basements are moderate, and those on sites for most kinds of sanitary facilities are severe. The main limitations are the wetness, the shrink-swell potential, and low strength on sites for local roads and streets. Excess surface water can be removed by using shallow ditches and providing the proper grade. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling. Roads and streets should be designed to offset the limited ability of the soil to support a load. Because of the wetness and the restricted permeability, septic tank absorption fields do not function properly during rainy periods. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIw, and the woodland ordination symbol is 8W.

He—Hebert silty clay loam. This soil is level and somewhat poorly drained. It is on broad flats and in depressions on the back slopes of natural levees on the alluvial plains of the Boeuf River and other former channels and distributaries of the Arkansas River. Individual areas range from about 10 to 500 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark brown, mottled silty clay loam about 8 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 9 inches thick. The subsoil to a depth of about 60 inches is silty clay loam. It is mottled grayish brown and strong brown in the upper part, reddish brown and mottled in the next part, and dark brown and mottled in the lower part. In places the subsoil is extremely acid.

Included with this soil in mapping are a few small areas of Perry, Portland, and Rilla soils. Perry and Portland soils are lower on the landscape than the Hebert soil. They have a clayey subsoil. Rilla soils are in the higher positions on the landscape and are well drained. Included soils make up about 15 percent of the map unit.

The Hebert soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.5 to 3.0 feet during the period December through April. The shrink-swell potential is moderate. The surface layer is slightly sticky when wet and hard when dry.

Most areas are used for cultivated crops. A small

acreage is used for pasture, woodland, or homesite development.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, and rice. The main limitations are wetness, the medium fertility, and poor tilth. Good tilth is difficult to maintain because the surface layer becomes cloddy if it is farmed when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Land grading and smoothing also can help to remove excess water. A flooding irrigation system is needed if rice is grown. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, maintains tilth, and increases the water intake rate. Most crops respond well to applications of lime and fertilizer.

This soil is well suited to pasture. The wetness and the medium fertility are the main limitations. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, white clover, red clover, vetch, and southern winterpea. Shallow ditches and suitable outlets can remove excess surface water. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Fertilizer and lime are needed for optimum production of forage.

This soil is well suited to woodland, but only a few areas support native hardwoods. Moderate plant competition, the equipment limitation, and the risk of soil compaction are the main management concerns. Among the trees that are suitable for planting are green ash, sweetgum, Shumard oak, cherrybark oak, and water oak. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Harvesting only during the drier periods reduces the risk of soil compaction.

This soil has good potential as habitat for woodland and openland wildlife and fair potential as habitat for wetland wildlife. Few or no limitations affect management or development. The habitat for woodland wildlife can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for openland wildlife can be improved by providing undisturbed and vegetated areas near cropland. The habitat for wetland wildlife can be improved by constructing small ponds for use by waterfowl and furbearers.

This soil is moderately well suited to recreational development. The main limitations are the wetness and the restricted permeability. Drainage can be improved by using open ditches and providing the proper grade.

This soil is moderately well suited to urban uses. The main limitations are the shrink-swell potential, the wetness, low strength on sites for local roads and streets, and the restricted permeability. Excess surface water can be removed by using shallow ditches or providing the proper grade. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIw, and the woodland ordination symbol is 8W.

Hp—Hebert-Perry complex, occasionally flooded. These soils are on the alluvial plains of the Boeuf River. They are occasionally flooded for brief to very long periods, mainly in the spring and after periods of unusually heavy rainfall. The somewhat poorly drained Hebert soil is in the higher positions on the landscape, such as narrow ridges. The poorly drained Perry soil is in swales and in other low positions. Individual areas of these soils range from about 50 to 750 acres in size. They are about 50 percent Hebert soil and 30 percent Perry soil. Slopes range from 0 to 3 percent.

Typically, the surface layer of the Hebert soil is dark grayish brown silty clay loam about 5 inches thick. The subsurface layer is dark brown, mottled silty clay loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is mottled. The upper part is grayish brown silty clay loam, the next part is brown silty clay loam, and the lower part is brown silt loam. In places the soil has more sand or more clay in the surface layer or in the subsoil.

The Hebert soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.5 to 3.0 feet during the period December through April. The floodwater typically is 3 to 10 feet deep. The shrink-swell potential is moderate.

Typically, the surface layer of the Perry soil is dark grayish brown clay about 6 inches thick. The subsoil extends to a depth of about 60 inches. It is gray, mottled clay in the upper part and reddish brown, mottled silty clay and clay in the lower part. In places the soil has a loamy overwash and a stratified clayey and loamy subsoil.

The Perry soil is characterized by medium fertility.

Water and air move through this soil at a very slow rate. A seasonal high water table is within a depth of about 2 feet during the period December through June. The floodwater typically is 3 to 12 feet deep, but it is more than 15 feet deep in places. The shrink-swell potential is very high. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Included with these soils in mapping are a few small areas of Portland and Rilla soils. Portland soils are slightly higher on the landscape than the Perry soil. They are brown or reddish brown throughout. Rilla soils are in the higher positions on the landscape. They are loamy throughout. Included soils make up about 15 percent of the map unit.

Most areas of the Hebert and Perry soils are used as woodland or pasture.

These soils are poorly suited to cultivated crops. The occasional flooding, wetness, and poor tilth are the main management concerns. The medium fertility is a minor limitation. The flooding commonly delays planting. Only late-planted crops, such as grain sorghum and soybeans, can be grown. The flooding can be controlled only by using water pumps and building major structures, such as large earthen levees. Surface drainage can be improved by constructing shallow ditches or by smoothing the land surface and providing the proper grade.

These soils are poorly suited to pasture. The main limitation is the wetness caused by the occasional flooding and the seasonal high water table. The main suitable pasture plant is common bermudagrass. During periods of flooding, cattle can be moved to pastures that are protected from flooding or that are in the higher elevations. Large applications of fertilizer or lime are generally not practical because of the hazard of overflow. The flooding can be controlled by building large earthen levees and using water pumps.

These soils are moderately well suited to woodland. The wetness and the flooding severely restrict the use of equipment during the winter and spring. Also, seedling mortality is a moderate concern because of the wetness. Plant competition is moderate or severe. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Harvesting during dry periods helps to prevent the formation of ruts and reduces the risk of soil compaction. Using containerized planting stock or special planting stock that is larger than normally used can improve the seedling survival rate. The trees that are suitable for planting are green ash, sweetgum, cherrybark oak, Shumard oak, willow oak, and water oak. Nuttall oak also can be planted in areas of the Perry soil.

These soils have fair potential as habitat for wetland and openland wildlife and good potential as habitat for woodland wildlife. Management practices that enhance the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer and squirrels. Constructing shallow ponds can improve the habitat for waterfowl and furbearers. The habitat for openland wildlife species, such as rabbits, quail, and dove, can be improved by creating small, undisturbed areas of appropriate vegetation near cropland.

These soils are poorly suited to recreational development because of the wetness and the hazard of flooding. Also, the surface layer is sticky when wet. The flooding can be controlled by building large earthen levees and using water pumps.

These soils are poorly suited to urban uses. They are not suited to dwellings because of the hazard of flooding. They are also limited by the restricted permeability, low strength on sites for local roads and streets, and the shrink-swell potential. The flooding can be controlled only by constructing earthen levees and using water pumps.

The land capability classification of both soils is IVw. The woodland ordination symbol of the Hebert soil is 8W, and that of the Perry soil is 3W.

Ld—Liddieville fine sandy loam, 2 to 5 percent slopes. This soil is gently sloping and well drained. It is on narrow ridges on terraces. Individual areas range from 5 to 100 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil is 44 inches thick. It is strong brown loam in the upper part, yellowish red sandy clay loam in the next part, and strong brown loam in the lower part. The substratum to a depth of about 60 inches is strong brown loamy fine sand. In places slopes are less than 2 percent or more than 5 percent.

Included with this soil in mapping are a few small areas of Dexter, Egypt, Gigger, Gilbert, and Necessity soils. Dexter soils are in landscape positions similar to those of the Liddieville soil. They contain less sand and more silt and clay in the upper part of the subsoil than the Liddieville soil. Egypt, Gigger, Gilbert, and Necessity soils are lower on the landscape than the Liddieville soil. Egypt and Gilbert soils have a high content of sodium in the subsoil. Gigger and Necessity soils have a fragipan. Included soils make up about 10 percent of the map unit.

The Liddieville soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. The available water capacity is moderate or high. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate, and the hazard of water erosion is moderate. The soil dries quickly after rains. The shrink-swell potential is low.

This soil is used mainly for cultivated crops. A small acreage is used for homesite development, woodland, or pasture.

This soil is well suited to cultivated crops, mainly cotton and soybeans. It is limited mainly by the hazard of erosion. The medium fertility, droughtiness, and the potentially toxic level of exchangeable aluminum are additional limitations. The soil is friable and can be easily tilled throughout a wide range in moisture content. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods in most years. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling when the soil is dry. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. The risk of sheet or rill erosion can be reduced by using gradient terraces and farming on the contour. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The slope, the medium fertility, and the droughtiness are the main limitations. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, and red clover. All adapted pasture plants can be grown, but bunch-type species planted alone generally are not suitable because of the hazard of erosion. A seedbed should be prepared on the contour or across the slope if possible. Grasses and legumes grow well if adequate fertilizer is used. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native trees. Few limitations affect use and management. The trees that are suitable for planting are loblolly pine, pecan, Shumard oak, water oak, and cherrybark oak. Droughtiness can affect seedling survival in areas where understory plants are numerous.

This soil has good potential as habitat for openland and wetland wildlife. Generally, wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. Controlled burning in wooded areas increases the palatable browse available to deer and the seed-producing plants available to quail, turkeys, doves, and nongame birds. Using a greater diversity of crops in rotation and planting crops in narrow strips improve the habitat for openland wildlife.

This soil is well suited to recreational development. It is limited mainly by the slope. Erosion can be a concern on playgrounds or in other areas where the plant cover is not adequately maintained. Cuts and fills should be seeded or mulched. The plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is moderately well suited to urban uses. The slope, low strength on sites for local roads and streets, and the restricted permeability are the main limitations. If the soil is used for shallow excavations, the cutbanks are not stable and are subject to caving. The hazard of erosion increases if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Applying the proper kinds and amounts of fertilizer, shaping the slopes, seeding, and mulching help to establish and maintain the plant cover. Roads should be designed to offset the limited ability of the soil to support a load. The restricted permeability can be overcome by increasing the size of septic tank absorption fields.

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

Lo—Loring silt loam, 1 to 5 percent slopes. This soil is gently sloping and moderately well drained. It is on ridges on terraces. Individual areas are irregular in shape and range from 10 to 200 acres in size.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 28 inches. It is strong brown silt loam and silty clay loam. Below this to a depth of about 60 inches is a fragipan of silt loam. It is brown in the upper part and mottled strong brown and yellowish brown in the lower part.

Included with this soil in mapping are a few small areas of Calhoun, Calloway, and Grenada soils. Calhoun soils are in swales and depressions and are poorly drained. They do not have a fragipan. Calloway soils are slightly lower on the landscape than the Loring soil and are somewhat poorly drained. They have grayish mottles in the upper part of the subsoil. Grenada soils are in landscape positions similar to those of the Loring soil. They have two distinct zones of clay accumulation in the subsoil above the fragipan. Included soils make up about 15 percent of the map unit.

The Loring soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through the upper part of this soil at a moderate rate and through the fragipan at a moderately slow rate. The effective rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a medium rate. A seasonal high water table is perched above the fragipan at a depth of about 2 to 3 feet during the period December through March. The shrink-swell potential is low.

Most areas are used for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

This soil is well suited to cultivated crops, mainly cotton, corn, and soybeans. It is limited mainly by the slope and the restricted rooting depth. The medium fertility and the potentially toxic level of exchangeable aluminum in the root zone are additional limitations. The soil is friable and can be easily tilled throughout a wide range in moisture content. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. In places, however, deep cuts made during grading and smoothing operations can expose the fragipan, which cannot be easily tilled. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility, help to control erosion, and maintain tilth and the content of organic matter. Contour farming and terraces also help to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. It is limited mainly by the medium fertility and the restricted rooting depth. Also, it is susceptible to erosion before the pasture grasses become established. Suitable pasture plants are improved bermudagrass, common bermudagrass, crimson clover, bahiagrass, ryegrass, and tall fescue. A seedbed should be prepared on the contour or across the slope if possible. Grasses and legumes grow well if adequate fertilizer is used. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland. The main limitations are the risk of soil compaction and severe competition from understory plants. Also, the restricted rooting depth can limit growth in some years. If site preparation is not adequate, competition from undesirable plants can prevent or delay the reestablishment of trees. Burning, spraying, cutting, and girdling can eliminate unwanted weeds, brush, and trees in areas that support pine. Harvesting only during the drier periods reduces the risk of soil compaction. The trees that are suitable for planting are loblolly pine, shortleaf pine, cherrybark oak, Shumard oak, water oak, pecan, and sweetgum.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. Leaving stubble and other crop residue on the surface in winter also improves the habitat for openland wildlife.

This soil is moderately well suited to recreational development. It is limited mainly by the wetness, the moderately slow permeability, and the hazard of erosion. Erosion control and a drainage system are needed in intensively used areas, such as playgrounds and camp areas. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area. If sanitary facilities are installed in recreational areas, sewage lagoons or self-contained sewage disposal units function better than septic tank absorption fields.

This soil is moderately well suited to urban uses. The main limitations are the wetness, the moderately slow permeability, and low strength on sites for local roads and streets. Because of the seasonal high water table, a drainage system may be needed on sites for buildings. The hazard of erosion increases if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Roads should be designed to offset the limited ability of the soil to support a load. Because of the high water table and the moderately slow permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIe, and the woodland ordination symbol is 10A.

MA—Maurepas muck. This soil is level and very poorly drained. It is ponded most of the time and is frequently flooded. It is in former stream channels of the old Arkansas River. It occurs as one mapped area about 265 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is very dark grayish brown muck about 10 inches thick. Below this to a depth of about 60 inches is dark brown muck.

Included with this soil in mapping are a few small areas of Hebert, Perry, Portland, and Yorktown soils. Hebert, Perry, and Portland soils are higher on the landscape than the Maurepas soil. Yorktown soils are in landscape positions similar to those of the Maurepas

Figure 4.—Wetland wildlife habitat in an area of Maurepas muck. Water tupelo is the main tree species in this area.

soil. Hebert soils are loamy throughout. Perry, Portland, and Yorktown soils have a clayey subsoil. Included soils make up about 15 percent of the map unit.

The Maurepas soil is characterized by high fertility. Water and air move through this soil at a rapid rate. The soil is ponded most of the time and is frequently flooded by runoff from the higher elevations. Typically, the seasonal high water table ranges from 1.0 foot above the surface to 0.5 foot below. If the soil is drained, the organic material initially shrinks to about half the original thickness as it dries. It then subsides further as a result of compaction and oxidation. This subsidence is most rapid during the first 2 years but continues at a rate of about 1 inch per year. The lower the water table, the more rapid the loss of organic material. The shrink-swell potential of this soil is low. The capacity of the soil to support a load also is low.

Most areas are used as habitat for wetland wildlife (fig. 4).

This soil is generally not suited to cultivated crops, pasture, urban use, and recreational development. The ponding, low strength, and the hazard of flooding are severe limitations affecting these uses.

This soil is poorly suited to woodland. Common trees in the area include baldcypress and water tupelo. Harvesting is very difficult because of the low ability of the soil to support a load. Trees can be harvested only by using specialized methods and equipment. Natural regeneration of trees is very slow.

This soil has fair potential as habitat for wetland wildlife. It supports only a limited variety of desirable food-producing plants. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants.

The land capability classification is VIIIw. No woodland ordination symbol is assigned.

Me—Mer Rouge silt loam. This soil is level and moderately well drained. It is mainly on broad flats on the alluvial plains of distributaries of the old Arkansas River. Individual areas range from about 20 to 400 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is about 47 inches thick. It is mottled. In sequence downward, it is black silty clay loam, very dark gray silty clay loam, dark yellowish brown silty clay loam, yellowish brown silt loam, yellowish red silty clay loam, and strong brown silt loam. The substratum to a depth of about 60 inches is stratified yellowish red and yellowish brown, mottled silt loam. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Gallion, Hebert, Perry, Rilla, and Sterlington soils. These soils do not have a very dark gray or very dark grayish brown surface layer. Gallion, Rilla, and Sterlington soils are slightly higher on the landscape than the Mer Rouge soil and are well drained. Hebert soils are in landscape positions similar to those of the Mer Rouge soil and are somewhat poorly drained. Perry soils are in the slightly lower positions on the landscape and are poorly drained. They have a clayey subsoil. Included soils make up about 15 percent of the map unit.

The Mer Rouge soil is characterized by high fertility. Water and air move through this soil at a moderately slow rate. An adequate supply of water is available to plants in most years. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 3 to 5 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

This soil is used mainly for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

This soil is well suited to cultivated crops. Cotton is the main crop, but corn, soybeans, and truck crops also are suitable. The soil is friable and can be easily tilled throughout a wide range in moisture content. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Maintaining crop residue on or near the surface helps to maintain tilth and the content of organic matter.

This soil is well suited to pasture. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, red clover, white clover, and vetch. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. The level of fertility generally is sufficient for sustained production of high-quality nonirrigated pasture. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is well suited to woodland, but only a few areas support native hardwoods. The main management concerns are the risk of soil compaction and moderate competition from understory plants. Among the trees that are suitable for planting are cherrybark oak, green ash, water oak, and pecan. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Harvesting during dry periods helps to prevent compaction.

This soil has good potential as habitat for openland and woodland wildlife. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. Oak trees are preferred plants for deer, squirrels, and turkey. Leaving small grain standing in fields provides food for doves, quail, turkeys, and nongame birds.

This soil is moderately well suited to recreational development. It has moderate limitations affecting camp areas, playgrounds, and picnic areas. The main limitation is the restricted permeability. A drainage system can improve the soil for use as playgrounds or camp areas. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of the area.

This soil is moderately well suited to urban uses. The main limitations are the wetness, the restricted permeability, the shrink-swell potential, and low strength on sites for local roads and streets. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is I, and the woodland ordination symbol is 3A.

Mg—Mer Rouge-Gallion silt loams. These soils are on the alluvial plains of distributaries of the old Arkansas River. The level, moderately well drained

Mer Rouge soil is on narrow flats. The nearly level, well drained Gallion soil is on low ridges and slight rises on natural levees. Individual areas of these soils occur in an irregular pattern on the landscape and range from about 20 to 500 acres in size. They are about 55 percent Mer Rouge soil and 35 percent Gallion soil. Slopes are 0 to 1 percent on the narrow flats and 0 to 2 percent on the low ridges and slight rises.

Typically, the surface layer of the Mer Rouge soil is very dark grayish brown silt loam about 4 inches thick. The subsoil is about 50 inches thick. In sequence downward, it is very dark gray, mottled silty clay loam; very dark grayish brown and brown silty clay loam; brown, mottled silt loam; yellowish brown, mottled loam; reddish brown silt loam; and brown, mottled silt loam. The substratum to a depth of about 60 inches is stratified reddish brown, mottled very fine sandy loam and brown, mottled silt loam.

The Mer Rouge soil is characterized by high fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. An adequate supply of water is available to plants in most years. A seasonal high water table is at a depth of about 3 to 5 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

Typically, the surface layer of the Gallion soil is dark grayish brown silt loam about 6 inches thick. The subsoil is about 29 inches thick. It is brown silt loam. The substratum to a depth of about 60 inches is brown very fine sandy loam.

The Gallion soil is characterized by high fertility. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. An adequate supply of water is available to plants in most years. The shrink-swell potential is moderate in the subsoil.

Included with these soils in mapping are a few small areas of Hebert, Perry, Portland, Rilla, and Sterlington soils. Hebert soils are slightly lower on the landscape than the Mer Rouge soil. They are grayish in the upper part of the profile. Perry and Portland soils are in swales and depressions and are poorly drained. They have a clayey subsoil. Rilla and Sterlington soils are slightly higher on the landscape than the Gallion soil. They have a subsoil that is very strongly acid or strongly acid. Included soils make up about 10 percent of the map unit.

The Mer Rouge and Gallion soils are used mainly for cultivated crops. A small acreage is used for pasture, homesite development, or woodland.

These soils are well suited to crops, mainly cotton, soybeans, and corn. They are friable and can be easily tilled throughout a wide range in moisture content. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. Most crops respond well to applications of fertilizer.

These soils are well suited to pasture. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, clover, and vetch. The level of fertility generally is sufficient for sustained production of high-quality nonirrigated pasture. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

These soils are well suited to woodland. Because they also are suited to cropland, however, most areas have been cleared for use as cropland or pasture. Few limitations affect woodland use and management. Compaction of the surface layer can be a problem if heavy equipment is used when the soils are wet. Competition from understory plants is moderate. Site preparation helps to control the initial growth of undesirable understory plants, and cutting and girdling help to control subsequent growth. The trees that are suitable for planting are cherrybark oak, Shumard oak, green ash, pecan, sweetgum, and water oak.

These soils have good potential as habitat for openland and woodland wildlife. Selective harvesting preserves large den- and mast-producing trees and thus improves the habitat for woodland wildlife. The habitat for openland wildlife can be improved by using a greater diversity of crops in rotation and planting crops in narrow strips. Leaving stubble from grain sorghum and similar crops on the surface provides cover for wildlife.

The Mer Rouge soil is moderately well suited to recreational development, and the Gallion soil is well suited. The main limitation is the restricted permeability in the Mer Rouge soil. Excess surface water can be removed by using shallow ditches and providing the proper grade. If septic tank absorption fields are installed in recreational areas, the restricted permeability in the Mer Rouge soil can be a concern. It can be overcome by enlarging the absorption field.

These soils are moderately well suited to urban uses. The main limitations are the restricted permeability, wetness, the shrink-swell potential, and low strength on sites for local roads and streets. Roads should be designed to offset the limited ability of the soils to support a load. Excess water can be removed by using shallow ditches and providing the proper grade. Reinforcing the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling of the subsoil. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Increasing the size of the absorption field can help to overcome the restricted permeability.

The land capability classification of both soils is I. The woodland ordination symbol of the Mer Rouge soil is 3A, and that of the Gallion soil is 9A.

Ne—Necessity silt loam, 1 to 3 percent slopes. This soil is very gently sloping and somewhat poorly drained. It is on low ridges and knolls on terraces. Individual areas are irregular in shape and range from 20 to 200 acres in size.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 29 inches. It is yellowish brown, mottled silty clay loam and silt loam. The next 4 inches is yellowish brown silty clay loam and light brownish gray, mottled silt loam. Below this to a depth of 60 inches or more is a fragipan. It is yellowish brown, mottled silt loam in the upper part and yellowish brown, mottled loam in the lower part. In places the surface layer is silty clay loam.

Included with this soil in mapping are a few small areas of Deerford, Dexter, Egypt, Gigger, and Gilbert soils. Deerford and Egypt soils are in landscape positions similar to those of the Necessity soil. They do not have a fragipan. Also, they have a high content of sodium in the subsoil. Dexter and Gigger soils are higher on the landscape than the Necessity soil. Dexter soils do not have a fragipan. Gigger soils do not have grayish mottles in the upper part of the subsoil. Gilbert soils are in the lower positions on the landscape and are poorly drained. They do not have a fragipan. Included soils make up about 15 percent of the map unit.

The Necessity soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. The effective rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a slow rate. A seasonal high water table is perched above the fragipan at a depth of about 1 to 2 feet during the period December through March. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is low.

This soil is used mainly for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

The Necessity soil is moderately well suited to cultivated crops, mainly cotton, corn, soybeans, grain sorghum, and truck crops. It is limited mainly by seasonal wetness, the slope, the medium fertility, and the potentially toxic level of exchangeable aluminum in the root zone. The soil is friable and can be easily tilled throughout a wide range in moisture content. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing also help to remove excess water. In places, however, deep cuts made during grading and smoothing operations can expose the fragipan. In areas where water of suitable quality is available, supplemental irrigation can prevent crop damage during dry periods. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Installing drop structures in grassed waterways helps to prevent gullying in places. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The slope and the medium fertility are the main limitations. The chief suitable pasture plants are common bermudagrass, improved bermudagrass, and bahiagrass. The soil is susceptible to erosion before the pasture grasses are established. Grazing when the soil is wet results in puddling of the surface layer, poor tilth, and excessive runoff. Excess surface water can be removed by surface ditches. Maintaining a vegetative cover on the surface helps to control erosion. Fertilizer and lime are needed for optimum production of forage. Proper grazing and weed control also help to maintain the pasture and improve the quality of the forage.

This soil is well suited to woodland. The main management concerns are the risk of soil compaction, moderate plant competition, and the equipment limitation caused by the wetness. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Harvesting only during dry periods helps to prevent soil compaction. In some years the restricted rooting depth can affect seedling survival because of inadequate soil moisture. The main suitable trees to plant are loblolly pine, Shumard oak, water oak, pecan, swamp chestnut oak, and cherrybark oak.

This soil has good potential as habitat for openland and woodland wildlife. Selective harvesting preserves large den- and mast-producing trees and thus improves the habitat for woodland wildlife. Providing suitable plants for food and cover along field borders can improve the habitat for doves, quail, rabbits, and nongame birds. In pine forests, controlled burning can increase the amount of palatable browse available to deer and the seed-producing plants available to quail and turkeys.

This soil is moderately well suited to recreational development. The main limitations are the wetness and the slow permeability. Also, erosion may be a hazard on playgrounds and in other intensively used areas. A drainage system can improve the soil for use as playgrounds or camp areas. Excess surface water can be removed by providing the proper grade. Maintaining an adequate plant cover by applying fertilizer and controlling traffic helps to prevent erosion and sedimentation and enhances the beauty of the area.

This soil is poorly suited to urban uses. The main limitations are the wetness, the slope, the slow permeability, and low strength on sites for local roads and streets. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. The hazard of erosion increases if the surface is exposed during site development. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Plans for homesite development should provide for the preservation of as many trees as possible. Plants can be difficult to establish in areas where the surface layer has been removed and the fragipan exposed. Mulching and applying fertilizer in cut areas help to establish plants. Roads should be designed to offset the limited ability of the soil to support a load. Because of the high water table and the slow permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IIe, and the woodland ordination symbol is 9W.

Ng—Necessity-Gilbert silt loams, gently undulating. These soils are on terraces. The level or very gently sloping, somewhat poorly drained Necessity soil is on low ridges and knolls. The level and poorly drained Gilbert soil is in swales and depressions. It is subject to rare flooding. Individual areas of these soils range from about 20 to 400 acres in size. They are about 50 percent Necessity soil and 35 percent Gilbert soil. Slopes are less than 1 percent in the swales and depressions and are 0 to 3 percent on the ridges and knolls.

Typically, the surface layer of the Necessity soil is brown silt loam about 7 inches thick. The upper part of the subsoil is yellowish brown, mottled silty clay loam about 9 inches thick. The next part is yellowish brown silty clay loam and light brownish gray, mottled silt loam about 11 inches thick. The next 4 inches is light brownish gray, mottled silt loam. Below this to a depth of about 51 inches is a fragipan. It is dark yellowish brown, mottled silt loam in the upper part and yellowish brown, mottled silt loam in the lower part. The next layer to a depth of about 60 inches is yellowish brown, mottled loam. In some low areas the surface layer is silty clay loam.

The Necessity soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a slow rate. Rooting depth is restricted by the fragipan. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years. Water runs off the surface at a slow rate. A seasonal high water table is perched above the fragipan at a depth of about 1 to 2 feet during the period December through March. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is low.

Typically, the surface layer of the Gilbert soil is grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is light brownish gray, mottled silt loam and silty clay loam in the upper part and light brownish gray, mottled silty clay loam in the lower part. In low areas the surface layer is silty clay loam.

The Gilbert soil is characterized by low fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur during unusually wet periods. Runoff is very slow. A seasonal high water table is within a depth of about 1.5 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is moderate in the subsoil. A high content of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are adversely affected by a lack of water during dry periods in the summer and fall of some years.

Included with these soils in mapping are a few small areas of Dexter, Egypt, Gigger, and Foley soils. Dexter and Gigger soils are higher on the landscape than the Necessity soil. Dexter soils are well drained and do not have a fragipan. Gigger soils are moderately well drained and do not have grayish mottles in the upper part of the subsoil. Egypt and Foley soils are in landscape positions similar to those of the Necessity soil. They do not have a fragipan. Also, Foley soils have a high content of sodium in the middle and lower parts of the subsoil. Included soils make up about 15 percent of the map unit.

The Necessity and Gilbert soils are used mainly for cultivated crops. A small acreage is used for pasture, homesite development, or woodland.

These soils are moderately well suited to cultivated crops, mainly cotton, soybeans, and rice. The main limitations are the wetness, the low or medium fertility, the slope, the potentially toxic level of exchangeable aluminum in the root zone, the sodium in the subsoil, and the restricted rooting depth. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water from the swales. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Properly designed irrigation systems are needed if rice is grown. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion on ridges. Erosion-control measures include seeding in early fall, minimizing tillage, and constructing terraces, diversions, and grassed waterways. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

These soils are moderately well suited to pasture. The main limitations are the wetness, the low or medium fertility, the slope, the restricted rooting depth, and the sodium in the subsoil. Suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue, bahiagrass, and vetch. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by using field ditches. A seedbed should be prepared on the contour or across the slope if possible. Applications of lime and fertilizer can help to overcome the low or medium fertility and can increase forage production. Rotation grazing also helps to maintain the quality of forage. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

These soils are moderately well suited to woodland. A few small areas support native hardwoods. The main management concerns are the equipment limitation and slight or moderate seedling mortality caused by the wetness. Also, plant competition is moderate or severe, and the soils can become compacted if heavy equipment is used during wet periods. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Planting and harvesting during dry periods can reduce the risk of soil compaction. The seasonal wetness, the restricted rooting depth, and the high content of sodium in the subsoil can affect seedling survival. Proper site preparation improves the seedling survival rate. Using planting stock that is larger than normally used can also improve seedling survival. The trees that are suitable for planting are loblolly pine, pecan, Shumard oak, sweetgum, cherrybark oak, swamp chestnut oak, willow oak, and water oak.

These soils have good or fair potential as habitat for openland and woodland wildlife. The Gilbert soil has good potential as habitat for wetland wildlife. Selective harvesting preserves large den- and mast-producing trees and thus improves the habitat for woodland wildlife. The habitat for openland wildlife can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants along field borders and in other areas near cropland. Constructing shallow ponds in areas of the Gilbert soil improves the habitat for wetland wildlife.

These soils are poorly suited to recreational development. They are limited mainly by the wetness and the restricted permeability. Also, the Necessity soil is susceptible to erosion and the Gilbert soil is subject to rare flooding. A drainage system can improve the soils for use as playgrounds or camp areas. Seeding or mulching cuts and fills and maintaining the plant cover help to control erosion. The plant cover can be maintained by applying fertilizer and controlling traffic. The flooding can be controlled, but large earthen levees and diversions are needed.

These soils are poorly suited to urban uses. The main limitations are the wetness, low strength on sites for local roads and streets, and the restricted permeability. Flooding and the shrink-swell potential also are concerns in areas of the Gilbert soil. Erosion is a minor hazard in areas of the Necessity soil. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Preserving the existing plant cover during construction or revegetating disturbed areas on construction sites as soon as possible helps to control erosion. Selecting adapted species for planting is critical for the establishment of lawns, shrubs, trees, and vegetable gardens because of the seasonal wetness, the restricted rooting depth, and the high content of sodium in the lower part of the subsoil. Unless the soils are irrigated, plants that tolerate droughtiness should be selected. Because of the high water table and the restricted permeability, septic tank absorption fields may not function properly. If flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used. Roads should be designed to offset the limited ability of the soils to support a load. Reinforcing the footings and foundations of buildings helps to prevent the structural damage caused by shrinking and swelling of the subsoil. The flooding can be controlled, but water pumps and major structures, such as levees, are needed.

The land capability classification of the Necessity soil is IIe, and the woodland ordination symbol is 9W. The land capability classification of the Gilbert soil is IIIw, and the woodland ordination symbol is 6W.

Pc—Perry silty clay loam. This soil is level and poorly drained. It is in backswamps and swales on the alluvial plains of the Boeuf River, Bayou Lafourche, and other former channels of the Arkansas River. It is protected from flooding. Individual areas are irregular in shape and range from 10 to 150 acres in size. Slopes are dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown silty clay loam about 6 inches thick. The subsoil is about 40 inches thick. It is gray, mottled clay. The next layer to a depth of about 60 inches is reddish brown, mottled clay.

Included with this soil in mapping are a few small areas of Forestdale, Hebert, Portland, Rilla, and Sterlington soils. Forestdale and Portland soils are slightly higher on the landscape than the Perry soil. Forestdale soils do not crack to a depth of 20 inches. Portland soils are brownish or reddish throughout. Hebert, Rilla, and Sterlington soils are higher on the landscape than the Perry soil. They are loamy throughout. Included soils make up about 15 percent of the map unit.

The Perry soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow or very slow rate. A seasonal high water table is within a depth of about 2 feet during the period December through June. The shrink-swell potential is very high. The surface layer remains wet for long periods after heavy rains. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops. A small acreage is used as woodland or pasture.

This soil is moderately well suited to cultivated crops, mainly rice, soybeans, and grain sorghum. It is limited mainly by the wetness and poor tilth. The medium fertility is a minor limitation. Good tilth is somewhat difficult to maintain. The soil can be worked within only a narrow range in moisture content. The surface layer is slightly sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter.

This soil is well suited to pasture. The main limitations are the wetness and the medium fertility. The chief suitable pasture plants are tall fescue, common bermudagrass, improved bermudagrass, bahiagrass, white clover, vetch, and southern winterpea. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by using field ditches. Grasses and legumes grow well if adequate fertilizer is used. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland. The main management concerns are a severe equipment limitation, moderate seedling mortality, and compaction caused by the wetness and by the stickiness of the surface layer. Also, competition from understory plants is severe. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Only trees that can tolerate seasonal wetness should be selected for planting. The trees that are suitable for planting are green ash, water oak, Nuttall oak, and sweetgum. Special site preparation, such as harrowing or bedding, helps to establish seedlings, reduces the seedling mortality rate, and increases early growth. Harvesting only during dry periods helps to prevent the formation of ruts and reduces the risk of soil compaction.

This soil has good potential as habitat for woodland and wetland wildlife and fair potential as habitat for openland wildlife. The habitat for deer and squirrels can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearing animals, such as mink, nutria, and raccoon. The habitat for openland wildlife can be improved by creating small undisturbed areas of appropriate vegetation near cropland.

This soil is poorly suited to recreational development. It is limited mainly by the wetness and the very slow permeability. Excess surface water can be removed by using shallow ditches and providing the proper grade. If sanitary facilities are established in recreational areas, sewage lagoons or self-contained sewage disposal units can be used.

This soil is poorly suited to urban uses. The main limitations are the wetness, the very high shrink-swell potential, low strength on sites for local roads and streets, and the very slow permeability. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the very slow permeability. Sewage lagoons or self-contained sewage disposal units can be used. Roads should be designed to offset the limited ability of the soil to support a load.

The land capability classification is IIIw, and the woodland ordination symbol is 3W.

Pd—Perry clay. This soil is level and poorly drained. It is in backswamps and swales on the alluvial plains of the Boeuf River, Bayou Lafourche, and other former channels of the Arkansas River. It is subject to rare flooding. Individual areas are irregular in shape and range from 10 to 1,200 acres in size. Slopes are dominantly less than 1 percent.

Typically, the surface layer is dark gray, mottled clay about 6 inches thick. The subsoil extends to a depth of about 60 inches. It is clay. It is gray and mottled in the upper part, dark reddish brown in the next part, and reddish brown in the lower part.

Included with this soil in mapping are a few small areas of Forestdale, Gallion, Hebert, Portland, and Rilla soils. Forestdale and Portland soils are slightly higher on the landscape than the Perry soil. Forestdale soils do not crack to a depth of 20 inches during dry periods. Portland soils are brownish or reddish throughout. Gallion, Hebert, and Rilla soils are higher on the landscape than the Perry soil. They are loamy throughout. Also included are a few small areas of loamy soils that occur as tiny islands in the backswamps. Included soils make up about 10 percent of the map unit.

The Perry soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur after high-intensity rains of long duration. Water runs off the surface at a slow or very slow rate. A seasonal high water table is within a depth of about 2 feet during the period December through June. The shrink-swell potential is very high. The surface layer remains wet for long periods after heavy rains. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops. A small acreage is used for woodland, pasture, or homesite development.

This soil is moderately well suited to cultivated crops, mainly rice, soybeans, and grain sorghum. It is limited mainly by the wetness and poor tilth. The medium fertility is a minor limitation. Good tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. The surface layer is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Minimizing tillage and returning crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter.

This soil is well suited to pasture. The main limitations are the wetness and the medium fertility. The chief suitable pasture plants are tall fescue, common bermudagrass, improved bermudagrass, Dallisgrass, bahiagrass, white clover, vetch, and southern winterpea. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Excess surface water can be removed by using surface ditches. Grasses and legumes grow well if adequate fertilizer is used. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland. The main management concerns are a severe equipment limitation, moderate seedling mortality, and the risk of soil compaction caused by the wetness and by the stickiness of the surface layer. Also, competition from understory plants is severe. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. Only trees that can tolerate seasonal wetness should be selected for planting. The trees that are suitable for planting are green ash, water oak, Nuttall oak, and sweetgum. Special site preparation, such as harrowing or bedding, improves seedling survival and increases early growth. Harvesting only during dry periods helps to prevent the formation of ruts and reduces the risk of soil compaction.

This soil has good potential as habitat for woodland and wetland wildlife and fair potential as habitat for openland wildlife. The habitat for deer and squirrels can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearing animals, such as mink and raccoons. The habitat for openland wildlife can be improved by creating small undisturbed areas of appropriate vegetation near cropland.

This soil is poorly suited to recreational development. It is limited mainly by the wetness, the very slow permeability, and the clay surface layer. The flooding is a hazard in camp areas. Excess surface water can be removed by using shallow ditches and providing the proper grade. The flooding can be controlled only by using water pumps and building large structures, such as earthen levees. If the soil is used as a site for playgrounds or camp areas, the stickiness of the surface layer is a limitation. Adding loamy material to the surface reduces the stickiness.

This soil is poorly suited to urban uses. The main concerns are the wetness, the flooding, the very high shrink-swell potential, low strength on sites for local roads and streets, and the very slow permeability. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling. Roads and streets should be specially designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the very slow permeability. If flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used. The flooding can be controlled only by using water pumps and building large structures, such as earthen levees.

The land capability classification is IIIw, and the woodland ordination symbol is 3W.

Pe—Perry clay, occasionally flooded. This soil is level and poorly drained. It is in backswamps and swales on the alluvial plains of the Boeuf River, Bayou Lafourche, and other former distributary channels of the Arkansas River. It is subject to occasional flooding. Individual areas are irregular in shape and range from 10 to 300 acres in size. Slopes are dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown clay about 5 inches thick. The subsoil extends to a depth of about 60 inches. It is clay. It is gray and mottled in the upper part and yellowish red and reddish brown in the lower part.

Included with this soil in mapping are a few small areas of Forestdale, Hebert, and Portland soils. Forestdale and Portland soils are slightly higher on the landscape than the Perry soil. Forestdale soils do not crack to a depth of 20 inches during dry periods. Portland soils are brownish or reddish throughout. Hebert soils are in the higher positions on the landscape. They are loamy throughout. Also included are a few small areas of silty soils that occur as tiny islands in some backswamps. Included soils make up about 15 percent of the map unit.

The Perry soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs slowly or very slowly off the surface. The soil is subject to brief to very long periods of flooding. A seasonal high water table is within a depth of about 2 feet during the period December through June. The shrink-swell potential is very high. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops or as woodland. A small acreage is used as pasture.

This soil is moderately well suited to woodland. The main management concerns are a severe equipment limitation, moderate seedling mortality, and compaction caused by flooding, wetness, and the clay surface layer. Also, competition from understory plants is severe. Planting and harvesting during dry periods can help to prevent the formation of ruts and reduce the risk of soil compaction. Competing vegetation can be controlled by proper site preparation. Also, cutting or girdling can eliminate unwanted weeds, brush, and trees. Only trees that can tolerate seasonal wetness should be selected for planting. Special site preparation, such as harrowing or bedding, improves seedling survival. The trees that are suitable for planting are water oak, green ash, Nuttall oak, and sweetgum.

This soil is poorly suited to cultivated crops. It is limited mainly by the wetness, poor tilth, and the hazard of flooding. The medium fertility is a minor limitation. Soybeans, rice, and grain sorghum are the main crops. The surface layer is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Planting is delayed and crops are damaged by flooding in spring. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or grass-legume mixtures help to maintain fertility and tilth. The flooding can be controlled only by using water pumps and building large structures, such as earthen levees.

This soil is moderately well suited to pasture. The main limitation is the wetness. Flooding is a hazard. The medium fertility is a minor limitation. Suitable pasture plants are common bermudagrass, southern winterpea, vetch, and adapted native grasses. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. During periods of flooding, cattle can be moved to pastures that are protected from flooding or that are in the higher elevations.

This soil has fair potential as habitat for openland, woodland, and wetland wildlife. The habitat for woodland wildlife can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for waterfowl and furbearers can be improved by constructing shallow ponds and planting appropriate vegetation around the ponds. Leaving stubble from grain sorghum and similar plants on the surface in winter provides food and cover for rabbits, quail, and nongame birds.

This soil is poorly suited to recreational development because of the flooding and the wetness. The restricted permeability and the clay surface layer are additional limitations. The flooding can be controlled, but major structures, such as earthen levees, are needed. The seasonal wetness can be reduced by using surface ditches and providing the proper grade. The clay surface layer is sticky when wet. Adding loamy material to the surface reduces the stickiness.

This soil is poorly suited to urban uses. It is not suited to dwellings because of the hazard of flooding. The main limitations are the wetness, the very high shrink-swell potential, low strength on sites for roads, and the restricted permeability. Major flood-control structures and extensive local drainage systems are needed to protect the soil from flooding. Roads and streets should be established above the level of flooding. Constructing buildings on pilings or high mounds elevates them above the level of flooding. If the flooding is controlled, sewage lagoons or self-contained sewage disposal units can be used.

The land capability classification is IVw, and the woodland ordination symbol is 3W.

Po—Portland silty clay loam. This soil is level and somewhat poorly drained. It is on slight rises on the alluvial plains of the Boeuf River, Bayou Lafourche, and other former channels of the Arkansas River. It is protected from flooding. Individual areas are irregular in shape and range from 10 to 200 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is about 6 inches thick. It is dark brown silty clay loam. The next layer is dark grayish brown, mottled clay about 6 inches thick. The subsoil is about 32 inches thick. It is reddish brown clay. The substratum to a depth of about 60 inches also is reddish brown clay. In places the surface layer is silty clay.

Included with this soil in mapping are a few small areas of Hebert, Perry, Rilla, and Sterlington soils. Hebert, Rilla, and Sterlington soils are higher on the landscape than the Portland soil. They are loamy throughout. Perry soils are in the slightly lower positions on the landscape. They are grayish in the upper part of the subsoil. Included soils make up about 15 percent of the map unit.

The Portland soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow rate. A perched seasonal high water table is at a depth of about 1 to 2 feet during the period December through May. The shrink-swell potential is high. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops. A small acreage is used for pasture or woodland.

This soil is moderately well suited to cultivated crops, mainly rice, soybeans, and grain sorghum. It is limited mainly by wetness and poor tilth. The medium fertility is a minor limitation. The surface layer is slightly sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. A flooding irrigation system is needed if rice is grown. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. Returning crop residue to the soil or regularly adding other organic material improves fertility and tilth and increases the content of organic matter.

This soil is well suited to pasture. The main limitation is the wetness. The medium fertility is a minor limitation. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. The main suitable pasture plants are improved bermudagrass, common bermudagrass, Dallisgrass, bahiagrass, white clover, tall fescue, vetch, and southern winterpea. Fertilizer is needed for optimum growth of grasses and legumes.

This soil is well suited to woodland. The main management concerns are a moderate equipment limitation, moderate seedling mortality, and the risk of soil compaction caused by wetness. Plant competition is severe. Only trees that can tolerate the seasonal wetness should be selected for planting. Among the trees that are suitable for planting are green ash, water oak, Nuttall oak, and sweetgum. Conventional harvest methods generally are suitable, but compaction may be a problem if heavy equipment is used during wet periods. Bedding and a surface drainage system can improve seedling survival. Harvesting during dry periods reduces the risk of surface compaction. Competing vegetation can be controlled by proper site preparation. Cutting or girdling eliminates unwanted weeds, brush, and trees.

This soil has good potential as habitat for openland, wetland, and woodland wildlife. The habitat for deer, turkeys, and squirrels can be improved by planting oak trees and desirable understory plants or encouraging the growth of existing suitable vegetation. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as nutria, mink, and raccoons. Planting grasses and legumes around field borders provides food and cover for rabbits, quail, and nongame birds and animals.

This soil is poorly suited to recreational development. The main limitations are the wetness and the restricted permeability. Excess surface water can be removed by using shallow ditches and providing the proper grade. If sanitary facilities are established in recreational areas, sewage lagoons or self-contained sewage disposal units can be used.

This soil is poorly suited to urban uses. It is severely limited as a site for buildings, local roads and streets, and most kinds of sanitary facilities. The main limitations are the wetness, the restricted permeability, low strength on sites for local roads and streets, and the high shrink-swell potential. A drainage system may be needed on sites for roads and around building foundations. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIIw, and the woodland ordination symbol is 8W.

Pr—Portland clay. This level and somewhat poorly drained soil is on slight rises on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. It is subject to rare flooding. Individual areas range from about 10 to 20 acres in size. Slopes are dominantly less than 1 percent.

Typically, the surface layer is dark brown clay about 5 inches thick. The subsoil is about 45 inches thick. It is dark brown, mottled clay in the upper part and reddish brown, mottled clay in the lower part. The substratum to a depth of about 60 inches is reddish brown clay.

Included with this soil in mapping are a few small areas of Gallion, Hebert, Perry, Rilla, and Sterlington soils. Gallion, Hebert, Rilla, and Sterlington soils are higher on the landscape than the Portland soil. They are loamy throughout. Perry soils are in the slightly lower positions on the landscape. They are grayish in the upper part of the subsoil. Included soils make up about 10 percent of the map unit.

The Portland soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow rate. Although flooding is rare, it can occur during unusually wet periods. A perched seasonal high water table is at a depth of about 1 to 2 feet during the period December through May. The surface layer remains wet for long periods after heavy rains. The shrink-swell potential is high. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches thick. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops. A small acreage is used for pasture, homesite development, or woodland.

This soil is moderately well suited to cultivated crops, mainly rice, soybeans, and grain sorghum. It is limited mainly by wetness and poor tilth. The medium fertility is a minor limitation. Good tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. The surface layer becomes cloddy if tilled when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter.

This soil is well suited to pasture. The main limitation is the wetness. The medium fertility is a minor limitation. Suitable pasture plants are common bermudagrass, improved bermudagrass, Dallisgrass, bahiagrass, white clover, red clover, tall fescue, vetch, and southern winterpea. Grazing when the soil is wet results in puddling of the surface layer and damages the plant community. Fertilizer is needed for optimum growth of grasses and legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a moderate equipment limitation, the risk of soil compaction, and moderate seedling mortality caused by wetness and the clay surface layer. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees.

Only trees that can tolerate the seasonal wetness should be selected for planting. Among the trees that are suitable for planting are water oak, Nuttall oak, green ash, and sweetgum. Using containerized seedlings or special planting stock that is larger than normally used can reduce the seedling mortality rate. Planting and harvesting during dry periods can help to prevent the formation of ruts and reduce the risk of soil compaction.

This soil has good potential as habitat for openland, woodland, and wetland wildlife. The habitat for woodland wildlife can be improved by planting suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as nutria, mink, and raccoons. Planting grasses and legumes in narrow strips with other crops improves the habitat for doves, quail, rabbits, and nongame birds and animals.

This soil is poorly suited to recreational development. The main limitations are the wetness, the very slow permeability, and the clay surface layer. The rare flooding is a hazard in camp areas. Excess water can be removed by using shallow ditches and providing the proper grade. The soil can be improved for most recreational uses by adding a layer of loamy material to the surface. The flooding can be controlled by constructing earthen levees and diversions.

This soil is poorly suited to urban development because of the wetness, the flooding, the high shrink-swell potential, the very slow permeability, low strength on sites for local roads and streets, and the clay surface layer. A drainage system may be needed on sites for roads and around building foundations. Roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the very slow permeability. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling. The flooding can be controlled by constructing earthen levees and diversions.

The land capability classification is IIIw, and the woodland ordination symbol is 8W.

Ra—Rilla silt loam, 0 to 1 percent slopes. This soil is level and well drained. It is on natural levees on the alluvial plains of the Boeuf River and other former channels or distributaries of the Arkansas River. Individual areas are irregular in shape and range from 10 to 500 acres in size.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsurface layer is very pale brown silt loam about 6 inches thick. The subsoil is yellowish red silt loam about 25 inches thick. The substratum to a depth of about 60 inches is yellowish red very fine sandy loam. In some places the soil has less clay in the subsoil. In other places slopes range from 1 to 3 percent.

Included with this soil in mapping are a few small areas of Gallion, Hebert, Perry, Portland, and Sterlington soils. Gallion soils are slightly lower on the landscape than the Rilla soil. Also, they are more alkaline in the subsoil. Hebert, Perry, and Portland soils are in the lower positions on the landscape. Hebert soils have a subsoil that is grayish in the upper part. Perry and Portland soils have a clayey subsoil. Sterlington soils are in landscape positions similar to those of the Rilla soil. Included soils make up about 10 percent of the map unit.

The Rilla soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 4 to 6 feet during the period December through April. The shrink-swell potential is moderate.

Most areas are used for cultivated crops. A small acreage is used for homesite development, pasture, orchards, or woodland.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn (fig. 5), and grain sorghum. The main limitations are the medium fertility and the potentially toxic level of exchangeable aluminum in the root zone. The soil is friable and can be easily tilled throughout a wide range in moisture content. A tillage pan forms easily, however, if the soil is tilled when wet. Chiseling or subsoiling can break up the tillage pan. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The medium fertility is a minor limitation. The main suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, tall fescue, white clover, vetch, and southern winterpea. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is well suited to woodland, but very few areas support native trees. Few limitations affect timber

Figure 5.—Corn in an area of Rilla silt loam, 0 to 1 percent slopes. Corn is an important cash crop in the survey area.

production. The trees that are suitable for planting are sweetgum, cherrybark oak, Shumard oak, water oak, and pecan.

This soil has good potential as habitat for woodland and openland wildlife. Wildlife habitat can be improved by planting appropriate vegetation or promoting the natural establishment of desirable plants. The habitat for white-tailed deer, turkeys, and squirrels can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. Using a greater diversity of crops in rotation and planting crops in narrow strips can improve the habitat for doves, quail, rabbits, and nongame birds and animals. Leaving crop residue on the surface in winter provides additional food and cover for openland wildlife.

This soil is well suited to recreational development. Few limitations affect this use.

This soil is moderately well suited to urban uses. It has moderate limitations if used as a site for dwellings, small commercial buildings, shallow excavations, and most kinds of sanitary facilities. The main limitations are the wetness, the shrink-swell potential, low strength on sites for local roads and streets, and the restricted permeability. Buildings and roads should be designed to offset the adverse effects of shrinking and swelling, and roads should be designed to offset the limited ability of the soil to support a load. The restricted permeability is a limitation on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field.

The land capability classification is I, and the woodland ordination symbol is 9A.

Rb—Rilla silt loam, 1 to 3 percent slopes. This soil is very gently sloping and well drained. It is on natural levees on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. Individual areas range from about 10 to 100 acres in size.

Typically, the surface layer is dark grayish brown and brown silt loam about 4 inches thick. The subsurface layer is brown, mottled silt loam about 6 inches thick. The subsoil is about 40 inches thick. It is mottled reddish brown and yellowish red silty clay loam in the upper part, reddish brown silty clay loam in the next part, and reddish brown silt loam in the lower part. The substratum to a depth of about 60 inches is stratified brown and yellowish red very fine sandy loam. In places slopes are more than 3 percent.

Included with this soil in mapping are a few small areas of Hebert, Perry, Portland, and Sterlington soils. Hebert soils are lower on the landscape than the Rilla soil. They have a subsoil that is grayish in the upper part. Perry and Portland soils are in the lower positions on the landscape. They have a clayey subsoil. Sterlington soils are in landscape positions similar to those of the Rilla soil. They contain less clay in the subsoil than the Rilla soil. Included soils make up about 10 percent of the map unit.

The Rilla soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. A seasonal high water table is at a depth of about 4 to 6 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

Most areas are used for cultivated crops. A small acreage is used for homesite development, pasture, or woodland.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, and grain sorghum. It is limited mainly by the slope, the medium fertility, and the potentially toxic level of exchangeable aluminum in the root zone. A tillage pan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the tillage pan. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Using stubble-mulch tillage and tilling and seeding on the contour or across the slope reduce the hazard of erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. Few limitations affect this use, but the soil is susceptible to erosion before the pasture grasses are established. Also, the medium fertility is a minor limitation. The main suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, tall fescue, white clover, southern winterpea, and vetch. Fertilizer and lime are needed for optimum growth of grasses and legumes.

This soil is well suited to woodland. The potential production of southern hardwoods is high. The trees that are suitable for planting are pecan, Shumard oak, water oak, sweetgum, and cherrybark oak.

This soil has good potential as habitat for woodland and openland wildlife. Leaving stubble and other crop residue on the surface in winter provides food and cover for rabbits, doves, and quail. Planting appropriate vegetation in selected areas and protecting the areas from disturbance also improve the habitat. In wooded areas, selective harvesting preserves some of the large mast-producing trees and thus improves the habitat for deer, turkeys, and squirrels.

This soil is well suited to recreational development. Erosion can be a hazard in playground areas. Maintaining a vegetative cover by applying fertilizer and controlling traffic helps to control erosion.

This soil is moderately well suited to urban uses. On sites for buildings, shallow excavations, and most kinds of sanitary facilities, the main limitations are the wetness, the shrink-swell potential, and the restricted permeability. Low strength is a severe limitation on sites for local roads and streets. Buildings and roads should be designed to offset the limited ability of the soil to support a load. Septic tank absorption fields do not function properly during rainy periods because of the wetness and the restricted permeability. Revegetating disturbed areas on construction sites as soon as possible helps to control erosion.

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

Rh—Rilla-Hebert silt loams, gently undulating. These soils are on natural levees on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. The well drained, very gently sloping Rilla soil is on narrow, convex ridges. The somewhat poorly drained, level Hebert soil is on narrow flats and in swales. Individual areas range from about 20 to 1,000 acres in size. They are about 50 percent Rilla soil and 40 percent Hebert soil. Slopes range from 1 to 3 percent on the ridges and are 0 to 1 percent on the narrow flats and in the swales.

Typically, the surface layer of the Rilla soil is brown silt loam about 5 inches thick. The subsurface layer also is brown silt loam. It is about 3 inches thick. The subsoil is about 28 inches thick. It is yellowish red silt loam in the upper part, yellowish red silty clay loam in the next part, and yellowish red silt loam in the lower part. The substratum to a depth of about 60 inches is yellowish red, mottled very fine sandy loam. In places slopes are more than 3 percent.

The Rilla soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. A seasonal high water table is at a depth of about 4 to 6 feet during the period December through April. The shrink-swell potential is moderate.

Typically, the surface layer of the Hebert soil is dark grayish brown silt loam about 5 inches thick. The

Figure 6.—Grain sorghum in an area of Rilla-Hebert silt loams, gently undulating.

subsurface layer is grayish brown, mottled silt loam about 7 inches thick. The subsoil is about 28 inches thick. It is grayish brown, mottled silty clay loam in the upper part; reddish brown, mottled silty clay loam in the next part; and reddish brown silt loam in the lower part. The substratum to a depth of about 60 inches is reddish brown very fine sandy loam.

The Hebert soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.5 to 3.0 feet during the period December through April. The shrink-swell potential is moderate in the subsoil.

Included with these soils in mapping are few small areas of Perry, Portland, and Sterlington soils. Perry and Portland soils are lower on the landscape than the Hebert soil. They have a clayey subsoil. Sterlington soils are in landscape positions similar to those of the Rilla soil. They contain less clay in the subsoil than the Rilla soil. Included soils make up about 10 percent of the map unit.

Most areas of the Rilla and Hebert soils are used for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

These soils are well suited to cultivated crops, mainly cotton, soybeans, corn, grain sorghum (fig. 6), and truck crops. The main limitations are the wetness of the Hebert soil and the slope in areas of the Rilla soil. The medium fertility is a minor limitation in both soils, and the potentially toxic level of exchangeable aluminum in the root zone is an additional limitation in the Rilla soil. Proper row arrangement, field ditches, and suitable outlets are needed to remove excess surface water. Land grading and smoothing can reduce the amount of excess water, but moving large volumes of soil may be necessary in places. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum. The soils can be easily tilled throughout a wide range in moisture content.

These soils are well suited to pasture. The main limitations are the wetness of the Hebert soil and the medium fertility in both soils. The main suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, tall fescue, white clover, southern winterpea, and vetch. Fertilizer is needed for optimum growth of grasses and legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Shallow ditches and suitable outlets can remove excess surface water.

These soils are well suited to woodland. Compaction of the surface layer can be a problem, however, if heavy equipment is used when the soils are wet. Also, plant competition is moderate. The trees that are suitable for planting are sweetgum, pecan, water oak, Shumard oak, and cherrybark oak. Scheduling site preparation and planting and harvesting activities during dry periods reduces the risk of soil compaction.

These soils are well suited to use as habitat for woodland and openland wildlife. The habitat for woodland wildlife can be improved by planting oak trees and desirable understory plants or promoting the natural establishment of existing suitable vegetation. Using a diversity of crops in rotation and planting crops in narrow strips improve the habitat for doves, quail, rabbits, and nongame birds and animals.

These soils are well suited to recreational development. The slope is the main limitation in areas of the Rilla soil. The Hebert soil is limited mainly by the wetness and the restricted permeability. Excess surface water can be removed by using shallow ditches and providing the proper grade. In playground areas on the Rilla soil, erosion is a hazard. Maintaining a vegetative cover and controlling traffic help to control runoff and erosion.

These soils are moderately well suited to urban uses. The main limitations are the wetness, low strength on sites for local roads and streets, the shrink-swell potential, and the restricted permeability. A drainage system may be needed on sites for roads and around building foundations. Roads should be designed to offset the limited ability of the soils to support a load. Because of the wetness and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification of the Rilla soil is IIe, and the woodland ordination symbol is 9A. The land capability classification of the Hebert soil is IIIw, and the woodland ordination symbol is 8W.

Sa—Sharkey clay. This soil is level and poorly drained. It is on broad flats on the alluvial plains of Bayou Macon. It is subject to rare flooding. Individual areas are irregular in shape and range from 10 to several thousand acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown, mottled clay about 3 inches thick. The subsurface layer is dark gray, mottled clay about 6 inches thick. The subsoil also is dark gray, mottled clay. It is about 40 inches thick. The substratum to a depth of about 60 inches is olive gray, mottled clay. In places slopes are more than 1 percent.

Included with this soil in mapping are a few small areas of Dundee and Tensas soils. Dundee soils are higher on the landscape than the Sharkey soil. They are loamy throughout. Tensas soils are in the slightly higher positions on the landscape. They have a subsoil that is clayey in the upper part and loamy in the lower part. Included soils make up about 10 percent of the map unit.

The Sharkey soil is characterized by high fertility. Water and air move through this soil at a very slow rate. Although flooding is rare, it can occur during unusually wet periods. Water runs very slowly off the surface and stands in low areas for long periods after rains. A seasonal high water table is within a depth of about 2 feet during the period December through April. The shrink-swell potential is very high. The surface layer is very sticky when wet and very hard when dry. It dries slowly once it becomes wet. An adequate supply of water is available to plants in most years. During dry periods, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Most areas are used for cultivated crops. A small acreage is used as woodland, pasture, or wildlife habitat.

This soil is moderately well suited to cultivated crops. It is limited mainly by the wetness and poor tilth. Soybeans, rice, wheat, and grain sorghum are the main crops. Tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. The surface layer is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. A drainage system is needed for most cultivated crops and pasture plants. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Properly designed irrigation systems are needed if rice is grown. Land grading and smoothing can improve surface drainage, allow more uniform application of irrigation water, and permit more efficient use of farm equipment. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material help to maintain fertility, tilth, and the content of organic matter.

This soil is well suited to pasture. The main limitation is the wetness. The chief suitable pasture plants are tall fescue, Dallisgrass, bahiagrass, common bermudagrass, and improved bermudagrass. White clover, vetch, and southern winterpea are adapted cool-season legumes. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a severe equipment limitation, moderate seedling mortality, severe plant competition, and the risk of soil compaction caused by wetness. Unsurfaced roads and skid trails are sticky or slippery when wet and can be impassable during rainy periods. Because the soil is sticky when wet, most kinds of planting and harvesting equipment can be used only during dry periods. Soil compaction can be minimized by using suitable logging systems, laying out skid trails in advance, and harvesting during periods when the soil is least susceptible to compaction. Only trees that can tolerate seasonal wetness, such as green ash, sweetgum, and Nuttall oak, should be selected for planting. Bedding the rows helps to overcome the wetness and improves seedling survival. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants.

This soil has good potential as habitat for woodland and wetland wildlife and fair potential as habitat for openland wildlife. Management practices that enhance the growth of oaks and other mast-producing trees can improve the habitat for white-tailed deer and squirrels. Constructing shallow ponds can improve the habitat for waterfowl and furbearers. The habitat for openland wildlife species, such as rabbits, quail, and doves, can be improved by creating small, undisturbed areas of appropriate vegetation near cropland.

This soil is poorly suited to recreational development. It is limited mainly by the wetness, the restricted permeability, and the clayey surface layer. The rare flooding is a hazard in camp areas. A drainage system can improve the soil for use as playgrounds or camp areas. The stickiness of the clayey surface layer can be overcome by adding a layer of loamy material to the surface. The flooding can be controlled, but only by using major structures, such as large earthen levees.

This soil is poorly suited to urban uses. The main concerns are the wetness, the flooding, the shrink-swell potential, the restricted permeability, and low strength on sites for local roads and streets. Excess water can be removed by using shallow ditches and providing the proper grade. Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling. Because of the wetness and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Roads should be designed to offset the limited ability of the soil to support a load. The flooding can be controlled only by using water pumps and building major structures, such as large earthen levees.

The land capability classification is IIIw, and the woodland ordination symbol is 7W.

Sg—Sterlington silt loam, 0 to 1 percent slopes. This soil is level and well drained. It is on natural levees on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. Individual areas are irregular in shape and range from 10 to 200 acres in size.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The subsurface layer is brown, mottled silt loam about 4 inches thick. The subsoil is silt loam about 26 inches thick. It is yellowish red in the upper part, yellowish red and brown in the next part, and yellowish red in the lower part. The substratum to a depth of about 60 inches is stratified brown and yellowish red very fine sandy loam.

Included with this soil in mapping are a few small areas of Hebert, Perry, Portland, and Rilla soils. Hebert, Perry, and Portland soils are lower on the landscape than the Sterlington soil. Hebert soils have a grayish subsoil. Perry and Portland soils have a clayey subsoil. Rilla soils are in landscape positions similar to those of the Sterlington soil. They have more clay in the subsoil than the Sterlington soil. Included soils make up about 15 percent of the map unit.

The Sterlington soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. The surface layer dries quickly after rains. The shrink-swell potential is low.

Most areas are used for cultivated crops. A small

acreage is used as pasture or for homesite development.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, grain sorghum, and truck crops. The main limitations are the medium fertility and the potentially toxic level of exchangeable aluminum in the root zone. The soil is friable and can be easily tilled throughout a wide range in moisture content. Traffic pans develop easily, but they can be broken up by deep plowing or chiseling. Returning crop residue to the soil or regularly adding other organic material improves fertility, reduces crusting, and increases the content of organic matter. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The medium fertility is a minor limitation. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, white clover, southern winterpea, and vetch. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is well suited to woodland, but only a few areas support native hardwoods. Competition from understory plants is moderate. Competing vegetation can be controlled by proper site preparation. Cutting or girdling eliminates unwanted weeds, brush, and trees. The trees that are suitable for planting are cherrybark oak, pecan, Shumard oak, water oak, and sweetgum.

This soil has good potential as habitat for woodland and openland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. The habitat for woodland wildlife can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. Planting suitable grasses and legumes along field borders provides additional food and cover for rabbits, quail, doves, and nongame birds and animals.

This soil is well suited to recreational development. Few limitations affect this use.

This soil is well suited to urban uses. Few limitations affect building sites and local roads and streets. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. It can be overcome by increasing the size of the absorption field.

The land capability classification is I, and the woodland ordination symbol is 3A.

Sr—Sterlington silt loam, 1 to 3 percent slopes. This soil is very gently sloping and well drained. It is on natural levees on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. Individual areas are long and narrow and range from 10 to 200 acres in size.

Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil is about 38 inches thick. It is yellowish red silt loam in the upper part, brown very fine sandy loam in the next part, and yellowish red silt loam in the lower part. The substratum to a depth of about 60 inches is reddish brown silt loam. In places slopes are more than 3 percent.

Included with this soil in mapping are a few small areas of Hebert and Rilla soils. Hebert soils are lower on the landscape than the Sterlington soil. They are grayish in the upper part of the subsoil. Rilla soils are in landscape positions similar to those of the Sterlington soil. They contain more clay in the subsoil than the Sterlington soil. Included soils make up about 15 percent of the map unit.

The Sterlington soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The surface layer dries quickly after rains. The shrink-swell potential is low.

Most areas are used for cultivated crops. A small acreage is used as pasture or for homesite development.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, grain sorghum, and truck crops. It is limited mainly by the slope. The medium fertility and the potentially toxic level of exchangeable aluminum in the root zone are additional limitations. The soil is friable and can be easily tilled throughout a wide range in moisture content, but it should be tilled on the contour or across the slope. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

This soil is well suited to pasture. The medium fertility is a minor limitation. The soil is subject to erosion before the pasture grasses are established. Suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, white clover, southern winterpea, and vetch. A seedbed should be prepared on the contour or across the slope if possible. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This soil is well suited to woodland, but only a few areas support native hardwoods. Competition from understory plants is moderate. It can be controlled by proper site preparation. The trees that are suitable for planting are cherrybark oak, Shumard oak, water oak, pecan, and sweetgum.

This soil has good potential as habitat for woodland and openland wildlife. Wildlife habitat can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants. The habitat for woodland wildlife can be improved by planting trees and suitable understory plants or encouraging the growth of existing suitable vegetation. Planting grasses and legumes along field borders and leaving patches of grain standing in fields provide food and cover for rabbits, quail, doves, and many nongame birds and animals.

This soil is well suited to recreational development. The main limitation is the slope. In areas used for playgrounds, maintaining the plant cover helps to control erosion.

This soil is well suited to urban uses. Few limitations affect building sites and local roads and streets. The restricted permeability is a moderate limitation on sites for septic tank absorption fields. It can be overcome by enlarging the absorption area.

The land capability classification is IIe, and the woodland ordination symbol is 3A.

St—Sterlington-Hebert silt loams, gently undulating. These soils are on natural levees on the alluvial plains of the Boeuf River and other former channels of the Arkansas River. The well drained Sterlington soil is on narrow, convex ridges, and the somewhat poorly drained Hebert soil is on narrow flats and in swales. Individual areas range from about 20 to 1,000 acres in size. They are about 50 percent Sterlington soil and 40 percent Hebert soil. Slopes range from 1 to 3 percent on the ridges and from 0 to 2 percent in the swales and on narrow flats.

Typically, the surface layer of the Sterlington soil is dark brown silt loam about 5 inches thick. The subsurface layer is pale brown silt loam about 7 inches thick. The subsoil is about 38 inches thick. It is yellowish red very fine sandy loam in the upper part, yellowish red silt loam in the next part, and brown very fine sandy loam in the lower part. The substratum to a depth of about 60 inches is yellowish red very fine sandy loam. In places slopes are more than 3 percent.

The Sterlington soil is characterized by medium fertility and a level of exchangeable aluminum that is potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The surface layer dries quickly after rains. The shrink-swell potential is low.

Typically, the surface layer of the Hebert soil is dark grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is grayish brown silt loam about 10 inches thick. The subsoil is about 29 inches thick. It is brown, mottled silt loam in the upper part; reddish brown, mottled silty clay loam in the next part; and yellowish red silty clay loam in the lower part. The substratum to a depth of about 60 inches is reddish brown silt loam.

The Hebert soil is characterized by medium fertility. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.5 to 3.0 feet during the period December through April. The shrink-swell potential is moderate.

Included with these soils in mapping are a few small areas of Perry, Portland, and Rilla soils. Perry and Portland soils are lower on the landscape than the Sterlington and Hebert soils. They have a clayey subsoil. Rilla soils are in landscape positions similar to those of the Sterlington soil. They have more clay in the subsoil than the Sterlington soil. Included soils make up about 10 percent of the map unit.

Most areas of the Sterlington and Hebert soils are used for cultivated crops. A small acreage is used for pasture, woodland, or homesite development.

These soils are well suited to cultivated crops, mainly cotton, soybeans, grain sorghum, and truck crops. The main limitations are the wetness of the Hebert soil and the slope in areas of the Sterlington soil. The medium fertility and the potentially toxic level of exchangeable aluminum in the root zone are additional limitations. The soils are friable and can be easily tilled throughout a wide range in moisture content. A tillage pan forms easily if the soils are tilled when wet. Chiseling or subsoiling can break up the tillage pan. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing remove excess water, but moving large volumes of soil may be necessary in places. Leaving crop residue on or near the surface conserves moisture, maintains tilth, and helps to control erosion. Most crops respond well to applications of lime and fertilizer, which improve fertility and reduce the high level of exchangeable aluminum.

These soils are well suited to pasture. The main limitations are the wetness and the medium fertility. The Sterlington soil is susceptible to erosion before the pasture grasses are established. The main suitable pasture plants are improved bermudagrass, common bermudagrass, bahiagrass, tall fescue, white clover, southern winterpea, and vetch. Fertilizer and lime are needed for optimum production of forage. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Shallow ditches can remove excess surface water.

These soils are well suited to woodland, but only a few areas support native hardwoods. The main management concerns are the equipment limitation, the risk of soil compaction caused by the wetness, and moderate competition from understory plants. Competing vegetation can be controlled by proper site preparation. Scheduling site preparation and harvesting activities during dry periods reduces the risk of soil compaction. Among the trees that are suitable for planting are sweetgum, pecan, water oak, Shumard oak, and cherrybark oak. Willow oak is also suitable in areas of the Hebert soil.

These soils have good potential as habitat for openland and woodland wildlife. The Hebert soil has fair potential as habitat for wetland wildlife. The habitat for deer, turkeys, and squirrels can be maintained by encouraging the growth of oak trees and other mast-producing trees. Leaving stubble from grain sorghum and similar crops on the surface provides cover for wildlife.

These soils are moderately well suited to recreational development. The main limitations are the wetness and the restricted permeability in the Hebert soil. Erosion can be a hazard on playgrounds in areas of the Sterlington soil. Excess surface water can be removed from narrow flats and swales by using shallow ditches and providing the proper grade. Maintaining an adequate plant cover helps to control erosion and sedimentation and enhances the beauty of area.

These soils are moderately well suited to urban uses. The main limitations are the slope and the restricted permeability in areas of the Sterlington soil and the wetness, low strength on sites for roads, the restricted permeability, and the shrink-swell potential in areas of the Hebert soil. A drainage system may be needed on sites for roads and around building foundations in areas of the Hebert soil. Preserving the existing plant cover during construction helps to control erosion. Because of the wetness and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling. Roads should be designed to offset the limited ability of the Hebert soil to support a load.

The land capability classification of the Sterlington soil is IIe, and the woodland ordination symbol is 3A. The land capability classification of the Hebert soil is IIIw, and the woodland ordination symbol is 8W.

Tc—Tensas silty clay. This soil is level and somewhat poorly drained. It is on narrow and broad flats on the alluvial plains of Bayou Macon. Individual areas range from about 20 to 300 acres in size. Slopes are less than 1 percent.

Typically, the surface layer is dark grayish brown silty clay about 6 inches thick. The subsoil is about 42 inches thick. It is mottled. In sequence downward, it is dark gray silty clay, grayish brown silty clay, grayish brown silty clay loam, and grayish brown loam. The substratum to a depth of about 60 inches is grayish brown, mottled silt loam.

Included with this soil in mapping are a few small areas of Dundee and Sharkey soils. Dundee soils are higher on the landscape than the Tensas soil. They are loamy throughout. Sharkey soils are in the lower positions on the landscape. They are clayey throughout. Included soils make up about 15 percent of the map unit.

The Tensas soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1 to 3 feet during the period December through April. The shrink-swell potential is very high. An adequate supply of water is available to plants in most years.

Most areas are used for cultivated crops. A small acreage is used as woodland.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, rice, and grain sorghum. The main limitations are the wetness and poor tilth. The medium fertility is a minor limitation. Good tilth is difficult to maintain. The soil can be worked within only a narrow range in moisture content. It becomes cloddy if it is farmed when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Installing pipe or other drop structures in drainage ditches helps to control the water level in rice fields and helps to prevent excessive erosion of ditches. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Most crops respond well to applications of fertilizer and lime.

This soil is well suited to pasture. The main limitation is the wetness. The medium fertility is a minor limitation. The main suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue, Dallisgrass, white clover, red clover, and vetch. Excess surface water can be removed by using shallow ditches. Grasses and legumes grow well if adequate fertilizer is used. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth.

This soil is moderately well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a severe equipment limitation, moderate seedling mortality, and the risk of soil compaction or of the formation of ruts caused by wetness and the clayey surface layer. Only trees that can tolerate seasonal wetness, such as water oak, green ash, willow oak, and Nuttall oak, should be selected for planting. Because the soil is sticky when wet, most kinds of planting and harvesting equipment can be used only during dry periods. The formation of ruts and the risk of soil compaction can be minimized by using suitable logging systems, laying out skid trails in advance, and harvesting during periods when the soil is least susceptible to compaction. Competing vegetation can be controlled by proper site preparation. Cutting or girdling eliminates unwanted weeds, brush, and trees. Bedding and providing a surface drainage system improve the seedling survival rate.

This soil has good potential as habitat for woodland and wetland wildlife and fair potential as habitat for openland wildlife. The habitat for deer, turkeys, and squirrels can be improved by planting oak trees and suitable understory plants or encouraging the growth of existing suitable vegetation. The habitat for wetland wildlife can be improved by constructing shallow ponds, which provide open water areas for waterfowl and furbearers, such as muskrat, nutria, and raccoon. The habitat for openland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants along field borders and in other areas near cropland.

This soil is poorly suited to recreational development. It is limited mainly by wetness, the restricted permeability, and the clayey surface layer. A drainage system can improve the soil for use as playgrounds or camp areas. Excess water can be removed by using shallow ditches and providing the proper grade. The stickiness of the surface layer can be reduced by adding a layer of loamy material to the surface.

This soil is poorly suited to urban uses. The main limitations are the wetness, the restricted permeability, low strength on sites for local roads and streets, and the shrink-swell potential. A drainage system may be needed on sites for roads and around building foundations. Excess water can be removed by using shallow ditches and providing the proper grade. Roads should be designed to offset the limited ability of the soil to support a load. Because of the wetness and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIIw, and the woodland ordination symbol is 4W.

Ts—Tensas-Sharkey complex. These soils are on the alluvial plains along Bayou Macon. The somewhat poorly drained Tensas soil is on narrow ridges. The poorly drained Sharkey soil is in swales. It is subject to rare flooding. Individual areas range from about 100 to 500 acres in size. They are about 50 percent Tensas soil and 40 percent Sharkey soil. Slopes range from 0 to 2 percent on the ridges and are 0 to 1 percent in the swales.

Typically, the surface layer of the Tensas soil is dark grayish brown silty clay about 4 inches thick. The subsoil extends to a depth of about 48 inches. It is mottled. It is grayish brown silty clay in the upper part, grayish brown silty clay loam in the next part, and grayish brown silt loam in the lower part. The substratum to a depth of about 60 inches is grayish brown, mottled loam. In places the subsoil is more alkaline.

The Tensas soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1 to 3 feet during the period December through April. The surface layer remains wet for long periods after heavy rains. An adequate supply of water is available to plants in most years. The shrink-swell potential is very high.

Typically, the surface layer of the Sharkey soil is dark grayish brown, mottled clay about 6 inches thick. The subsoil is about 36 inches thick. It is gray, mottled clay in the upper part and dark gray, mottled clay in the lower part. The substratum to a depth of about 60 inches is gray, mottled clay.

The Sharkey soil is characterized by high fertility. Water and air move through this soil at a very slow rate. Water runs off the surface at a very slow rate and stands in low areas for long periods after heavy rains. A seasonal high water table is within a depth of about 2 feet during the period December through April. Although flooding is rare, it can occur during unusually wet periods. The surface layer is very sticky when wet and dries slowly once it becomes wet. The shrink-swell potential is very high. An adequate supply of water is available to plants in most years. During dry periods in most years, cracks form that are 0.5 inch to 3.0 inches wide. They extend from the surface to a depth of 20 inches or more.

Included with these soils in mapping are a few small areas of Dundee soils. These included soils are higher on the landscape than the Tensas and Sharkey soils. They are loamy throughout. They make up about 10 percent of the map unit.

Most areas of the Tensas and Sharkey soils are used for cultivated crops. A small acreage is used for pasture or as woodland.

These soils are moderately well suited to cultivated crops, mainly soybeans, wheat, and grain sorghum. The main limitations are wetness and poor tilth. The medium fertility of the Tensas soil is a minor limitation. Tilth is difficult to maintain. The soils can be worked within only a narrow range in moisture content. The surface layer becomes cloddy if it is farmed when too wet or too dry. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Land grading and smoothing can improve surface drainage and permit more efficient use of farm equipment. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter.

These soils are well suited to pasture. The main limitation is the wetness. The medium fertility of the Tensas soil is a minor limitation. Suitable pasture plants are improved bermudagrass, tall fescue, Dallisgrass, white clover, red clover, and vetch. Grazing when the soil is wet results in puddling of the surface layer, poor tilth, and damage to the pasture plants. Excess surface water can be removed by shallow ditches. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Periodic mowing and clipping help to maintain a uniform distribution of plants, discourage selective grazing, and reduce clumpy growth. Applications of nitrogen fertilizer improve the growth of forage plants.

These soils are moderately well suited to woodland, but only a few areas support native hardwoods. The main management concerns are a severe equipment limitation, moderate seedling mortality, the risk of soil compaction, and severe plant competition caused by wetness and the clayey surface layer. Carefully managed reforestation after the trees are harvested reduces competition from undesirable understory plants. The trees that are suitable for planting are green ash, Nuttall oak, and sweetgum. Willow oak and water oak also are suitable in areas of the Tensas soil. Because the clayey surface layer of these soils is sticky when wet, most kinds of planting and harvesting equipment can be used only during dry periods. Bedding and providing a drainage system improve the seedling survival rate.

These soils have good potential as habitat for woodland and wetland wildlife. They have fair potential as habitat for openland wildlife. The habitat for openland wildlife can be improved by planting appropriate vegetation, maintaining the existing plant cover, or promoting the natural establishment of desirable plants along field borders and in other areas near cropland. Selective harvesting preserves some of the mature oak trees and other mast-producing trees and thus improves the habitat for deer and squirrels. Constructing shallow ponds and planting appropriate vegetation around the ponds improve the habitat for waterfowl, furbearers, and other birds and animals.

These soils are poorly suited to recreational development. The main limitations are the wetness, the restricted permeability, and the clayey surface layer. The rare flooding is a hazard in camp areas. Adding loamy fill material helps to overcome the clayey surface layer. A drainage system can improve the soils for use as playgrounds or camp areas. Excess water can be removed by using shallow ditches and providing the proper grade. The flooding can be controlled only by using water pumps and building major structures, such as large earthen levees.

These soils are poorly suited to urban uses. The main limitations are the wetness, the clayey texture, low strength on sites for local roads and streets, and the shrink-swell potential. The flooding is a major hazard. It can be controlled only by using water pumps and building major structures, such as large earthen levees. A drainage system may be needed on sites for roads and around building foundations. Roads should be designed to offset the limited ability of the soils to support a load. Because of the wetness and the restricted permeability, septic tank absorption fields may not function properly. Sewage lagoons or self-contained sewage disposal units can be used. Using proper engineering designs and backfilling with material that has a low shrink-swell potential help to prevent the structural damage caused by shrinking and swelling.

The land capability classification of both soils is IIIw. The woodland ordination symbol of the Tensas soil is 4W, and that of the Sharkey soil is 7W.

YO—Yorktown clay, frequently flooded. This soil is level and very poorly drained. It is in former stream channels on the alluvial plains along the Boeuf River. It is ponded most of the time and is frequently flooded. Individual areas range from about 40 to 300 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark gray, mottled clay about 9 inches thick. The subsoil extends to a depth of about 60 inches. It is gray, mottled clay in the upper part and reddish brown, mottled clay in the lower part.

Included with this soil in mapping are a few small areas of Hebert, Maurepas, Perry, and Portland soils. Hebert, Perry, and Portland soils are higher on the landscape than the Yorktown soil. Hebert soils are loamy throughout. Perry and Portland soils dry enough in most years to shrink and crack. Maurepas soils are in landscape positions similar to those of the Yorktown soil. They are mucky throughout. Included soils make up about 20 percent of the map unit.

The Yorktown soil is characterized by medium fertility. Water and air move through this soil at a very slow rate. The soil is ponded by as much as 5 feet of water for 10 months or longer during most years. It is frequently flooded for very long periods. During dry periods, however, a seasonal high water table is within a depth of about 0.5 foot. The shrink-swell potential is very high.

All of the acreage is wooded. Baldcypress, water tupelo, water hickory, and green ash are the main tree species. Most areas are used as wildlife habitat. A small amount of timber is cut for commercial use.

This soil is generally not suited to cultivated crops, pasture, recreational development, and urban uses. The ponding and flooding are too severe for these uses.

This soil is poorly suited to woodland because of the wetness. Natural regeneration of trees is very slow. The trees that are suitable for planting are baldcypress, water tupelo, and green ash. Trees can be harvested only by using specialized equipment.

This soil has fair potential as habitat for wetland wildlife. The habitat can be easily maintained for waterfowl and furbearers. It can be improved by constructing shallow ponds, which provide open water areas during dry periods for waterfowl and furbearers, such as muskrat, nutria, and raccoon.

The land capability classification is VIIw, and the woodland ordination symbol is 3W.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They either are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in national forests, national parks, military reservations, and state parks.

Prime farmland soils receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

The map units in the parish that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Some soils that have a seasonal high water table qualify as prime farmland only in areas where this limitation has been overcome by drainage measures. The need for these measures is indicated after the map unit name in table 5. Onsite evaluation is needed to determine whether or not this limitation has been overcome by corrective measures.

Use and Management of the Soils

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

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

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

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

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

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

Crops and Pasture

Richard C. Aycock, area staff agronomist, Soil Conservation Service, helped prepare this section.

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

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

In 1984, about 270,000 acres, or 75 percent of the total acreage in Richland Parish, was used for crops, pasture, or hay *(16)*. During the period 1964 to 1984, the acreage of cropland steadily increased and the acreage of pasture and woodland decreased. During recent years, however, some cropland has been converted to pasture.

In 1985, about 97,000 acres of cotton, 40,000 acres of soybeans, 15,000 acres of rice, 12,000 acres of grain sorghum, and 7,000 acres of corn was produced *(16)*. Pasture, hayland, and cropland used for small grain make up the remainder of the agricultural acreage.

Differences in crop suitability and management needs result from differences in soil characteristics, such as fertility, erodibility, content of organic matter, availability of water for plants, drainage, and the hazard of flooding. Cropping systems and tillage systems also are important management considerations. Because each farm has unique pattern of soils, each has unique management problems. Not all principles of farm management apply to all soils or crops. This section describes the general principles of management that can be applied widely to the soils in Richland Parish.

Pasture. Perennial grasses or legumes, or mixtures of both, are grown for pasture and hay. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume. Also, many farmers seed small grain or ryegrass in the fall for winter and spring forage. Excess summer grasses are harvested as hay for use in winter.

Common bermudagrass, improved bermudagrass, and, to a lesser extent, Pensacola bahiagrass are the summer perennials most commonly grown. Tall fescue, the main winter perennial grass grown in the parish, grows well only on soils that have a favorable moisture content. All of these grasses respond well to applications of fertilizer, particularly nitrogen.

Several of the soils in the parish, such as Dexter, Deerford, Foley, Egypt, and Calhoun soils, have high levels of exchangeable aluminum within the root zone of most grasses. The high levels of aluminum tend to increase the incidence of grass tetany, a disease in cattle. Grass tetany is a complex metabolic disorder resulting from mineral imbalances in the diets of ruminant animals in temperate regions. It is associated with cool, wet environmental conditions during the growth periods of cool-season grasses and can result in the eventual death of affected animals. Mature females in the late stages of pregnancy or the early stages of lactation are most commonly affected because they have the greatest magnesium requirements and the lowest levels of magnesium in the bloodstream. A high level of aluminum saturation in unlimed soils inhibits the uptake of calcium, magnesium, and phosphorus by the forage plants consumed by livestock. Animals with grass tetany become deficient in calcium or phosphorus. Treatment includes injections of a magnesium, calcium, and phosphorus solution into the bloodstream. Pastures should be limed to reduce the potential for grass tetany.

White clover, crimson clover, vetch, and southern winterpea are the most commonly grown legumes. All of these legumes respond well to lime, particularly on acid soils.

Proper grazing management is essential for high-quality forage, stand survival, and erosion control. Brush and weed control, applications of fertilizer and lime, and pasture renovation also are important. Some farmers obtain additional forage by grazing crop residue and the new growth of crops, grasses, and forbs in late fall and winter.

Fertilizer and lime. Reaction of the soils in Richland Parish ranges from extremely acid to neutral in the surface layer. An acid surface layer generally requires applications of lime to reduce the acidity and to counteract the excessive levels of aluminum and manganese in some soils. The levels of calcium and magnesium in the soils are generally adequate within the root zone of most crops. Phosphorus and potassium levels range from low to high.

A high level of exchangeable aluminum can prevent the uptake of phosphorus by plant roots and cause crop failure in areas of some acid soils. Also, a toxic level of manganese can result in reduced cotton yields. Applying lime is probably the most common method of reducing the levels of aluminum and manganese in soils.

Excessive quantities of exchangeable sodium are within the rooting depth of most crops in Deerford, Foley, Gilbert, and Egypt soils. A high content of sodium can break down soil structure. The soil becomes dispersed, and permeability is reduced. Root penetration is restricted because of the deterioration of the soil caused by excessive sodium. Also, excessive sodium in the soil reduces the amount of exchangeable calcium and magnesium in the soil that is available for plant growth.

No satisfactory or economical methods have yet been developed to remove excessive sodium from soils. Land leveling and deep tillage, which mix the surface layer and the subsoil, should not be used. Crops that can tolerate a high content of sodium, such as cotton and common bermudagrass, can be selected. Rice and soybeans, however, are especially sensitive to excessive sodium.

Secondary or micronutrient deficiencies have not been observed in crops grown in Richland Parish. Additions of molybdenum can increase soybean yields on unlimed soils. Adding molybdenum, however, is not a substitute for proper applications of lime.

Crops and pasture plants in Richland Parish respond to applications of fertilizer and lime. The kind and amount of fertilizer or lime depend on the needs of the crop, past cropping history, the level of expected yields, and the nature of the soils. Specific recommendations should be based on laboratory analysis of soil samples from each field. The Cooperative Extension Service can help to determine the kind and amount of fertilizer or lime to apply.

A soil sample for laboratory testing should consist of a single soil phase and should represent no more than 20 acres. Samples for cropland should be taken at a depth of 5 to 7 inches. Pastures should be sampled at a depth of 2 to 4 inches. Samples can be taken from several places in the field and mixed thoroughly. A one-pint sample of soil is adequate for laboratory analysis. If samples are being taken from a field where no-till planting is anticipated, samples should be taken from the upper 2 inches of the soil.

Organic matter content. Organic matter is important as a source of nitrogen for crop growth. Nitrogen fertilizer added to the soil generally makes up only a small part of the total nitrogen that a crop uses. The rest must come from organic matter in the soil. Organic matter increases the rate of water infiltration, reduces surface runoff and soil losses from erosion, and promotes good physical condition of the surface layer.

Soils in Richland Parish that are continuously cultivated are low in content of organic matter. Soils in

Figure 7.—This traffic pan is exposed in an excavated area of Rilla silt loam, 0 to 1 percent slopes. The cotton root extends through an area where the pan has been ruptured by chiseling equipment.

areas of woodland or native grasses can have a moderate or moderately high content of organic matter. The content of organic matter can be maintained by growing crops that produce an abundance of foliage and that have extensive root systems, such as corn, grain sorghum, rice, and small grain. Also, leaving crop residue on the surface, growing perennial grasses and legumes in rotation with other crops, and adding barnyard manure help to maintain the content of organic matter.

Soil tillage. The major purposes of tilling the soil are for seedbed preparation and weed control. Preparing seedbeds, cultivating, and harvesting tend to damage soil structure. Excessive cultivation of the soils should be avoided. Some of the clayey soils in the parish become cloddy when cultivated.

A compacted layer develops in loamy or silty soils if they are plowed at the same depth for long periods or are plowed when wet. This compacted layer, which forms directly below the plow layer, is generally known as a traffic pan or plow pan. Plowing only when the soil is dry, plowing at various depths, and subsoiling or chiseling help to prevent the formation of a traffic pan or plow pan.

The soils in the Macon Ridge area of Richland Parish, such as Calhoun, Calloway, Dexter, Egypt, Gigger, Gilbert, Grenada, and Loring soils, are especially susceptible to compaction. Subsoiling or chiseling can break up the plow pans in these soils, but research has shown that the soils tend to become compacted again soon after subsoiling (fig. 7). Therefore, the benefits of subsoiling are limited.

Figure 8.—A furrow irrigation system in an area of Rilla silt loam, 0 to 1 percent slopes.

Chiseling each year to break up shallow disk pans, which form at a depth of about 4 inches, can improve crop production in most years. The benefits of chiseling and subsoiling are more apparent in the loamy soils on the flood plains, such as Hebert, Rilla, and Sterlington soils.

Clayey soils become cloddy if plowed when too wet or too dry. If the plow layer of clayey soils becomes cloddy, planting is delayed until after it rains again and the plow layer can be reworked to prepare a more suitable seedbed. Tilling these soils at the optimum moisture content or using tillage implements that disturb the surface but leave crop residue in place helps to maintain soil tilth.

Drainage. A surface drainage system may be needed to make many of the soils in the parish more suitable for crops. Soils in the higher positions on natural levees and soils on terraces are drained by a gravity drainage system consisting of row drains and field drains. The clayey soils in the lower positions on the flood plains are drained by a gravity drainage system consisting of a network of main and lateral ditches and field drains. The success of the system depends on the availability of adequate outlets. An improved drainage system incorporates precision grading and smoothing with fewer open ditches. Such a system creates a more uniformly shaped field, which is more suited to the use of modern, multirow farm machinery. Deep cutting of soils that have unfavorable subsoil characteristics, such as excessive sodium or a fragipan, should be avoided.

Some soils in the parish are subject to backwater flooding from Bayou Lafourche, Big Creek, and the Boeuf River or from runoff from higher elevations. These soils can be protected from flooding by constructing a levee system.

Water for plant growth. The available water capacity of the soils in the parish ranges from moderate to very high, but in many years sufficient water is not available at the critical time for optimum plant growth unless the soils are irrigated. Moisture deficits can be expected in some years on soils that have a fragipan or an excessive amount of sodium in the subsoil. Rainfall is generally adequate in winter and spring, but often it is not adequate for crops in summer and fall. This rainfall pattern favors the growth of early maturing crops.

The total acreage of irrigated cropland in the parish in 1986 was about 50,000 acres, according to the local office of the Soil Conservation Service. Of this total, about 28,000 acres of rice was irrigated using a flooding irrigation system and about 22,000 acres was irrigated using either a furrow or sprinkler irrigation system (fig. 8). Water for irrigation is plentiful in the parish. About 75 percent is from ground water, and 25 percent is from surface water. The quality of the water is generally suitable for irrigation, but some of the ground water in the southern part of the parish is saline.

Cropping system. The sequence of crops should be such that the soil has plant cover during as much of the year as possible. A good cropping system should include a legume for nitrogen, a cultivated crop to aid in weed control, a deep-rooted crop to utilize subsoil fertility and maintain soil permeability, and a close-growing crop to maintain the content of organic matter.

The most suitable cropping system varies according to the needs of the farmer and the characteristics of the soil. Cotton is grown continuously or in rotation with soybeans, corn, or grain sorghum on most of the loamy, well drained and moderately drained soils in the survey area. Soybeans are grown continuously or in rotation with rice or grain sorghum on the clayey soils. A small acreage of soybeans is double-cropped with small grain, mainly wheat. Cropping systems for livestock operations generally have a higher percentage of annual forage plants than those on cash-crop farms.

Control of erosion. Erosion is a management concern on soils that are bare of vegetation on the terraces of Richland Parish. Soils that formed in loess are especially susceptible to erosion because the silty soil particles are easily detached and moved by water. Erosion is not a serious problem on the soils on alluvial plains, mainly because the topography is level or nearly level. Sheet erosion is moderately severe in all fallow plowed fields and in newly constructed drainage ditches. Some gullies erode, mainly in areas of the more sloping soils and at overfalls into drainage ditches. Sheet and gully erosion can be reduced by maintaining a cover of vegetation or plant residue on the surface during as much of the year as possible, by farming on the contour or stripcropping where possible, by using minimum tillage, and by using methods other than fallow plowing for weed control. Constructing terraces or diversions and seeding waterways also help to control erosion. Water-control structures placed at overfalls into drainage ditches help to control gully erosion.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

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

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

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

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

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

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c.*

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Carl V. Thompson, Jr., forester, Soil Conservation Service, helped prepare this section.

This section contains information on the relationship between trees and their environment, particularly trees and the soils in which they grow. It includes information on the kind, amount, and condition of woodland resources in Richland Parish and provides soils interpretations that can be used in planning.

Soil directly influences the growth, management, and multiple uses of forests. Soil is the medium in which a tree is anchored and from which it draws its nutrients and moisture. Soil characteristics, such as chemical composition, texture, structure, depth, and position on the slope, affect tree growth, seedling survival, species adaptability, and the use of equipment.

The ability of a soil to supply moisture and nutrients to trees is strongly related to its texture, structure, and depth. Generally, sandy soils are less fertile and lower in available water capacity than clayey soils. However, aeration is often impeded in clayey soils, particularly under wet conditions. Position on the slope strongly influences species composition as well as growth of individual trees.

The characteristics of soils largely determine the species composition of forest stands and influence decisions regarding management and use. For example, sweetgum is tolerant of many kinds of soils and sites but grows best on the rich, moist, loamy alluvial soils on bottom land. Also, the use of heavy logging and site-preparation equipment is more restricted on clayey soils than on the better drained sandy or loamy soils.

Woodland Resources

Richland Parish was once almost entirely wooded. Dense hardwood forests covered the fertile Mississippi River alluvial soils and the silty soils on the terraces. The original forest species were green ash, American elm, slippery elm, American sycamore, sweetgum, persimmon, overcup oak, Nuttall oak, Shumard oak, water oak, willow oak, swamp chestnut, cherrybark oak, hackberry, pecan, baldcypress, and red maple. Also, loblolly pine grew on the silty soils on the terraces.

The process of clearing the trees began soon after the early settlers arrived. The loamy soils on the high natural levees and the silty soils on the terraces were best suited to crops and thus were cleared first. The clayey soils at the lower elevations were less suitable for cropland and were left forested until recent years. The clearing of hardwood forests accelerated when soybeans, which grow well on a wide variety of soils, became a commonly grown crop in the parish.

Now only about 32,414 acres, or about 9 percent of the total acreage in the survey area, is wooded. The woodland is mainly in scattered low areas, in swamps, and along bayous, streams, and lakes. Between 1964 and 1974, the acreage of woodland decreased by about 62,200 acres. Another 29,786 acres of hardwoods on bottom land was cleared between 1974 and 1980 *(11, 20, 24)*.

About 76 percent of the woodland in the parish is on private farms. About 3 percent is public forest land, 9 percent is owned by forest industries, and 12 percent is held by miscellaneous private interests.

Commercial forests can be divided into forest types based on tree species, site quality, or age. As described in this survey, forest types are stands of trees of similar character, composed of the same species, and growing under the same ecological and biological conditions. The forest types are named for the dominant trees. The sweetgum-Nuttall oak-willow oak forest type covers 75 percent of the forested land in Richland Parish. It is on bottom land. Associated trees include water oak, green ash, red maple, and elm. The American sycamore-common persimmon-American elm forest type covers 25 percent of the woodland. Associated trees are green ash, hackberry, red maple, honeylocust, and oak.

The marketable timber in the parish is composed entirely of hardwoods. About 45 percent is sawtimber, 27 percent is poletimber, and 18 percent is saplings and seedlings. About 10 percent of the commercial forest land is classified as "nonstocked."

About 18 percent of the forest land produces 85 to 120 cubic feet of wood per acre per year, and 82 percent produces less than 85 cubic feet per acre per year. Productive forest land can be expected to produce at least 165 cubic feet of wood per acre per year.

There are no timber processing plants in Richland Parish. The importance of timber production to the economy of the parish has decreased significantly because of land clearing and inadequate management of existing stands. Most of the commercial forest land would benefit if the stands were thinned and undesirable trees were cut or deadened. Planting trees, improving the stands, and protecting the woodland from grazing, fire, insects, and diseases also are needed.

The Soil Conservation Service, the Louisiana Department of Agriculture and Forestry, and the Louisiana Cooperative Extension Service can help to determine woodland management needs in specific areas.

Environmental Impact

Woodland is valuable for wildlife habitat, recreation, natural beauty, and conservation of soil and water. The commercial forest land of Richland Parish provides food and shelter for wildlife and offers opportunities for sport and recreation to many users each year. Woodland provides watershed protection, helps to control erosion and sedimentation, and enhances the quality and value of water resources.

Trees can be planted to screen distracting views of dumps and other unsightly areas, muffle the sound of traffic, reduce the effects of the wind, and enhance the beauty of an area. They help to filter dust and other impurities from the air, convert carbon dioxide into life-giving oxygen, and provide shade.

Woodland Production

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

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

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil that has no significant limitations affecting forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions, *moderate* if erosion-control measures are needed for particular silvicultural activities, and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, or susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by soil wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use for 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the most suitable equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. Ratings of moderate or severe indicate the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *productivity class* number. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands. The estimates of the productivity of the soils in this survey are based on published data *(5, 6, 7, 8, 9, 18)*.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year calculated at the age of culmination of mean annual increment.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

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

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

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

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Rick Simmering, biologist, Soil Conservation Service, helped prepare this section.

The most productive areas of wildlife habitat in Richland Parish are the hardwood forests on bottom land along Bayou Lafourche and the pine-hardwood forests south of Delhi, Louisiana. The oak-pecan forests on the flood plains support good populations of white-tailed deer, squirrels, and swamp rabbit. Migratory woodcock also favor these woodlands as feeding sites during the winter months.

The forest land in the parish is mainly on the narrow flood plains along streams. A few small tracts of woodland also are scattered throughout the parish. Although these small tracts do not support large numbers of deer, they do provide food and cover for many small game and nongame birds and mammals.

Cropland and pasture generally support only low populations of wildlife because of a shortage of cover in fall and winter, but the Louisiana Department of Wildlife and Fisheries rates Richland Parish as one of the higher producers of doves. Other openland species include bobwhite quail, cottontail rabbit, red fox, coyote, and a variety of other small mammals and songbirds. Rice and soybean fields flooded by winter rains provide attractive feeding areas for waterfowl, mainly ducks. Populations of waterfowl are high during the winter months.

Four major streams border or cross the parish. These are Bayou Lafourche, the Boeuf River, Big Creek, and Bayou Macon. Most of the streams and lakes receive water from cultivated areas. Fisheries are composed of species which can tolerate turbid water. These include carp, freshwater drum, catfish, gar, bowfin, buffalofish, and crappie. A privately owned 600-acre impoundment near Bayou Lafourche and a few small oxbow lakes near the Boeuf River, Bayou Macon, and Big Creek are the major large bodies of water in the area.

Many farm ponds are scattered throughout the parish. They offer better fishing than most of the natural waters. Largemouth bass and bluegill are the principal species stocked. Some landowners stock catfish and sell them locally. Also, many ponds are used for the commercial production of minnows.

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

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

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

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

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

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

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, sweetgum, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are red mulberry, redbay, and mayhaw.

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

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are privet, huckleberry, yaupon, and mockorange.

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

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

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

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

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

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

Engineering

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

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

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

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

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

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

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

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

Building Site Development

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

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

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

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

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

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

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

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

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

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

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

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

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

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

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

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

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

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

Construction Materials

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

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

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

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

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

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

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

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

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

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

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

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

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

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

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

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

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

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment.

Generally, deeper onsite investigation is needed to determine these properties.

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

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

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

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

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

Soil Properties

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

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

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

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

Engineering Index Properties

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

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(3)* and the system adopted by the American Association of State Highway and Transportation Officials *(2)*.

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

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

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

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

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

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

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

Physical and Chemical Properties

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

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

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

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

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

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

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

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

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

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

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

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

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

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

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

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

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that flooding is most likely is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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

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

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

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

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

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

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

Soil Fertility Levels

Dr. M.C. Amacher, Louisiana Agricultural Experiment Station, Louisiana State University, helped prepare this section.

This section gives information concerning the environmental factors and the physical and chemical properties of the soils that affect their potential for crop production. It also lists the methods used to obtain the chemical analyses of the soils that are sampled.

Factors Affecting Crop Production

Crop composition and yield are a function of many environmental, plant, and soil factors.

Environmental factors:
- Light—intensity and duration
- Temperature—air and soil
- Precipitation—distribution and amount
- Atmospheric carbon dioxide concentration

Plant factors (species and hybrid specific):
- Rate of nutrient and water uptake
- Rate of growth and related plant functions

Soil factors—physical properties:
- Particle-size distribution—texture
- Structure
- Surface area
- Bulk density
- Water retention and flow
- Aeration

Soil factors—chemical properties and soil fertility:

- Quantity factor. This factor is the amount of an element in the soil that is readily available for uptake by plants. The quantity factor is often referred to as the available supply of an element. To determine the quantity factor, the available supply is removed from the soil using a suitable extractant and is analyzed.
- Intensity factor. This factor is related to the concentration of an element species in the soil water. It is a measure of the availability of an element for uptake by plant roots. Two soils that have identical quantities of an element's available supply but have different element intensity factors will differ in element availability to the plant.
- Relative intensity factor. This factor is the effect that the availability of one element has on the availability of another.
- Quality/Intensity relationship factor. The relationship includes the reactions between the soil surface and soil water that control the distribution of element species between the available supply in the soil and the soil water. A special quantity/intensity relationship is the buffer capacity of the soil for a given element. The buffer capacity is the amount of a given element that must be added to or removed from the available supply to produce a given change in the intensity factor for that element.
- Replenishment factor. This factor is the rate of replenishment of the available supply and intensity

factors by weathering reactions, fertilizer additions, and transport by mass flow and diffusion.

These factors are interdependent. The magnitude of the factors and the interactions among them control crop response. The relative importance of each factor changes from soil to soil, crop to crop, and environment to environment. The soil factors are only part of the overall system.

The goal of soil testing is to provide information for a soil and crop management program that establishes and maintains optimum levels and balance of the essential elements in soil for crop and animal nutrition and that protects the environment against the buildup of potentially toxic levels of essential and nonessential elements. Current soil tests measure only one soil factor, the available supply of one or more nutrients in the plow layer. Where crop production is clearly limited by the available supply of one or more nutrients, existing soil tests can generally diagnose the problem and reliable recommendations to correct the problem can be made. Soil management systems generally are based on physical and chemical alteration of the plow layer. Characteristics of this layer can vary from one location to another, depending upon management practices and soil use.

Subsurface horizons are less subject to change or change very slowly as a result of alteration of the plow layer. These horizons reflect the soil's inherent ability to supply nutrients to plant roots and to provide a favorable environment for root growth. If soil fertility recommendations based on current soil tests are followed, major fertility problems in the plow layer are normally corrected. Crop production is then limited by crop and environmental factors, physical properties of the plow layer, and physical and chemical properties of the subsoil.

Chemical Analyses Methods

Information on the available nutrient supply in the subsoil allows evaluation of the natural fertility levels of the soil. Soil profiles were sampled during the soil survey and analyzed for soil reaction; organic matter content; extractable phosphorus; exchangeable cations of calcium, magnesium, potassium, sodium, aluminum, and hydrogen; total acidity; and cation-exchange capacity. The results are summarized in table 17. More detailed information on chemical analyses of soils is available *(1, 4, 13, 15, 17, 19, 25, 26, 30)*. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(29)*.

Organic carbon—potassium dichromate-sulfuric acid wet digestion (6A1a).

Reaction (pH)—1:1 soil/water solution (8C1a).

Extractable phosphorus—Bray 2 extractant (0.03 molar ammonium fluoride-0.1 molar hydrochloric acid).

Exchangeable cations—pH 7, 1 molar ammonium acetate-calcium (6N2), magnesium (6O2), potassium (6Q2), sodium (6P2).

Exchangeable aluminum and hydrogen—1 molar potassium chloride (6G2).

Total acidity—pH 8.2, barium chloride-triethanolamine (6H1a).

Sum cation-exchange capacity—sum of bases plus total acidity (5A3a).

Effective cation-exchange capacity—sum of bases plus exchangeable aluminum and hydrogen (5A3b).

Base saturation—sum of bases/sum cation-exchange capacity (5C3).

Exchangeable sodium percentage—exchangeable sodium/sum cation-exchange capacity.

Aluminum saturation—exchangeable aluminum/effective cation-exchange capacity.

Calcium/magnesium ratio—exchangeable calcium/exchangeable magnesium.

Characteristics of Soil Fertility

In general, four major types of nutrient distribution in soils of Louisiana can be identified. The first type includes soils that have relatively high levels of available nutrients throughout the profile. This type reflects the relatively high fertility status of the parent material from which soils developed and a relatively young age or a less intense degree of weathering of the soil profile.

The second type includes soils that have relatively low levels of available nutrients in the surface layer, but these levels generally increase with depth through the soil profile. These soils have relatively fertile parent material but are older soils that have been subjected to weathering over a longer period of time or to more intense weathering. If the levels of available nutrients in the surface layer are low, crops may exhibit deficiency symptoms early in the growing season. Deficiency symptoms often disappear if the crop roots are able to penetrate to the more fertile subsoil as the growing season progresses.

The third type includes soils that have adequate or relatively high levels of available nutrients in the surface layer but have relatively low levels in the subsoil. Such soils developed from low fertility parent material, or they are older soils that have been subjected to more intense weathering over a longer period of time. The higher nutrient levels in the surface layer generally are a result of fertilizing agricultural soils or biocycling in undisturbed soils.

The fourth type includes soils that have relatively low levels of available nutrients throughout the soil profile. These soils developed from low fertility parent material, or they are older soils that have been subjected to intense weathering over a long period of time. These soils have not accumulated nutrients in the surface layer as a result of fertilizing or biocycling.

Soil reaction and acidity, organic matter content, sodium content, and cation-exchange capacity can also show the general nutrient distribution patterns in soils. These distributions are the result of the interactions of parent material, weathering (climate), time, and to a lesser extent organisms and topography.

Nitrogen. Generally, over 90 percent of the nitrogen in the surface layer is in the form of organic nitrogen. Most of the nitrogen in the subsoil is in the form of fixed ammonium nitrogen. These forms of nitrogen are unavailable for plant uptake, but they can be converted to readily available ammonium and nitrate species.

Nitrogen generally is the most limiting nutrient element in crop production because plants have a high demand for it. Nitrogen fertilizer recommendations are nearly always based on the nitrogen requirement of the crop rather than nitrogen soil test levels, since no reliable nitrogen soil tests are available.

Despite the lack of an adequate nitrogen soil test, the amount of readily available ammonium and nitrate nitrogen in soils, the amount of organic nitrogen, the rate of mineralization of organic nitrogen to available forms of nitrogen, and the rate of conversion of fixed ammonium nitrogen to available forms of nitrogen provide information on the fertility status of a soil with respect to nitrogen. Unfortunately, since the amounts and rates of transformation of the various forms of nitrogen in the soils of Richland Parish are unknown, no assessment of the nitrogen fertility status for these soils can be given.

Phosphorus. Phosphorus exists in soils as discrete minerals, such as hydroxyapatite, variscite, and strengite; as occluded or coprecipitated phosphorus in other minerals; as phosphorus retained on the surfaces of minerals, such as carbonates, metal oxides, and layer silicates; and in organic compounds. Because most of the phosphorus is unavailable for plant uptake, the availability of phosphorus in the soil is a factor in controlling phophorus uptake by plants.

The Bray 2 extractant tends to extract more phosphorus than the more commonly used Bray 1, Mehlich 1, and Olsen extractants. The Bray 2 extractant provides an estimate of the plant-available supply of phosphorus in soils. The Bray 2 extractable phosphorus content of most of the soils in Richland Parish is variable and ranges from low to high. Calloway, Forestdale, and Gigger soils contain high levels of extractable phosphorus in the surface layer, probably as a result of additions of fertilizer; but the content of phosphorus in these soils decreases with depth. Calhoun, Dundee, Hebert, Mer Rouge, Rilla, Sharkey, Tensas, and Yorktown soils have high levels of extractable phosphorus throughout the profile. Only Deerford, Egypt, Liddieville, Necessity, and Perry soils have low levels of phosphorus in the profile. Generally, the alluvial soils have more phosphorus throughout the profile than the soils on the terraces.

Potassium. Potassium exists in three major forms in soils: exchangeable potassium associated with negatively charged sites on clay mineral surfaces, nonexchangeable potassium trapped between clay mineral interlayers, and structural potassium within the crystal lattice of minerals. Exchangeable potassium in soils can be replaced by other cations and is generally readily available for plant uptake. To become available to plants, nonexchangeable potassium and structural potassium need to be converted to exchangeable potassium through weathering reactions.

The exchangeable potassium content of the soils is an estimate of the supply available to plants. The available supply of potassium in the soils of Richland Parish ranges from low to high. Generally, the alluvial soils contain more exchangeable potassium than the soils on the terraces. The highest levels of exchangeable potassium are in soils that have a high content of clay, such as Perry, Portland, and Sharkey soils.

Crops respond to fertilizer potassium if exchangeable potassium levels are very low or low. Low levels can be gradually built up by adding fertilizer potassium to soils that contain a sufficient amount of clay to hold the potassium. Exchangeable potassium levels can be maintained by adding enough fertilizer potassium to account for crop removal, fixation of exchangeable potassium to nonexchangeable potassium, and leaching losses.

Magnesium. Magnesium exists in soils as exchangeable magnesium associated with negatively charged sites on clay mineral surfaces and as structural magnesium in mineral crystal lattices. Exchangeable magnesium is generally readily available for plant uptake, but structural magnesium must be converted to exchangeable magnesium during mineral weathering reactions.

According to soil test interpretation guidelines, the exchangeable magnesium levels of the soils of Richland Parish generally are high. Exchangeable magnesium levels generally are lower in the surface layer and increase with depth. Substantial amounts of exchangeable magnesium are in soils that have a high content of clay.

The levels of exchangeable magnesium in the soils of Richland Parish are more than adequate for crop production, especially where the plant roots can exploit the high levels in the subsoil. Because magnesium deficiencies in plants are normally rare, fertilizer sources of magnesium are generally not needed for crop production.

Calcium. Calcium exists in soil as exchangeable calcium associated with negatively charged sites on clay mineral surfaces and as structural calcium in mineral crystal lattices. Exchangeable calcium generally is available for plant uptake, but structural calcium is not.

Calcium is normally the most abundant exchangeable cation in soils. In the surface layer of the soils in Richland Parish, the level of exchangeable calcium is greater than the level of exchangeable magnesium. However, in the subsoil the levels of exchangeable calcium may be the same as, less than, or greater than exchangeable magnesium levels. High levels of exchangeable calcium can be expected in soils that have a high content of clay.

Organic matter. The organic matter content of a soil greatly influences other soil properties. High organic matter content in mineral soils is desirable, and low organic matter content can lead to many problems. Increasing the organic matter content can greatly improve the exchangeable acidity in soils. Exchangeable acidity is determined by the pH of the soil. Titratable acidity is the amount of acidity neutralized to a selected pH, generally pH 7.0 or 8.2, and constitutes the total potential acidity of a soil determined up to a given pH. All sources of soil acidity, including hydrolysis of monomeric and polymeric aluminum species and hydrogen from pH-dependent exchange sites on metal oxides, layer silicates, and organic matter, contribute to the total potential acidity. Total potential acidity in soils is determined by titration with base or incubation with lime; extraction with a buffered extractant followed by titration of the buffered extractant (pH 8.2, barium chloride-triethanolamine method); or equilibration with buffers followed by estimation of acidity from changes in buffer pH.

Soils in Richland Parish that formed in loess have a low pH in the upper part of the profile, and the reaction generally increases with depth. Significant quantities of exchangeable aluminum and total acidity are in many of the soil horizons. Some soils, such as Deerford, Egypt, and Foley soils, have high pH levels in the lower part of the profile. The alluvial soils, such as Gallion, Mer Rouge, Perry, and Portland soils, generally have acid surface layers, but the subsoil horizons can be alkaline. Exchangeable aluminum generally is not a significant part of the cation-exchange capacity of the alluvial soils in the parish.

Cation-exchange capacity. The cation-exchange capacity represents the available supply of nutrient and non-nutrient cations in the soil. It is the amount of cations on permanent and pH-dependent negatively charged sites on the surface. Permanent charge cation-exchange sites occur because a net negative charge develops on a mineral surface from substitution of ions within the crystal lattice. A negative charge developed from ionization of surface hydroxyl groups on minerals and organic matter produces pH-dependent cation-exchange sites.

Methods for determining cation-exchange capacity are available and can be classified as one of two types: methods that use unbuffered salts to measure the cation-exchange capacity at the pH of the soil and methods that use buffered salts to measure the cation-exchange capacity at a specified pH. These methods produce different results since unbuffered salt methods include only a part of the pH-dependent cation-exchange capacity and the buffered salt methods include all of the pH-dependent cation-exchange capacity up to the pH of the buffer (generally pH 7.0 or 8.2). Errors in the saturation, washing, and replacement steps can also cause different results.

The effective cation-exchange capacity is the sum of exchangeable bases (calcium, magnesium, potassium, sodium) determined by extraction with pH 7.0, 1 molar ammonium acetate plus the sum of neutral salt exchangeable aluminum and hydrogen (exchangeable acidity). The sum cation-exchange capacity is the sum of exchangeable bases plus the total acidity determined by extraction with pH 8.2, barium chloride-triethanolamine. The effective-cation exchange capacity is generally less than the sum cation-exchange capacity and includes only that part of the pH-dependent cation-exchange capacity that is determined by exchange of hydrogen with a neutral salt. The sum cation-exchange capacity includes all of the pH-dependent cation-exchange capacity up to pH 8.2. If a soil contains no pH-dependent exchange sites or the pH of the soil is about 8.2, the effective and sum cation-exchange capacity will be about the same. The larger the cation-exchange capacity, the larger the capacity to store nutrient cations.

In most of the soils on terraces in Richland Parish and in some of the alluvial soils, the pH-dependent charge is a significant source of the cation-exchange capacity. In soils that have a high level of pH-dependent charge (total acidity), the sum cation-exchange capacity is appreciably higher than the effective cation-exchange capacity. In soils that have a high content of clay, such as Perry, Portland, and Sharkey soils, the permanent charge cation-exchange capacity is the major source of the cation-exchange capacity.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 18 and the results of chemical analysis in table 19. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory, Department of Agronomy, Louisiana Agricultural Experiment Station, Louisiana State University.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(29)*.

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Water retained—pressure extraction, percentage of oven-dry weight of less than 2 mm material; ⅓ or ⅒ (³⁄₁₀) bar (4B1), 15 bars (4B2).
Water-retention difference—between ⅓ bar and 15 bars for less than 2 mm material (4C1).
Moist bulk density—of less than 2 mm material, saran-coated clods at field moist (4A1a), air-dry (4A1b), and ⅓ bar (4A1d) conditions.
Coefficient of linear extensibility—COLE (4D1).
Extractable bases—ammonium acetate pH 7.0, uncorrected; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).
Extractable acidity—barium chloride-triethanolamine (BaC12-TEA) solution (6G2b).
Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1b).
Base saturation—ammonium acetate, pH 7.0 (5C1).
Organic carbon—potassium dichromate-sulfuric acid wet digestion (6A1a).
Reaction (pH)—1:1 water dilution (8C1a).
Aluminum—potassium chloride extraction (6G).
Iron oxides as Fe—sodium dithionate extract, iron (6C2b), aluminum (6G7a).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(28)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

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

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

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

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(27)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(28)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

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

Calhoun Series

The Calhoun series consists of poorly drained, slowly permeable soils that formed in thick loess of late

Pleistocene age. These soils are on terraces. Slopes are 0 to 1 percent.

Soils of the Calhoun series are fine-silty, mixed, thermic Typic Glossaqualfs.

Calhoun soils commonly are near Calloway, Gilbert, Grenada, and Loring soils. Calloway soils are slightly higher on the landscape than the Calhoun soils. They have a fragipan in the lower part of the subsoil. Gilbert soils are in the lower positions on the landscape. They have a subsurface layer that extends into the subsoil. Grenada and Loring soils are on ridges. They have a fragipan in the lower part of the subsoil.

Typical pedon of Calhoun silt loam; about 3 miles northwest of Delhi, 100 feet south of canal, 110 feet west of woods, NE¼NE¼ sec. 3, T. 18 N., R. 9 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; few fine distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; very friable; common fine and medium roots; extremely acid; clear smooth boundary.

Eg1—6 to 14 inches; light gray (10YR 7/1) silt loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; extremely acid; gradual wavy boundary.

Eg2—14 to 23 inches; light gray (10YR 6/1) silt loam; few medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; extremely acid; clear irregular boundary.

Btg1—23 to 32 inches; grayish brown (10YR 5/2) silty clay loam; few fine distinct dark brown (10YR 4/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; faint continuous clay films on faces of peds; silt tongues of Eg material 1 to 4 centimeters wide extending into the lower boundary of the horizon and making up about 20 percent of the mass in the upper part; common white powdery material; extremely acid; gradual wavy boundary.

Btg2—32 to 45 inches; light brownish gray (2.5Y 6/2) silt loam; moderate medium subangular blocky structure; firm; few fine roots; faint continuous clay films on faces of peds; thin gray silt coatings on vertical faces of some peds; few small areas of white powdery material; extremely acid; gradual wavy boundary.

BCg—45 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; few fine roots; many soft brown masses; faint discontinuous clay films on vertical faces of some peds; extremely acid; gradual wavy boundary.

The thickness of the solum ranges from 40 to 80 inches. The content of sand is less than 10 percent in the upper 48 inches of the solum. In the upper 30 inches, 15 to more than 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 to 6 and chroma of 1 to 3. It is 2 to 7 inches thick. Reaction ranges from extremely acid to medium acid, except in areas that have been limed.

The Eg horizon has hue of 2.5Y or 10YR, value of 5 to 7, and chroma of 1 or 2. It is 9 to 20 inches thick. Reaction ranges from extremely acid to medium acid.

The Btg horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 1 or 2. It has few to many mottles in shades of brown. The texture is silt loam or silty clay loam. Reaction ranges from extremely acid to strongly acid.

The BCg horizon has hue of 2.5Y, 10YR, or 5Y, value of 5 or 6, and chroma of 1 to 4. Reaction ranges from extremely acid to mildly alkaline.

Calloway Series

The Calloway series consists of somewhat poorly drained, slowly permeable soils that formed in thick loess of late Pleistocene age. These soils have a fragipan. They are on terraces. Slopes range from 0 to 3 percent.

Soils of the Calloway series are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Calloway soils commonly are near Calhoun, Grenada, and Loring soils. The poorly drained Calhoun soils are slightly lower on the landscape than the Calloway soils. They do not have a fragipan. The moderately well drained Grenada and Loring soils are in the higher positions on ridges. They do not have gray mottles in the upper part of the argillic horizon.

Typical pedon of Calloway silt loam, in an area of Calhoun-Calloway silt loams, gently undulating; 2 miles northwest of Warden, 45 feet south of Parish Road 1162, 12 feet east of power line pole, NW¼NW¼ sec. 14, T. 18 N., R. 9 E.

Ap1—0 to 6 inches; dark brown (10YR 4/3) silt loam; weak fine and medium granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.

Ap2—6 to 10 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; abrupt smooth boundary.

B/E—10 to 25 inches; about 60 percent yellowish brown (10YR 5/6 and 5/4) (Bt) and 40 percent light brownish gray (10YR 6/2) (E) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine and coarse black concretions; very strongly acid; gradual irregular boundary.

E—25 to 28 inches; light brownish gray (10YR 6/2) silt loam; common medium faint brown (10YR 5/3) and few fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine and medium black concretions; very strongly acid; gradual wavy boundary.

Btx1—28 to 39 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle in about 60 percent of the mass; faint discontinuous clay films on faces of peds and in pores; seams of light brownish gray (10YR 6/2) silt loam between peds; few fine and medium black concretions; very strongly acid; gradual wavy boundary.

Btx2—39 to 45 inches; yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) silty clay loam; few medium distinct dark yellowish brown (10YR 4/4) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle in about 70 percent of the mass; faint discontinuous clay films on faces of peds and in pores; seams of light brownish gray (10YR 6/2) silt loam between peds; very strongly acid; gradual wavy boundary.

Btx3—45 to 60 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct grayish brown (10YR 5/2) and light yellowish brown (10YR 6/4) mottles; weak very coarse prismatic structure; firm and brittle in about 60 percent of the mass; faint discontinuous clay films on faces of peds and in pores; medium acid.

The solum is 60 or more inches thick. Depth to the fragipan ranges from 15 to 35 inches. The content of sand is less than 10 percent in the upper 48 inches of the solum. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 to 6 and chroma of 2 or 3. It is 3 to 10 inches thick. Reaction ranges from very strongly acid to medium acid.

The E horizon and the E part of the B/E horizon have value of 5 to 7 and chroma of 2. They range from very strongly acid to medium acid.

The Bt part of the B/E horizon has value and chroma of 4 to 6. Reaction ranges from very strongly acid to medium acid.

The Btx horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 2 to 6. It has few to many mottles in shades of yellow, brown, and gray. Reaction ranges from very strongly acid to medium acid in the upper part and is strongly acid or medium acid in the lower part.

Deerford Series

The Deerford series consists of somewhat poorly drained, slowly permeable soils that formed in silty sediments of late Pleistocene age. These soils are on terraces. Slopes range from 0 to 2 percent.

Soils of the Deerford series are fine-silty, mixed, thermic Albic Glossic Natraqualfs.

Deerford soils commonly are near Dexter, Egypt, Foley, Gigger, and Gilbert soils. Dexter, Egypt, Gigger, and Gilbert soils do not have a natric horizon. Dexter and Gigger soils are higher on the landscape than the Deerford soils. Egypt soils are in landscape positions similar to those of the Deerford soils. The poorly drained Foley and Gilbert soils are in the slightly lower positions on the landscape.

Typical pedon of Deerford silt loam; 4.7 miles south of Rayville, 0.5 mile south of Highway 584, 6 feet north of center of turn row, 1,320 feet east of fence row corner (section line), SW¼NW¼ sec. 4, T. 16 N., R. 7 E.

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

E—6 to 10 inches; pale brown (10YR 6/3) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; extremely acid; clear irregular boundary.

E/B—10 to 17 inches; light brownish gray (10YR 6/2) (E) and yellowish brown (10YR 5/6) (Bt) silt loam; weak medium subangular blocky structure; friable; few fine roots; tongues of E material extending throughout the horizon; extremely acid; clear irregular boundary.

Btn1—17 to 29 inches; silty clay loam that is light brownish gray (10YR 6/2) coated and yellowish brown (10YR 5/6) uncoated; common medium distinct strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common fine pores; tongues of E material extending to a depth of 25 inches; few black stains on faces of some peds; peds coated with light brownish gray

(2.5Y 6/2) clay films; very strongly acid; gradual wavy boundary.

Btn2—29 to 40 inches; silty clay loam that is light brownish gray (10YR 6/2) coated and yellowish brown (10YR 5/6) uncoated; common medium distinct pale brown (10YR 6/3) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many fine pores; faint discontinuous clay films on faces of peds; common dark stains on vertical faces of some peds; common black concretions; neutral; gradual wavy boundary.

BCn—40 to 51 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; common black stains on faces of some peds; mildly alkaline; gradual wavy boundary.

Cn—51 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; few black stains on faces of some clods; moderately alkaline.

The thickness of the solum ranges from 40 to more than 60 inches. A subhorizon with more than 15 percent exchangeable sodium is 6 to 16 inches below the upper boundary of the argillic horizon. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 to 6 and chroma of 2 to 4. It is 3 to 6 inches thick. Reaction ranges from very strongly acid to slightly acid.

The E horizon has value of 5 or 6 and chroma of 2 or 3. It is 3 to 12 inches thick. Reaction ranges from extremely acid to slightly acid in the E and E/B horizons.

The Btn horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. Ped coatings have value of 5 or 6 and chroma of 1 or 2. This horizon has mottles in shades of brown and gray. It is silty clay loam or silt loam. Reaction ranges from very strongly acid to slightly acid in the upper part and from neutral to moderately alkaline in the lower part.

The BCn and Cn horizons have colors and textures similar to those of the Btn horizon. They range from neutral to moderately alkaline.

Dexter Series

The Dexter series consists of well drained, moderately permeable soils that formed in thin loess and in the underlying loamy and sandy material of late Pleistocene age. These soils are on terraces. Slopes range from 0 to 5 percent.

Soils of the Dexter series are fine-silty, mixed, thermic Ultic Hapludalfs.

Dexter soils commonly are near Foley, Forestdale, Gilbert, Gigger, and Liddieville soils. The poorly drained Foley, Forestdale, and Gilbert soils are lower on the landscape than the Dexter soils. Also, Foley soils have a natric horizon, and Forestdale soils have a clayey and loamy subsoil. Gigger soils are in the slightly lower positions on the landscape. They have a fragipan. Liddieville soils are in landscape positions similar to those of the Dexter soils. They are fine-loamy.

Typical pedon of Dexter silt loam, 1 to 3 percent slopes; 3 miles south of Alto, 240 feet east and 1,100 feet south of the northwest corner of sec. 4, T. 15 N., R. 6 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak very fine granular structure in the upper 2 inches, weak coarse platy structure in the lower part; friable; many fine roots; strongly acid; abrupt smooth boundary.

BA—6 to 10 inches; dark brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; friable; few fine pores; strongly acid; clear smooth boundary.

Bt1—10 to 17 inches; dark brown (7.5YR 4/4) silty clay loam; reddish brown (5YR 4/4) ped surfaces; moderate medium subangular blocky structure; firm; few fine pores; faint almost continuous clay films on faces of peds; few discontinuous black stains on peds; strongly acid; gradual wavy boundary.

Bt2—17 to 25 inches; dark brown (7.5YR 4/4) clay loam; reddish brown (5YR 4/4) ped surfaces; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; faint discontinuous clay films on faces of peds; few black stains on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—25 to 32 inches; reddish brown (5YR 4/4) clay loam; yellowish red (5YR 4/6) ped surfaces; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; faint discontinuous clay films on faces of peds; faint discontinuous black stains on faces of peds; very strongly acid; gradual wavy boundary.

2BC1—32 to 44 inches; reddish brown (5YR 4/4) loam; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; faint discontinuous clay films on vertical faces of peds; common discontinuous black stains on faces of peds; very strongly acid; clear smooth boundary.

2BC2—44 to 59 inches; dark brown (7.5YR 4/4) fine sandy loam; weak coarse prismatic structure; friable; few dark brown soft masses; few pale brown

(10YR 6/3) streaks inside peds; very strongly acid; clear smooth boundary.

3C—59 to 60 inches; dark brown (7.5YR 4/4) loamy fine sand; massive; very friable; strongly acid.

The thickness of the solum ranges from 32 to 60 inches. Base saturation is more than 35 percent at a depth of about 50 inches below the upper boundary of the argillic horizon. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is 4 to 10 inches thick. Reaction ranges from very strongly acid to neutral, except in areas that have been limed.

The BA horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. The texture is silt loam or loam. Reaction ranges from very strongly acid to medium acid.

The Bt horizon has hue of 7.5YR or 5YR and value and chroma of 4 to 6. The texture is silt loam, silty clay loam, or clay loam. Reaction ranges from very strongly acid to medium acid.

The 2BC horizon is similar in color and reaction to the Bt horizon. It is sandy loam, fine sandy loam, loam, or sandy clay loam.

The 3C horizon has colors similar to those of the Bt and 2BC horizons. It is fine sandy loam, loamy fine sand, or sandy loam. Reaction is very strongly acid or strongly acid.

Dundee Series

The Dundee series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy alluvium deposited by the Mississippi River. These soils are on alluvial plains. Slopes range from 0 to 3 percent.

Soils of the Dundee series are fine-silty, mixed, thermic Aeric Ochraqualfs.

Dundee soils commonly are near Sharkey and Tensas soils. The poorly drained Sharkey soils are lower on the landscape than the Dundee soils. They are clayey throughout. Tensas soils are in the slightly lower positions on the landscape. They are clayey in the upper part of the subsoil.

Typical pedon of Dundee silty clay loam; 2.65 miles northeast of Warden, 525 feet east of wooded line along Bayou Macon, 35 feet south of turn row, NE¼SW¼ sec. 16, T. 18 N., R. 10 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silty clay loam; weak medium subangular blocky structure; firm; few fine roots; strongly acid; abrupt smooth boundary.

Btg1—5 to 12 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; few fine black stains on faces of some peds; medium acid; gradual wavy boundary.

Btg2—12 to 28 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; thin almost continuous clay films on faces of peds; few fine black stains on faces of some peds; slightly acid; clear smooth boundary.

Btg3—28 to 36 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; faint discontinuous clay films on faces of peds; few fine black stains on faces of some peds; slightly acid; clear smooth boundary.

Btg4—36 to 43 inches; grayish brown (10YR 5/2) silty clay loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; slightly acid; gradual smooth boundary.

Cg1—43 to 53 inches; grayish brown (10YR 5/2) silt loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; slightly acid; gradual wavy boundary.

Cg2—53 to 60 inches; grayish brown (10YR 5/2) silt loam; many medium faint dark brown (10YR 4/3) mottles; massive; friable; slightly acid.

The thickness of the solum ranges from 36 to more than 60 inches.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. It is 4 to 8 inches thick. Reaction ranges from very strongly acid to medium acid, except in areas that have been limed.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. It has mottles in shades of brown and gray. Reaction ranges from very strongly acid to slightly acid.

The Cg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has few to many mottles in shades of brown and gray. The texture is typically silt loam or very fine sandy loam, but in some pedons it is silty clay loam or silty clay below a depth of 40 inches. Reaction ranges from very strongly acid to neutral.

Egypt Series

The Egypt series consists of somewhat poorly drained, slowly permeable soils that formed in thin loess over loamy material of late Pleistocene age. These soils are on terraces. Slopes range from 0 to 3 percent.

Soils of the Egypt series are fine-silty, mixed, thermic Aquic Glossudalfs.

The Egypt soils in Richland Parish are taxadjuncts because they have slightly less sodium in the lower part of the argillic horizon than is defined as the range for the series. This difference, however, does not significantly affect the use and management of the soils.

Egypt soils commonly are near Dexter, Deerford, Foley, Forestdale, Gigger, Gilbert, and Necessity soils. The well drained Dexter soils are higher on the landscape than the Egypt soils. They do not have grayish mottles in the upper part of the subsoil. Deerford and Foley soils have a natric horizon. Deerford soils are in landscape positions similar to those of the Egypt soils, and Foley soils are in the lower positions on the landscape. Forestdale and Gilbert soils are poorly drained and are in the lower positions on the landscape. Also, Forestdale soils have a clayey and loamy subsoil. Gigger soils are in the slightly higher positions on the landscape. They have a fragipan.

Typical pedon of Egypt silt loam, in an area of Gilbert-Egypt silt loams, gently undulating; 5 miles south of Rayville, 3,000 feet south of Parish Road 4422, 1,975 feet east of section line, NE¼SW¼ sec. 10, T. 16 N., R. 7 E.

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; abrupt smooth boundary.

E—6 to 16 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent strong brown (7.5YR 5/6) and few medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; clear irregular boundary.

B/E—16 to 21 inches; strong brown (7.5YR 5/6) (Bt) and grayish brown (10YR 5/2) (E) silt loam; moderate medium subangular blocky structure; friable; few fine roots; about 25 percent tongues of E material; few black stains on faces of some peds; strongly acid; clear irregular boundary.

Bt1—21 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; medium acid; clear irregular boundary.

Bt2—33 to 41 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; slightly acid; clear wavy boundary.

Btn1—41 to 55 inches; yellowish brown (10YR 5/4 and 5/6) silt loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; few black stains on faces of peds; mildly alkaline; clear wavy boundary.

Btn2—55 to 60 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) silty clay loam; weak medium subangular blocky structure; firm; common black stains on faces of peds; few fine black concretions; few fine concretions of calcium carbonate; moderately alkaline.

The thickness of the solum ranges from 60 to 100 inches. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum. The content of exchangeable sodium ranges from 15 to 35 percent in the Btn horizon.

The Ap horizon has value of 4 to 6 and chroma of 2 or 3. It is 3 to 6 inches thick. Reaction ranges from very strongly acid to medium acid, except in areas that have been limed.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3. It is 5 to 12 inches thick. It has few to many mottles in shades of brown, yellow, and gray. Reaction ranges from very strongly acid to medium acid.

The Bt and Btn horizons have hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 3 to 6. Mottles that have chroma of 1 or 2 are in the upper 10 inches of the argillic horizon, and few or common mottles of brown, yellow, or gray are throughout the rest of the horizon. The Bt horizon is silt loam or silty clay loam. It ranges from strongly acid to slightly acid. The Btn horizon is silt loam, silty clay loam, loam, or clay loam. It ranges from neutral to strongly alkaline.

Foley Series

The Foley series consists of poorly drained, very slowly permeable soils that formed in silty material of late Pleistocene age. These soils are on terraces. Slopes are less than 1 percent.

Soils of the Foley series are fine-silty, mixed, thermic Albic Glossic Natraqualfs.

Foley soils commonly are near Deerford, Dexter, Egypt, Gigger, and Gilbert soils. Dexter, Egypt, Gigger, and Gilbert soils do not have a natric horizon. The somewhat poorly drained Deerford and Egypt soils are slightly higher on the landscape than the Foley soils. The well drained Dexter and moderately well drained Gigger soils are in the higher positions on the landscape. Gilbert soils are in landscape positions similar to those of the Foley soils.

Typical pedon of Foley silt loam; 5 miles southeast of Rayville, 137 feet south of fence row, 129 feet east of fence row, NE¼NE¼ sec. 9, T. 16 N., R. 7 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky structure; firm; many fine and medium roots; very strongly acid; abrupt smooth boundary.

Eg—4 to 9 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; firm; common fine and medium roots; strongly acid; gradual wavy boundary.

B/E—9 to 13 inches; about 65 percent grayish brown (10YR 5/2) silty clay loam (Bt) and 35 percent light brownish gray (10YR 6/2) silt loam (E); common medium distinct dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure (Bt); weak medium subangular blocky structure (E); firm; common fine and medium roots; strongly acid; abrupt irregular boundary.

Btg—13 to 21 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine and medium roots; tongues of E material extending throughout the horizon; many black stains on faces of peds; slightly acid; clear wavy boundary.

Btng1—21 to 29 inches; grayish brown (2.5Y 5/2) silty clay loam; few fine distinct olive brown (2.5Y 4/4) mottles; moderate medium subangular blocky structure; firm; few fine and medium roots; few silt coatings on faces of some peds; neutral; clear wavy boundary.

Btng2—29 to 39 inches; grayish brown (2.5Y 5/2) silt loam; some ped coatings of light gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common black and brown concretions; mildly alkaline; gradual wavy boundary.

BCg—39 to 52 inches; grayish brown (2.5Y 5/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; light brownish gray (10YR 6/2) silt coatings on faces of some peds; moderate medium subangular blocky structure; firm; common small black and brown concretions; mildly alkaline; gradual wavy boundary.

Cg—52 to 60 inches; grayish brown (10YR 5/2) silt loam; common medium distinct light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; few large concretions of calcium carbonate; common black and brown soft masses; moderately alkaline.

The thickness of the solum ranges from 40 to more than 72 inches. The content of exchangeable sodium exceeds 15 percent in the Btng horizon.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. It is 3 to 9 inches thick. Reaction ranges from very strongly acid to medium acid.

The Eg horizon has value of 5 or 6 and chroma of 1 or 2. It is silt loam, silt, or very fine sandy loam. It has mottles in shades of gray or brown. Reaction ranges from strongly acid to medium acid.

The Bt part of the B/E horizon, the Btg horizon, and the Btng horizon have hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. They have mottles in shades of gray or brown. Reaction ranges from strongly acid to neutral in the upper part of the B/E and Btg horizons and from neutral to strongly alkaline in the Btng horizon.

The Cg horizon has colors similar to those of the Btg horizon. It is typically silt loam, but loamy textures are possible in some pedons. Reaction ranges from neutral to strongly alkaline.

Forestdale Series

The Forestdale series consists of poorly drained, very slowly permeable soils that formed in recent clayey and loamy alluvium and in the underlying older loamy material. These soils are on alluvial plains. Slopes are dominantly less than 1 percent.

Soils of the Forestdale series are fine, montmorillonitic, thermic Typic Ochraqualfs.

The Forestdale soils in Richland Parish are taxadjuncts to the series because they are underlain by a 2BCg horizon that formed in loamy terrace material. This difference, however, does not significantly affect the use and management of the soils.

Forestdale soils commonly are near Egypt, Foley, Gigger, Necessity, and Perry soils. Egypt, Gigger, and Necessity soils are higher on the landscape than the Forestdale soils. They are fine-silty. Foley and Perry soils are in landscape positions similar to those of the Forestdale soils. Foley soils are fine-silty and have a natric horizon. Perry soils are very fine textured and crack to a depth of 20 inches or more in most years.

Typical pedon of Forestdale silty clay loam; 9.5 miles north of Holly Ridge, 30 feet south of Parish Road 2290, 45 feet west of Cypress Creek, NW¼NE¼ sec. 28, T. 19 N., R. 8 E.

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

Btg1—4 to 10 inches; gray (10YR 5/1) silty clay; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine and very fine roots; faint discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.

Btg2—10 to 18 inches; gray (10YR 5/1) silty clay; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium roots; faint discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.

Btg3—18 to 34 inches; gray (10YR 5/1) silty clay; common medium distinct dark yellowish brown (10YR 4/4) and few fine distinct brown (10YR 5/3) mottles in the lower part; moderate medium subangular blocky structure; firm; few medium roots; distinct discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.

2BCg1—34 to 43 inches; gray (10YR 5/1) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; faint discontinuous clay films on vertical faces of peds; common thin ped coatings of silt loam; slightly acid; clear smooth boundary.

2BCg2—43 to 60 inches; grayish brown (10YR 5/2) silt loam; common medium distinct olive brown (2.5Y 4/4) mottles; weak medium subangular blocky structure; friable; neutral.

The thickness of the solum ranges from 40 to more than 60 inches. Base saturation is more than 60 percent at a depth of about 50 inches below the upper boundary of the argillic horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or less. It is 4 to 8 inches thick. Reaction ranges from very strongly acid to medium acid, except in areas that have been limed.

The upper part of the Btg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has mottles in shades of brown and yellow. The texture is silty clay loam, silty clay, or clay. Reaction ranges from very strongly acid to medium acid.

The lower part of the Btg horizon and the 2BCg horizon have colors similar to those of the upper part of the Btg horizon. They have mottles in shades of brown or gray. They are silt loam or silty clay loam. Reaction ranges from very strongly acid to mildly alkaline.

Gallion Series

The Gallion series consists of well drained, moderately permeable soils that formed in loamy alluvium deposited by the Arkansas River. These soils are on alluvial plains. Slopes range from 0 to 2 percent.

Soils of the Gallion series are fine-silty, mixed, thermic Typic Hapludalfs.

Gallion soils commonly are near Hebert, Mer Rouge, Perry, Portland, Rilla, and Sterlington soils. Hebert, Perry, and Portland soils are lower on the landscape than the Gallion soils. Hebert soils have chroma of 2 in the upper part of the profile. Perry and Portland soils have a clayey subsoil. Mer Rouge soils are in the slightly lower positions on the landscape. They have value of 3 in the surface layer and the upper part of the subsoil. Rilla and Sterlington soils are slightly higher on the landscape than the Gallion soils. They have a subsoil that is very strongly acid or strongly acid. Also, Sterlington soils are coarse-silty.

Typical pedon of Gallion silt loam; 0.75 mile north of Crew Lake Community, 85 feet north of property line (field drain), 455 feet west of Parish Road 3303, NE¼SE¼ sec. 31, T. 18 N., R. 6 E.

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; fine and medium subangular blocky structure; very friable; few fine roots; medium acid; abrupt smooth boundary.

Bt1—7 to 18 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; common faint stains and dark reddish brown (5YR 3/4) clay films on faces of peds, in root channels, and in pores; few black stains; slightly acid; gradual smooth boundary.

Bt2—18 to 24 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; common faint stains and dark reddish brown (5YR 3/4) clay films on faces of peds, in root channels, and in pores; few fine concretions of calcium carbonate; neutral; gradual smooth boundary.

BC—24 to 40 inches; yellowish red (5YR 4/6) silt loam; common medium distinct brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; faint discontinuous clay films; common fine and medium concretions of calcium carbonate; neutral; clear wavy boundary.

C—40 to 60 inches; yellowish red (5YR 5/6) silt loam; weak medium subangular blocky structure; very friable; mildly alkaline.

The thickness of the solum ranges from 40 to 60 inches. Base saturation is more than 80 percent at a depth of about 50 inches below the upper boundary of the argillic horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3. It is 4 to 12 inches thick. Reaction ranges from medium acid to neutral.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. The texture is silt loam, clay loam, or silty clay loam. Reaction ranges from medium acid to moderately alkaline.

The BC horizon typically has colors and textures similar to those of the Bt horizon, but in some pedons it is very fine sandy loam or loam. Reaction ranges from medium acid to moderately alkaline. In some pedons this horizon has few or common concretions of calcium carbonate.

The C horizon has colors and textures similar to those of the BC horizon. Reaction ranges from slightly acid to moderately alkaline. In some pedons this horizon has few or common concretions of calcium carbonate.

Gigger Series

The Gigger series consists of moderately well drained, slowly permeable soils that formed in thin loess over loamy material of late Pleistocene age. These soils have a fragipan. They are on terraces. Slopes range from 1 to 3 percent.

Soils of the Gigger series are fine-silty, mixed, thermic Typic Fragiudalfs.

Gigger soils commonly are near Dexter, Egypt, Foley, Gilbert, Liddieville, and Necessity soils. The well drained Dexter and Liddieville soils are higher on the landscape than the Gigger soils. They do not have a fragipan. Egypt and Necessity soils are in the slightly lower positions on the landscape and are somewhat poorly drained. Also, Egypt soils do not have a fragipan. Foley and Gilbert soils are in the lower positions on the landscape and are poorly drained. Also, Foley soils have a natric horizon.

Typical pedon of Gigger silt loam, in an area of Gigger-Gilbert silt loams, gently undulating; 4.75 miles west of Warden, 1,280 feet east of section line, 2,480 feet south of section line, SW¼NW¼ sec. 17, T. 18 N., R. 9 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

Bt1—6 to 15 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds; medium acid; clear smooth boundary.

Bt2—15 to 24 inches; brown (7.5YR 4/4 and 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds; few black stains on faces of peds; very strongly acid; clear wavy boundary.

Btx1—24 to 34 inches; about 80 percent dark yellowish brown (10YR 4/4) silt loam and 20 percent light brownish gray (10YR 6/2) and grayish brown (10YR 5/2) albic material; few medium distinct yellowish brown (10YR 5/6) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; few fine roots in seams of albic material; few fine pores; faint discontinuous clay films on faces of peds; strongly acid; clear irregular boundary.

2Btx2—34 to 45 inches; dark brown (7.5YR 4/4) silt loam that has a noticeable increase in sand content; light brownish gray (10YR 6/2) seams between some peds; weak very coarse prismatic structure; firm; compact and brittle; common fine pores; faint discontinuous clay films on faces of peds; few medium black stains on faces of some peds; strongly acid; gradual wavy boundary.

2Btx3—45 to 54 inches; dark brown (7.5YR 4/4) silt loam; light brownish gray (10YR 6/2) seams between some peds; few medium distinct yellowish brown (10YR 5/4) mottles; weak very coarse prismatic structure; firm; compact and brittle; common fine pores; faint discontinuous clay films on faces of peds; medium black stains on faces of some peds; strongly acid; gradual wavy boundary.

2Bt—54 to 60 inches; dark brown (7.5YR 4/4) loam; few streaks of light brownish gray (10YR 6/2) and pale brown (10YR 6/3) between some peds; moderate coarse subangular blocky structure; friable; few fine pores; faint discontinuous clay films on faces of most peds; medium acid.

The solum is 60 or more inches thick. Depth to the fragipan ranges from 18 to 35 inches.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is 4 to 9 inches thick. Reaction ranges from extremely acid to neutral.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The texture is silt loam or silty clay loam. Reaction ranges from extremely acid to medium acid. This horizon is 5 to 15 percent sand that is dominantly very fine.

The Btx and 2Btx horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. They have mottles in shades of brown, yellow, and gray. The Btx horizon is silt loam or silty clay loam. The 2Btx horizon is loam, silt loam, silty clay loam, or clay loam. These horizons range from very strongly acid to medium acid.

There is a noticeable increase in content of sand from the Btx horizon to the 2Btx horizon.

The 2Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. The texture is loam, clay loam, sandy clay loam, or fine sandy loam, Reaction ranges from very strongly acid to medium acid.

Gilbert Series

The Gilbert series consists of poorly drained, very slowly permeable soils that formed in thin loess and in the underlying loamy material of late Pleistocene age. These soils are on terraces. Slopes are less than 1 percent.

Soils of the Gilbert series are fine-silty, mixed, thermic Typic Glossaqualfs.

Gilbert soils commonly are near Dexter, Egypt, Foley, Gigger, and Necessity soils. Dexter, Egypt, Gigger, and Necessity soils are higher on the landscape than the Gilbert soils. They have chroma of 3, 4, or 6 throughout the subsoil. Also, Gigger and Necessity soils have a fragipan. Foley soils are in landscape positions similar to those of the Gilbert soils. They have a natric horizon.

Typical pedon of Gilbert silt loam; 4.5 miles northwest of Delhi, 2,500 feet west of Parish Road 1145, south edge of turn row, 40 feet east of half-section line (property fence row), NW¼NE¼ sec. 27, T. 18 N., R. 9 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure in the upper part, platy in the lower part; friable; many fine and very fine roots; few very fine pores; very strongly acid; abrupt smooth boundary.

Eg—6 to 16 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine roots; few fine pores; very strongly acid; abrupt irregular boundary.

B/E—16 to 23 inches; grayish brown (10YR 5/2) silty clay loam (Bt) and light brownish gray (10YR 6/2) silt loam (E); common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint discontinuous clay films on faces of peds; few tongues of light gray (10YR 7/2) silt loam; very strongly acid; clear wavy boundary.

Btg1—23 to 39 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct brown (10YR 4/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; few fine and medium black and brown concretions; few tongues of light brownish gray (10YR 6/2) silt loam; very strongly acid; clear wavy boundary.

Btg2—39 to 44 inches; grayish brown (10YR 5/2) silty clay loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; faint discontinuous clay films on faces of peds; tongues of light brownish gray (10YR 6/2) silt loam that decrease in thickness with increasing depth; black stains on faces of some peds; strongly acid; clear wavy boundary.

Btng—44 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; few fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; faint discontinuous clay films on faces of peds; few medium black and brown concretions; black stains on faces of some peds; neutral.

The thickness of the solum ranges from 60 to 100 inches. The content of exchangeable sodium ranges from 15 to 35 percent in the Btng horizon. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 to 6 and chroma of 2 or 3. It is 3 to 7 inches thick. Reaction ranges from very strongly acid to medium acid, except in areas that have been limed.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It is 5 to 15 inches thick. It has mottles in shades of brown or gray. Reaction ranges from very strongly acid to medium acid.

The Btg and Btng horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. They have few to many mottles in shades of brown or gray. The Btg horizon is silt loam or silty clay loam. The Btng horizon is silt loam, silty clay loam, loam, or clay loam. Reaction ranges from very strongly acid to medium acid in the Btg horizon and from neutral to strongly alkaline in the Btng horizon.

Grenada Series

The Grenada series consists of moderately well drained soils that formed in thick loess of late Pleistocene age. These soils are on terraces. They have a fragipan. Permeability is moderate above the fragipan and slow in the fragipan. Slopes range from 1 to 12 percent.

Soils of the Grenada series are fine-silty, mixed, thermic Glossic Fragiudalfs.

Grenada soils commonly are near Calhoun, Calloway, and Loring soils. The poorly drained Calhoun soils are lower on the landscape than the Grenada soils. They do not have a fragipan. Calloway soils are in the slightly lower positions on the landscape. They have grayish mottles in the upper part of the subsoil. Loring soils are in landscape positions similar to those of the Grenada soils. They have a single zone of clay accumulation above the fragipan.

Typical pedon of Grenada silt loam, in an area of Grenada-Calhoun silt loams, gently undulating; about 2.5 miles northwest of Delhi, 255 feet west of Parish Road 1145, 25 feet north of the center of the section, SE¼NE¼ sec. 3, T. 17 N., R. 9 E.

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

Bw1—6 to 16 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

Bw2—16 to 23 inches; mottled yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) silt loam; common medium distinct brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; common fine roots; common black stains on faces of peds; common soft black and brown masses; very strongly acid; clear smooth boundary.

E—23 to 27 inches; light brownish gray (10YR 6/2) silt loam; massive in place parting to weak medium subangular blocky structure; very friable; few fine roots; many fine and medium black and brown masses; very strongly acid; clear irregular boundary.

Btx1—27 to 37 inches; brown (7.5YR 4/4) silt loam; many medium distinct grayish brown (10YR 5/2) and common medium distinct yellowish brown (10YR 5/6) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly brittle; faint discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

Btx2—37 to 47 inches; brown (7.5YR 4/4) silt loam; yellowish brown (10YR 5/4) silt coatings on faces of peds; light brownish gray (10YR 6/2) silt loam in root channels; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; brittle; faint discontinuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btx3—47 to 56 inches; brown (7.5YR 4/4) silt loam; yellowish brown (10YR 5/4) silt coatings on faces of peds; moderate very coarse prismatic structure; firm; brittle; common very fine and fine pores; faint discontinuous clay films on faces of peds; few black stains on faces of peds; strongly acid; gradual smooth boundary.

Btx4—56 to 60 inches; brown (7.5YR 4/4) silt loam; yellowish brown (10YR 5/4) silt coatings on faces of peds; moderate very coarse prismatic structure; firm; brittle; common very fine and fine pores; faint discontinuous clay films on faces of peds; common black stains on faces of peds and along root channels; very strongly acid.

The combined thickness of horizons having less than 10 percent sand is more than 48 inches. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 or 5 and chroma of 2 to 4. It is 4 to 8 inches thick. Reaction ranges from very strongly acid to medium acid, except in areas that have been limed.

The Bw horizon has value and chroma of 4 to 6. It has mottles in shades of brown and gray. The texture is silt loam or silty clay loam. Reaction ranges from very strongly acid to medium acid.

The E horizon has value of 5 to 7 and chroma of 1 or 2. It has mottles in shades of brown. Reaction ranges from very strongly acid to medium acid.

The Btx horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6, or it has hue of 7.5YR and value and chroma of 4. It has mottles in shades of brown and gray. The texture is silt loam or silty clay loam. Reaction ranges from very strongly acid to medium acid in the upper part and from strongly acid to neutral in the lower part.

Hebert Series

The Hebert series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy alluvium deposited by the Arkansas River. These soils are on alluvial plains. Slopes range from 0 to 3 percent.

Soils of the Hebert series are fine-silty, mixed, thermic Aeric Ochraqualfs.

Hebert soils commonly are near Mer Rouge, Perry, Portland, Rilla, and Sterlington soils. Mer Rouge soils are in landscape positions similar to those of the Hebert soils. They have value of 3 in the surface layer and the upper part of the subsoil. Perry and Portland soils are in the lower positions on the landscape. They have a clayey subsoil. Rilla and Sterlington soils are in the higher positions on natural levees. They have chroma of 4 to 6 throughout the subsoil. Also, Sterlington soils are coarse-silty.

Typical pedon of Hebert silt loam; 4.5 miles southwest of Rayville, 800 feet north of fence row, 45 feet west of center of gravel road, SE¼SW¼ sec. 26, T. 17 N., R. 6 E.

Ap1—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; common fine roots; very strongly acid; abrupt smooth boundary.

Ap2—2 to 5 inches; grayish brown (10YR 5/2) silt loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium granular structure; friable; common fine roots; very strongly acid; abrupt smooth boundary.

E—5 to 10 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine roots; medium acid; clear wavy boundary.

Bt1—10 to 17 inches; silty clay loam that is light brownish gray (10YR 6/2) coated and brown (10YR 5/3) uncoated; common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous grayish brown (10YR 5/2) clay films on faces of peds; medium acid; clear wavy boundary.

Bt2—17 to 27 inches; silty clay loam that is grayish brown (10YR 5/2) coated and pale brown (10YR 6/3) uncoated; common medium faint light brownish gray (10YR 6/2) and common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—27 to 39 inches; reddish brown (5YR 5/3) silty clay loam; common medium prominent light brownish gray (10YR 6/2) and few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous grayish brown (10YR 5/2) clay films on faces of peds and making up more than 50 percent of the horizon; few fine black concretions; strongly acid; clear wavy boundary.

Bt4—39 to 44 inches; reddish brown (5YR 5/3) loam; common medium prominent light brownish gray (10YR 6/2) and few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; faint discontinuous grayish brown (10YR 5/2) clay films on faces of peds and making up more than 50 percent of the horizon; strongly acid; clear wavy boundary.

BC1—44 to 50 inches; reddish brown (5YR 5/4) very fine sandy loam; light brownish gray (10YR 6/2) silt coatings on faces of peds; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

BC2—50 to 60 inches; reddish brown (5YR 5/4) silt loam; light brownish gray (10YR 6/2) silt coatings on faces of peds; few medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; medium acid.

The thickness of the solum ranges from 36 to 72 inches.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. It is 4 to 10 inches thick. Reaction ranges from very strongly acid to neutral. The texture is silt loam or silty clay loam.

The E horizon has value of 5 to 7 and chroma of 1 to 3. It is 2 to 10 inches thick. The texture is silt loam, loam, or very fine sandy loam. Reaction ranges from very strongly acid to neutral.

The Bt horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 to 6, and chroma of 2 to 4. The texture is silty clay loam, silt loam, or loam. Reaction ranges from very strongly acid to slightly acid.

The BC horizon has colors similar to those of the Bt horizon. It is silt loam, silty clay loam, or very fine sandy loam. Reaction ranges from strongly acid to mildly alkaline.

Liddieville Series

The Liddieville series consists of well drained, moderately permeable soils that formed in loamy and sandy material of late Pleistocene age. These soils are on terraces. Slopes range from 2 to 5 percent.

Soils of the Liddieville series are fine-loamy, mixed, thermic Ultic Hapludalfs.

Liddieville soils commonly are near Dexter, Egypt, Gigger, Gilbert, Necessity, and Perry soils. Dexter, Egypt, Gigger, Gilbert, and Necessity soils contain more silt and less sand in the upper part of the solum than the Liddieville soils. Perry soils have a clayey subsoil. Dexter soils are in landscape positions similar to those of the Liddieville soils. Egypt, Gigger, Gilbert, Necessity, and Perry soils are lower on the landscape than the Liddieville soils.

Typical pedon of Liddieville fine sandy loam, 2 to 5 percent slopes; 2.5 miles south of Start, 480 feet north of fence row, 2,400 feet west of Highway 133, NW¼NW¼ sec. 21, T. 17 N., R. 6 E.

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

BA—5 to 12 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; friable;

strongly acid; clear smooth boundary.
Bt1—12 to 27 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; distinct continuous clay films on faces of peds; few dark stains in the lower part; strongly acid; clear smooth boundary.
Bt2—27 to 40 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; distinct continuous clay films on faces of peds; few fine dark stains; very strongly acid; clear smooth boundary.
BC—40 to 49 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; very friable; very strongly acid; gradual smooth boundary.
C—49 to 60 inches; strong brown (7.5YR 4/6) loamy fine sand; massive; very friable; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Base saturation is 35 to 60 percent at a depth of about 50 inches below the upper boundary of the argillic horizon. Reaction ranges from very strongly acid to neutral throughout the profile. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 or 4. It is 3 to 10 inches thick.

The BA horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The texture is very fine sandy loam, fine sandy loam, or loam.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The texture is clay loam, loam, or sandy clay loam. The content of clay averages 18 to 30 percent in the control section.

The BC horizon has colors similar to those of the Bt horizon. It has mottles in shades of red and brown in some pedons. The texture is loam, very fine sandy loam, or fine sandy loam.

The C horizon has hue of 10YR, 7.5YR, or 5YR and value and chroma of 4 to 6. It has few or common mottles in shades of red or brown. The texture is fine sandy loam, very fine sandy loam, loam, or loamy fine sand.

Loring Series

The Loring series consists of moderately well drained soils that formed in thick loess of late Pleistocene age. These soils are on terraces. They have a fragipan. Permeability is moderate above the fragipan and moderately slow in the fragipan. Slopes range from 1 to 5 percent.

Soils of the Loring series are fine-silty, mixed, thermic Typic Fragiudalfs.

Loring soils commonly are near Calhoun, Calloway, and Grenada soils. Calhoun soils are lower on the landscape than the Loring soils and are poorly drained. Also, they do not have a fragipan. Calloway soils are in the slightly lower positions on the landscape. They have grayish mottles in the upper part of the subsoil. Grenada soils are in landscape positions similar to those of the Loring soils. They have two zones of clay accumulation above the fragipan.

Typical pedon of Loring silt loam, 1 to 5 percent slopes; about 0.8 mile west of Warden, 790 feet north of Highway 855, 55 feet west of center of gravel road, SE¼SE¼ sec. 14, T. 18 N., R. 9 E.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; many fine roots; extremely acid; clear smooth boundary.
BA—7 to 12 inches; strong brown (7.5YR 4/6) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.
Bt1—12 to 20 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; extremely acid; clear smooth boundary.
Bt2—20 to 28 inches; strong brown (7.5YR 4/6) silt loam; moderate medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; few pale brown (10YR 6/3) silt coatings on faces of peds; extremely acid; clear smooth boundary.
Btx1—28 to 35 inches; brown (7.5YR 4/4) silt loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; prisms are firm and brittle and make up about 70 percent of the horizontal cross section; few fine roots between prisms; faint discontinuous clay films on faces of peds; few light yellowish brown (10YR 6/4) silt coatings on faces of peds; few fine black stains inside prisms; extremely acid; clear irregular boundary.
Btx2—35 to 45 inches; mottled strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) silt loam; weak very coarse prismatic structure parting to weak medium subangular blocky; prisms are dense and brittle and make up about 75 percent of the horizontal cross section; few fine roots between prisms; faint discontinuous clay films on faces of peds within prisms; common pale brown (10YR 6/3) silt coatings on faces of peds; few fine black and brown concretions; very strongly acid; gradual wavy boundary.
Btx3—45 to 60 inches; mottled strong brown (7.5YR

5/6) and brown (10YR 4/4) silt loam; weak very coarse prismatic structure parting to weak medium subangular blocky; prisms are dense and brittle and make up about 75 percent of the horizontal cross section; faint discontinuous clay films on faces of peds; common gray (10YR 6/1) and light brownish gray (10YR 6/2) silt coatings on faces of peds; strongly acid.

The thickness of the solum ranges from 45 to 75 inches. Depth to the fragipan ranges from 14 to 35 inches. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is 6 to 9 inches thick. Reaction ranges from extremely acid to medium acid.

The BA and Bt horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. They are silt loam or silty clay loam. Reaction ranges from extremely acid to medium acid. In some pedons the Bt horizon has few gray mottles in the lower part.

The Btx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It has few to many mottles in shades of brown, yellow, and gray. The texture is silt loam or silty clay loam. Reaction ranges from extremely acid to medium acid.

Some pedons have a C horizon. This horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam. Reaction ranges from very strongly acid to slightly acid.

Maurepas Series

The Maurepas series consists of very poorly drained, rapidly permeable soils that formed in thick accumulations of decomposed woody and herbaceous plant remains. These soils are in former stream channels of the old Arkansas River. Slopes are less than 1 percent.

Soils of the Maurepas series are euic, thermic Typic Medisaprists.

The Maurepas soils in Richland Parish are taxadjuncts because they are more acid throughout than is defined as the range for the series. This difference, however, does not significantly affect the use and management of the soils.

Maurepas soils commonly are near Hebert, Perry, Portland, and Yorktown soils. These nearby soils are mineral soils. Hebert, Perry, and Portland soils are in higher positions on the flood plain than the Maurepas soils. Yorktown soils are in landscape positions similar to those of the Maurepas soils.

Typical pedon of Maurepas muck; 1 mile west of Girard, 90 feet north of Highway 80, 105 feet east of the west bank of the old channel scar, SW¼SE¼ sec. 2, T. 17 N., R. 6 E.

Oa1—0 to 10 inches; very dark grayish brown (10YR 3/2) muck; massive; very fluid; about 10 percent fiber, 2 percent rubbed; about 70 percent mineral material; strongly acid; clear smooth boundary.

Oa2—10 to 22 inches; dark brown (7.5YR 3/2) muck; massive; very fluid; about 25 percent fiber, 2 percent rubbed; about 40 percent mineral material; strongly acid; clear smooth boundary.

Oa3—22 to 37 inches; dark brown (7.5YR 3/2) muck; massive; very fluid; about 40 percent fiber, 1 percent rubbed; about 40 percent mineral material; very strongly acid; clear smooth boundary.

Oa4—37 to 60 inches; dark brown (7.5YR 3/4) muck; massive; very fluid; about 40 percent fiber, 3 percent rubbed; about 20 percent woody fiber; about 40 percent mineral material; very strongly acid.

The thickness of the organic material ranges from 51 to 80 inches.

The surface tier has hue of 7.5YR or 10YR, value of 3 or less, and chroma of 2 or less. It ranges from strongly acid to slightly acid. After rubbing, it ranges from 2 to about 40 percent fiber. The Oa1 horizon is 6 to 12 inches thick.

The subsurface tier has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 4 or less. It has as much as 60 percent fiber before rubbing but less than 10 percent after rubbing. Reaction ranges from very strongly acid to slightly acid.

The bottom tier has colors similar to those of the subsurface tier. Reaction ranges from very strongly acid to slightly acid. The organic layers contain between 15 and 45 percent mineral material. Fibers are dominantly woody, but many pedons have as much as 45 percent herbaceous fiber in the 0- to 51-inch control section. In some pedons the organic layers are underlain by slightly fluid, gray clay between depths of 60 and 80 inches.

Mer Rouge Series

The Mer Rouge series consists of moderately well drained, moderately slowly permeable soils that formed in loamy alluvium deposited by the Arkansas River. These soils are on alluvial plains. Slopes are 0 to 1 percent.

Soils of the Mer Rouge series are fine-silty, mixed, thermic Typic Argiudolls.

Mer Rouge soils commonly are near Gallion, Hebert, Perry, Portland, Rilla, and Sterlington soils. These nearby soils do not have a mollic epipedon. Gallion, Rilla, and Sterlington soils are in the slightly higher positions on the landscape and are well drained. Hebert and Portland soils are in the slightly lower positions on the landscape and are somewhat poorly drained. Perry soils are in the lower positions on the landscape and are poorly drained.

Typical pedon of Mer Rouge silt loam, in an area of Mer Rouge-Gallion silt loams; 2.1 miles north of Crew Lake, 1,250 feet east of gravel road, 52 feet north of turn row, NW½SW¼ sec. 29, T. 18 N., R. 6 E.

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

Bt1—4 to 17 inches; very dark gray (10YR 3/1) silty clay loam; few fine distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; distinct discontinuous clay films; slightly acid; clear wavy boundary.

Bt2—17 to 24 inches; very dark grayish brown (10YR 3/2) and brown (7.5YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; faint discontinuous clay films; neutral; gradual wavy boundary.

Bt3—24 to 37 inches; brown (7.5YR 5/4) silt loam; few fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; faint discontinuous clay films; dark stains on faces of some peds; mildly alkaline; clear smooth boundary.

Bk1—37 to 41 inches; yellowish brown (10YR 5/4) loam; few fine faint yellowish brown and common medium distinct very dark grayish brown (10YR 3/2) mottles; weak medium subangular blocky structure; friable; few fine pores; few fine concretions of calcium carbonate; moderately alkaline; clear smooth boundary.

Bk2—41 to 46 inches; reddish brown (5YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine pores; many fine and medium concretions of calcium carbonate; moderately alkaline; clear wavy boundary.

BC—46 to 54 inches; brown (10YR 5/4) silt loam; common medium distinct brown (10YR 5/3) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; moderately alkaline; clear smooth boundary.

C—54 to 60 inches; stratified reddish brown (5YR 5/4) very fine sandy loam and brown (10YR 5/3) silt loam; few medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; moderately alkaline.

The thickness of the solum ranges from 40 to 80 inches. Base saturation is more than 80 percent at a depth of about 50 inches below the upper boundary of the Bt horizon. Thickness of the mollic epipedon ranges from 12 to 24 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. It is 4 to 10 inches thick. Reaction is slightly acid or neutral.

The upper part of the Bt horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. It is silt loam, silty clay loam, or clay loam. It ranges from slightly acid to mildly alkaline. The lower part has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam, clay loam, loam, very fine sandy loam, or silt loam. It is neutral or mildly alkaline.

The Bk, BC, and C horizons typically have the same colors as the lower part of the Bt horizon, but in the subhorizons of some pedons they have hue of 5YR. They are silt loam, loam, or very fine sandy loam. They range from neutral to moderately alkaline.

Necessity Series

The Necessity series consists of somewhat poorly drained, slowly permeable soils that formed in silty and loamy material of late Pleistocene age. These soils are on terraces. They have a fragipan. Slopes range from 0 to 3 percent.

Soils of the Necessity series are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Necessity soils commonly are near Deerford, Dexter, Egypt, Foley, Forestdale, Gigger, and Gilbert soils. Deerford, Dexter, Egypt, Foley, Forestdale, and Gilbert soils do not have a fragipan. Deerford and Egypt soils are in landscape positions similar to those of the Necessity soils. Dexter and Gigger soils are higher on the landscape than the Necessity soils. Gigger soils do not have grayish mottles in the upper part of the Bt horizon. Gilbert, Foley, and Forestdale soils are in the lower positions on the landscape.

Typical pedon of Necessity silt loam, in an area of Necessity-Gilbert silt loams, gently undulating; 3.6 miles northwest of Warden, 1,400 feet west of section line, 1,400 feet south of section line, SW¼NE¼ sec. 9, T. 18 N., R. 9 E.

Ap—0 to 7 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; very strongly acid; abrupt smooth boundary.

Bt—7 to 16 inches; yellowish brown (10YR 5/4 and 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; few brown concretions;

faint discontinuous clay films on faces of peds; extremely acid; clear wavy boundary.

B/E—16 to 27 inches; yellowish brown (10YR 5/6) silty clay loam (Bt) and light brownish gray (10YR 6/2) silt loam (E); few fine faint dark yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; faint discontinuous clay films on faces of peds; few fine and medium black and brown concretions; very strongly acid; clear irregular boundary.

E—27 to 31 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; very friable; few fine pores; few fine and medium black concretions; very strongly acid; clear irregular boundary.

Btx1—31 to 41 inches; dark yellowish brown (10YR 4/6) silt loam; common medium faint yellowish brown (10YR 5/6) and few fine distinct light brownish gray (10YR 6/2) mottles; common seams of light brownish gray (10YR 6/2) between peds; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle in most of the matrix; common fine pores; faint discontinuous clay films on faces of peds; common fine and medium black and brown concretions; few black stains in ped interiors; strongly acid; clear wavy boundary.

Btx2—41 to 51 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct light brownish gray (10YR 6/2) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle in most of the matrix; common fine pores; faint discontinuous clay films on faces of peds; seams of light brownish gray (10YR 6/2) silt loam between peds; few fine and medium black and brown concretions; few black stains on faces of some peds; strongly acid; clear smooth boundary.

BC—51 to 60 inches; yellowish brown (10YR 5/4 and 5/6) loam; few medium distinct brown (7.5YR 5/4) mottles; weak medium subangular blocky structure; firm; slightly acid.

The thickness of the solum ranges from 50 to 80 inches. Depth to the fragipan ranges from 20 to 37 inches. The content of sand ranges from 10 to 35 percent throughout the profile. The content of fine sand or coarser material is less than 15 percent in the upper 20 inches of the argillic horizon. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has value of 4 to 6 and chroma of 2 or 3. It is 4 to 10 inches thick. Reaction ranges from very strongly acid to medium acid.

The Bt horizon and the Bt part of the B/E horizon have value of 4 to 6 and chroma of 3 to 6. They have mottles in shades of gray, yellow, or brown. They are silt loam, silty clay loam, loam, or clay loam. Reaction ranges from extremely acid to medium acid.

The E horizon and the E part of the B/E horizon have value of 5 to 7 and chroma of 2 or 3. They have mottles in shades of brown and gray. Reaction ranges from very strongly acid to medium acid.

The Btx horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6. It has mottles in shades of gray, yellow, or brown. The texture is silt loam, loam, or clay loam. Reaction ranges from very strongly acid to slightly acid.

The BC horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. The texture is loam or clay loam. Reaction ranges from very strongly acid to slightly acid.

Perry Series

The Perry series consists of poorly drained, very slowly permeable soils that formed in loamy and clayey alluvium deposited by the Arkansas River and, possibly, the Mississippi River. These soils are on alluvial plains. They are subject to flooding unless protected by levees. Slopes are dominantly less than 1 percent.

Soils of the Perry series are very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Perry soils commonly are near Forestdale, Gallion, Gilbert, Hebert, Mer Rouge, Necessity, Portland, Rilla, and Sterlington soils. All of the nearby soils are in higher or slightly higher positions on the landscape than the Perry soils. Forestdale and Portland soils have a clayey subsoil. Gallion, Gilbert, Hebert, Mer Rouge, Necessity, Rilla, and Sterlington soils are loamy throughout. Forestdale soils do not crack to a depth of 20 inches. Portland soils are brown or reddish brown throughout.

Typical pedon of Perry clay; 4.25 miles north of Rayville, 2,500 feet west of Parish Road 3333, 35 feet north of the center of Parish Road 3334, 135 feet west of second power line pole from old building, SE¼SW¼ sec. 11, T. 18 N., R. 7 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) clay; few medium distinct yellowish brown (10YR 5/6) mottles in the lower part; moderate medium subangular blocky structure; firm; strongly acid; abrupt smooth boundary.

Bg1—6 to 14 inches; gray (10YR 5/1) clay; many medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few slickensides in the lower part; strongly acid; gradual smooth boundary.

Bg2—14 to 21 inches; gray (10YR 5/1) clay; common medium distinct dark brown (10YR 4/3) mottles; moderate medium subangular blocky structure; firm; few fine roots; common slickensides; strongly acid; clear wavy boundary.

2Bw—21 to 31 inches; dark reddish brown (5YR 3/4) clay; moderate medium subangular blocky structure; firm; few fine roots; common slickensides; slightly acid; clear wavy boundary.

2Bk1—31 to 41 inches; reddish brown (5YR 4/3) clay; moderate medium angular blocky structure; firm; common fine and medium concretions of carbonate; few black stains; neutral; gradual wavy boundary.

2Bk2—41 to 60 inches; reddish brown (5YR 4/4) clay; moderate medium angular blocky structure; firm; common fine and medium concretions of calcium carbonate; few black stains; mildly alkaline.

The thickness of the solum ranges from 30 to 60 inches. The content of clay ranges from 60 to 85 percent throughout the profile.

The Ap horizon has value of 3 to 6 and chroma of 1 or 2. The texture is silty clay loam or clay. It is 4 to 9 inches thick. Reaction ranges from very strongly acid to medium acid.

The Bg horizon has value of 4 to 6 and chroma of 1. It has mottles in shades of red and brown. Reaction ranges from strongly acid to neutral.

The 2Bk horizon has value of 3 or 4 and chroma of 2 to 4. The texture is clay or silty clay. Reaction ranges from slightly acid to moderately alkaline.

Some pedons have a 2C horizon. This horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 1 to 4. It is calcareous. The texture is clay. Reaction ranges from slightly acid to moderately alkaline.

Portland Series

The Portland series consists of somewhat poorly drained, very slowly permeable soils that formed in loamy and clayey alluvium deposited by the Arkansas River. These soils are on alluvial plains. They are protected from flooding or are only rarely flooded. Slopes are 0 to 1 percent.

Soils of the Portland series are very fine, mixed, nonacid, thermic Vertic Haplaquepts.

Portland soils commonly are near Gallion, Hebert, Mer Rouge, Necessity, Perry, Rilla, and Sterlington soils. Gallion, Mer Rouge, Necessity, Rilla, and Sterlington soils are higher on the landscape than the Portland soils. They are loamy throughout. Perry soils are in the slightly lower positions on the landscape and are poorly drained. They are dark gray or gray in the upper part of the solum.

Typical pedon of Portland clay; on western boundary of Rayville city limits, 380 feet north of the center of a hard surfaced road, 10 feet west of the edge of the woods, NE¼SE¼ sec. 8, T. 17 N., R. 7 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) clay; moderate fine subangular blocky structure; very firm; common fine and very fine roots; very strongly acid; abrupt smooth boundary.

Bw1—5 to 20 inches; dark brown (7.5YR 4/4) clay; common medium distinct grayish brown (10YR 5/2) mottles; moderate medium angular blocky structure; firm; common fine roots; common slickensides; very strongly acid; gradual wavy boundary.

Bw2—20 to 37 inches; reddish brown (5YR 4/3) clay; common medium distinct brown (7.5YR 4/4) and few fine distinct grayish brown (10YR 5/2) mottles in the upper part; moderate medium angular blocky structure; firm; few fine roots; common medium and large slickensides; slightly acid; clear wavy boundary.

Bw3—37 to 50 inches; reddish brown (5YR 4/4) clay; moderate medium subangular blocky structure; firm; common slickensides; few fine concretions of calcium carbonate; common fine black stains on faces of peds; neutral; clear wavy boundary.

C—50 to 60 inches; reddish brown (5YR 4/4) clay; massive; firm; common very fine to coarse concretions of calcium carbonate; moderately alkaline.

The thickness of the solum ranges from 40 to more than 60 inches. The content of clay ranges from 60 to 85 percent throughout the profile.

The Ap horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 3. It is 3 to 12 inches thick. Reaction is very strongly acid or strongly acid, except in areas that have been limed. The texture is clay or silty clay loam.

The Bw horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It has few or common mottles with chroma of 2 or less in the upper part. The texture is clay or silty clay. Reaction ranges from very strongly acid to medium acid in the upper part and from slightly acid to moderately alkaline in the lower part. Common or many slickensides and wedge-shaped aggregates are in the 10- to 40-inch control section.

The C horizon has the same colors and textures as the Bw horizon. It ranges from slightly acid to moderately alkaline.

Rilla Series

The Rilla series consists of well drained, moderately permeable soils that formed in loamy alluvium deposited by the Boeuf River, a former channel of the old Arkansas River. These soils are on alluvial plains. Slopes range from 0 to 3 percent.

Soils of the Rilla series are fine-silty, mixed, thermic Typic Hapludalfs.

Rilla soils commonly are near Gallion, Hebert, Perry, Portland, and Sterlington soils. Hebert soils are lower on the landscape than the Rilla soils. They have chroma of 2 in the upper 20 inches of the profile. Gallion soils are in the slightly lower positions on the landscape. They have a subsoil that is more alkaline than that of the Rilla soils. Perry and Portland soils are in the lower positions on the landscape. They have a clayey subsoil. Sterlington soils are in landscape positions similar to those of the Rilla soils. They are coarse-silty.

Typical pedon of Rilla silt loam, 1 to 3 percent slopes; 2.5 miles north of Rayville, 190 feet west of Highway 137, 25 feet north of turn row, 30 feet east of an oak tree, NE¼NW¼ sec. 28, T. 18 N., R. 7 E.

Ap—0 to 4 inches; silt loam that is dark grayish brown (10YR 4/2) in the upper part and brown (10YR 5/3) in the lower part; weak medium granular structure; friable; very strongly acid; abrupt smooth boundary.

E—4 to 10 inches; brown (10YR 5/3) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak thin platy structure in the upper part, weak medium subangular blocky in the lower part; friable; few fine black stains on faces of some peds; very strongly acid; abrupt smooth boundary.

Bt1—10 to 18 inches; mottled reddish brown (5YR 4/4) and yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; few faint discontinuous clay films on faces of peds; few black stains on faces of some peds; very strongly acid; gradual smooth boundary.

Bt2—18 to 32 inches; reddish brown (5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; thin light brown (7.5YR 6/4) coatings of silt on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—32 to 50 inches; yellowish red (5YR 4/6) silt loam; weak medium subangular blocky structure; firm; faint discontinuous clay films on faces of peds; many thin light brown (7.5YR 6/4) coatings of silt on faces of peds; strongly acid; clear smooth boundary.

C—50 to 60 inches; brown (7.5YR 5/4) and yellowish red (5YR 5/6) very fine sandy loam; massive; friable; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. In the upper 30 inches, 15 to 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. It is 4 to 6 inches thick. Reaction ranges from very strongly acid to neutral.

The E horizon has the same colors as the Ap horizon. It is 2 to 10 inches thick. The texture is silt loam or very fine sandy loam. Reaction ranges from very strongly acid to neutral.

The Bt horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. The texture is silty clay loam, silt loam, or clay loam. Reaction ranges from extremely acid to strongly acid.

The C horizon has the same colors as the Bt horizon. The texture is very fine sandy loam, loam, silty clay loam, or silty clay. Reaction ranges from very strongly acid to neutral.

Sharkey Series

The Sharkey series consists of poorly drained, very slowly permeable soils that formed in clayey alluvium deposited by the Mississippi River. These soils are on alluvial plains. Slopes are 0 to 1 percent.

Soils of the Sharkey series are very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Sharkey soils commonly are near Dundee and Tensas soils. Dundee soils are higher on the landscape than the Sharkey soils. They are loamy throughout. Tensas soils are in the slightly higher positions on the landscape. They are loamy in the lower part of the subsoil.

Typical pedon of Sharkey clay; 2.3 miles northeast of Warden, 25 feet south of section line, 406 feet west of drain, NE¼NE¼ sec. 17, T. 18 N., R. 10 E.

Ap1—0 to 3 inches; dark grayish brown (10YR 4/2) clay; common medium prominent yellowish brown (10YR 5/6) and common medium distinct gray (10YR 5/1) mottles; moderate medium and fine granular structure; plastic and sticky; strongly acid; clear smooth boundary.

Ap2—3 to 9 inches; dark gray (10YR 4/1) clay; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium and fine granular structure; very plastic and sticky; strongly acid; clear smooth boundary.

Bg1—9 to 22 inches; dark gray (10YR 4/1) clay; common medium prominent yellowish brown (10YR 5/6 and 5/8) mottles; weak medium subangular blocky structure; firm; plastic; strongly acid; clear smooth boundary.

Bg2—22 to 31 inches; dark gray (10YR 4/1) clay; common medium prominent yellowish brown (10YR 5/6) and few medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure parting to weak fine angular blocky; firm; plastic; common shiny faces on peds; medium acid; gradual smooth boundary.

BCg—31 to 49 inches; dark gray (10YR 4/1) clay; common medium distinct dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure parting to weak fine angular blocky; firm; plastic; few fine and medium roots; few slickensides; few black and brown concretions; slightly acid; gradual smooth boundary.

Cg—49 to 60 inches; olive gray (5Y 5/2) clay; few medium prominent dark yellowish brown (10YR 4/4) mottles; weak medium angular blocky structure; firm; plastic; few fine crystals of gypsum; neutral.

The thickness of the solum ranges from 36 to 60 inches. Cracks as much as 3 inches in width form to a depth of 20 inches or more in most years.

The Ap horizon has value of 3 or 4 and chroma of 1 or 2. It is 4 to 10 inches thick. Where value is 3 it is less than 10 inches thick. Reaction ranges from strongly acid to neutral.

The Bg and BCg horizons have hue of 10YR or 5Y, value of 4 to 6, and chroma of 1, or they are neutral in hue and have value of 4 to 6. They have mottles in shades of brown and yellow. Reaction ranges from strongly acid to moderately alkaline.

The Cg horizon has the same colors and mottles as the Bg and BCg horizons. The texture typically is clay or silty clay, but some pedons have coarser textures below a depth of 40 inches. Reaction ranges from neutral to moderately alkaline.

Sterlington Series

The Sterlington series consists of well drained, moderately permeable soils that formed in loamy alluvium deposited by the Arkansas River. These soils are on alluvial plains. Slopes range from 0 to 3 percent.

Soils of the Sterlington series are coarse-silty, mixed, thermic Typic Hapludalfs.

Sterlington soils commonly are near Gallion, Hebert, Mer Rouge, Perry, Portland, and Rilla soils. Gallion and Mer Rouge soils are slightly lower on the landscape than the Sterlington soils. They are fine-silty. Hebert, Perry, and Portland soils are in the lower positions on the landscape. Hebert soils are fine-silty, and Perry and Portland soils have a clayey subsoil. Rilla soils are in landscape positions similar to those of the Sterlington soils. They are fine-silty.

Typical pedon of Sterlington silt loam, 0 to 1 percent slopes; 3.4 miles south of Start, 295 feet north of canal crossing, 160 feet west of center of turn row, SE¼SE¼ sec. 21, T. 17 N., R. 6 E.

Ap—0 to 6 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; very friable; common fine and very fine roots; strongly acid; abrupt smooth boundary.

E—6 to 10 inches; brown (7.5YR 5/4) silt loam; few fine faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; very friable; few fine roots; strongly acid; clear smooth boundary.

Bt—10 to 20 inches; yellowish red (5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; very strongly acid; clear smooth boundary.

B/E—20 to 25 inches; yellowish red (5YR 5/6) (Bt) and brown (7.5YR 5/4) (E) silt loam; weak medium subangular blocky structure; very friable; very strongly acid; clear smooth boundary.

B′t—25 to 36 inches; yellowish red (5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; light brown (7.5YR 6/4) coatings on faces of peds; very strongly acid; abrupt smooth boundary.

C—36 to 60 inches; brown (7.5YR 5/4) and yellowish red (5YR 4/6) very fine sandy loam; massive; very friable; strongly acid.

The thickness of the solum ranges from 30 to 60 inches. Base saturation ranges from 60 to 80 percent at a depth of about 50 inches below the upper boundary of the Bt horizon. In the upper 30 inches, 15 to more than 50 percent of the effective cation-exchange capacity typically is saturated with exchangeable aluminum.

The Ap horizon has hue of 5YR, 7.5YR, or 10YR, value of 3 to 5, and chroma of 2 to 4. It is 4 to 8 inches thick. Where value is 3 and chroma is 2 or 3, it is less than 7 inches thick. Reaction ranges from very strongly acid to medium acid.

The E horizon has the same colors as the Ap horizon. It is 0 to 10 inches thick. The texture is silt loam or very fine sandy loam. Reaction ranges from very strongly acid to medium acid.

The Bt and B′t horizons have hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. They are silt loam, loam, or very fine sandy loam. Reaction ranges from very strongly acid to slightly acid. Some pedons have subhorizons containing E material that has chroma of 3 or more.

The C horizon has the same colors as the Bt horizon. The texture is very fine sandy loam, loam, silt loam, or silty clay loam. Reaction ranges from strongly acid to neutral.

Tensas Series

The Tensas series consists of somewhat poorly drained, very slowly permeable soils that formed in clayey alluvium and in the underlying loamy alluvium deposited by the Mississippi River. These soils are on alluvial plains. Slopes range from 0 to 3 percent.

Soils of the Tensas series are fine, montmorillonitic, thermic Aeric Ochraqualfs.

Tensas soils commonly are near Dundee and Sharkey soils. Dundee soils are in the higher positions on the landscape. They are loamy throughout. Sharkey soils are in the lower positions on the landscape. They are clayey throughout.

Typical pedon of Tensas silty clay, in an area of Tensas-Sharkey complex; 1.85 miles northeast of Warden, 40 feet south of section line, 75 feet east of drain, NE¼NW¼ sec. 17, T. 18 N., R. 10 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay; weak fine granular structure; firm; medium acid; clear smooth boundary.

Btg1—4 to 12 inches; grayish brown (10YR 5/2) silty clay; common medium distinct yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; few fine black stains; few fine black and brown concretions; strongly acid; clear smooth boundary.

Btg2—12 to 27 inches; grayish brown (10YR 5/2) silty clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; faint discontinuous clay films on faces of peds; few fine black stains along old root channels; few fine and medium concretions; strongly acid; clear smooth boundary.

2BC1—27 to 36 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/6) and common fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; medium acid; clear smooth boundary.

2BC2—36 to 48 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and few medium distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; firm; few fine roots; few fine black and brown concretions; medium acid; clear smooth boundary.

2C—48 to 60 inches; grayish brown (10YR 5/2) loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; firm; medium acid.

The thickness of the solum ranges from 30 to more than 60 inches. Depth to the loamy 2BC horizon ranges from 20 to 36 inches.

The Ap horizon has value of 3 to 5 and chroma of 1 or 2. It is 3 to 8 inches thick. Reaction ranges from very strongly acid to neutral.

The Btg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. It has mottles in shades of brown or yellow. The texture is clay or silty clay. Reaction ranges from very strongly acid to medium acid. Some pedons have subhorizons that have chroma of 1 or that are neutral in hue and have value of 4 or 5.

The 2BC and 2C horizons have hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. The texture is silty clay loam, silt loam, loam, or very fine sandy loam. Reaction ranges from strongly acid to neutral. In some pedons the surfaces of peds have chroma of 1.

Yorktown Series

The Yorktown series consists of very poorly drained, very slowly permeable soils that formed in clayey alluvium deposited by the Arkansas River. These soils are on alluvial plains. They are ponded most of the time and are frequently flooded. Slopes are 0 to 1 percent.

Soils of the Yorktown series are very fine, montmorillonitic, nonacid, thermic Typic Fluvaquents.

The Yorktown soils in Richland Parish are taxadjuncts because they are more acid throughout than is defined as the range for the series. This difference, however, does not significantly affect the use and management of the soils.

Yorktown soils commonly are near Hebert, Maurepas, Perry, Portland, Rilla, and Sterlington soils. Hebert, Perry, Portland, Rilla, and Sterlington soils are higher on the landscape than the Yorktown soils. Maurepas soils are in landscape positions similar to those of the Yorktown soils. Hebert, Rilla, and Sterlington soils are loamy throughout. Maurepas soils are organic. Perry and Portland soils have vertic properties.

Typical pedon of Yorktown clay, frequently flooded; 1.4 miles north of Alto, 225 feet west of the center of Highway 135, 37 feet south of section line, NE¼NE¼ sec. 16, T. 16 N., R. 6 E.

A—0 to 9 inches; dark gray (10YR 4/1) clay; few fine prominent yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bg1—9 to 20 inches; gray (5Y 6/1) clay; few fine prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very sticky and firm; few fine and medium roots; strongly acid; clear smooth boundary.

Bg2—20 to 33 inches; gray (5Y 6/1) clay; many medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very sticky and firm; few fine and medium roots; strongly acid; clear smooth boundary.

Bg3—33 to 51 inches; gray (5Y 6/1) clay; common medium prominent strong brown (7.5YR 5/8) and few medium prominent reddish brown (5YR 4/4) mottles in the lower part; moderate medium subangular blocky structure; very sticky and firm; few fine and medium roots; strongly acid; gradual wavy boundary.

BC—51 to 60 inches; reddish brown (5YR 4/4) clay; common fine prominent gray (5Y 6/1) and few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common black stains on faces of some peds; medium acid.

The thickness of the solum ranges from 50 to 80 inches. Depth to the BC horizon ranges from 40 to 60 inches.

The A horizon has hue of 10YR or 5Y, value of 4 to 6, and chroma of 1 or 2. It is 4 to 10 inches thick. The texture is clay. Reaction ranges from very strongly acid to medium acid.

The Bg horizon has hue of 10YR or 5Y, value of 4 to 6, and chroma of 1. Reaction ranges from very strongly acid to medium acid.

The BC horizon has value of 3 to 5 and chroma of 3 or 4. Reaction ranges from very strongly acid to slightly acid.

Formation of the Soils

This section explains the processes and factors of soil formation as they relate to the soils of Richland Parish.

Processes of Soil Formation

The processes of soil formation determine the kind of soil horizons and the degree of their development. The rate and relative effectiveness of different processes are determined by the factors of soil formation: climate, living organisms, relief, parent material, and time.

Important soil-forming processes include those that result in additions of organic, mineral, and gaseous materials to the soil; losses of these same materials from the soil; the translocation of materials within the soil; and physical and chemical transformation of mineral and organic materials within the soils *(22)*.

Typically, many processes occur simultaneously in soils. In Richland Parish, for example, the accumulation of organic matter, the development of soil structure, and the leaching of bases from soil horizons are simultaneous processes. The influence of a particular process may change with time. For example, installing drainage and water-control systems can change the length of time the soils are flooded or saturated with water. Some important processes that have contributed to the formation of the soils of Richland Parish are discussed in the following paragraphs.

Organic matter has accumulated, undergone partial decomposition, and been incorporated into all of the soils in the parish. Organic matter accumulates mainly in and above the surface layer; consequently, the surface layer is higher in organic matter content than the lower horizons. Organic residues are decomposed, incorporated into the soil, and mixed largely by the activity of living organisms. Many of the more stable products of decomposition remain as finely divided materials. These materials increase granulation, result in dark colors, increase the water-holding capacity and the cation-exchange capacity, and provide nutrients for plants.

The addition of mineral material on the surface has been important in the formation of some of the soils in Richland Parish. The added material, generally in the form of alluvium, provides new parent material in which the processes of soil formation can occur. For example, Sharkey soils formed in areas characterized by accumulations of clayey backswamp sediments deposited by the Mississippi River.

Processes that result in the development of soil structure occur in all of the soils. Plant roots and other organisms contribute to the rearrangement of soil material into aggregates. Organic residues, the products of decomposition, and the secretions of organisms serve as cementing agents that help to stabilize structural aggregates. Alternate wetting and drying as well as shrinking and swelling contribute to the development of structural aggregates and are particularly effective in soils that have large amounts of clay, such as Sharkey, Perry, and Portland soils.

Except for Dexter, Liddieville, Gallion, Rilla, and Sterlington soils, all of the soils in the survey area have horizons in which segregation of iron and manganese compounds has been an important process. This segregation is a result of alternating oxidizing and reducing conditions. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese are predominant over the less soluble oxidized forms in the soil solution. Reduced forms of these elements can result in the gray colors in the Bg and Cg horizons that are characteristic of many of the soils in the parish. In the more soluble reduced form, appreciable amounts of iron and manganese can be removed from the soils or translocated from one part of the soil to another by water. The presence of brown mottles in predominantly gray horizons is indicative of segregation and local concentration of oxidized iron compounds as a result of alternating oxidizing and reducing conditions in the soils. The well drained Dexter, Liddieville, Gallion, Rilla, and Sterlington soils do not have the gray colors associated with wetness and poor aeration and apparently are not dominated by a reducing environment for a significant time.

The loss of components from the soil is also important in the overall process of soil development.

Water moving through the soil leaches soluble bases and any free carbonates that may have been present initially from some horizons of all the soils. All of the soils become less acid with increasing depth below the horizons at or near the surface. The most extensive leaching has occurred in Liddieville, Dexter, Gigger, Loring, Grenada, Dundee, Necessity, Rilla, Sterlington, and Gigger soils. These soils are acid and do not become neutral or alkaline within the solum. Deerford, Foley, Egypt, and Gilbert soils are the least severely leached soils in the parish as indicated by mildly alkaline or moderately alkaline reaction in the lower horizons of the solum.

The formation, translocation, and accumulation of clay in the soil profile are also important to the development of most of the soils in Richland Parish. Silicon and aluminum released as a result of weathering of such minerals as pyroxenes, amphiboles, and feldspars can recombine with the components of water to form secondary clay minerals, such as kaolinite. Layer silicate minerals, such as biotite, glauconite, and montmorillonite, can also weather to form other clay minerals, such as vermiculite or kaolinite. Horizons of secondary accumulation of clay result largely from the translocation of clay from upper to lower horizons. As water moves downward, it can carry small amounts of clay in suspension. This clay is deposited and accumulates at the depth of water penetration or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over long periods, such processes can result in distinct horizons of clay accumulation. Except for Perry, Portland, and Sharkey soils, all of the soils in Richland Parish have a subsoil characterized by a secondary accumulation of clay.

Secondary accumulation of calcium carbonate in the lower soil horizons has been an important process in some of the soils in Richland Parish. Deerford, Egypt, Foley, Gilbert, Gallion, Mer Rouge, Perry, and Portland soils have, in some places, secondary accumulations of carbonates within a depth of 60 inches. Carbonates dissolved from overlying horizons may have been translocated to these depths by water and redeposited. Other sources and processes that contribute to carbonate accumulations include the segregation of material within the horizon, the upward translocation of materials from deeper horizons during fluctuation of water table levels, and the weathering of materials from minerals, such as plagioclase.

Factors of Soil Formation

The interaction of five main factors influences the processes of soil formation and results in differences among the soils. These factors are climate, plants and other living organisms, relief, time, and parent material *(12)*. The relative effect of any one factor can differ from place to place, but the interaction of all the factors determines the kind of soil that forms. Because of these interactions, many of the differences in soils cannot be attributed to differences in only one factor. For example, organic matter content in the soils of Richland Parish is influenced by several factors, including relief, parent material, and living organisms. Such interactions do not preclude recognition of the manner in which a given factor can influence a specific soil property. In the following paragraphs the factors of soil formation are described as they relate to soils in the parish.

Climate

Richland Parish is in a region characterized by a humid, subtropical climate. The climate is relatively uniform throughout the parish. As a result, local differences in the soils are not caused by large differences in atmospheric conditions. The warm average temperatures and large amounts of precipitation favor a rapid rate of weathering of readily weatherable minerals in the soils. The most permeable soils are typically the most highly leached and are acid throughout the solum. The less permeable soils are generally less leached, as indicated by soil reaction that becomes more alkaline with increasing depth. Many of the soils in the parish have developed distinct horizons of secondary accumulation of clay. Differences in weathering, leaching, and translocation of clay in soils in the parish are caused chiefly by variations in time, relief, and parent material rather than in climate. Weathering processes involving the release and reduction of iron and manganese are indicated by gray colors in Eg, Bg, or Cg horizons in many of the soils. Oxidation and segregation of these elements as a result of alternating oxidizing and reducing conditions is indicated by mottled horizons and concretions of iron and manganese in most of the soils.

Another important influence of climate is expressed in the clayey soils that have large amounts of expanding lattice minerals in which large changes in volume occur upon wetting and drying. Wetting and drying cycles and associated volume changes are important factors in the formation and stabilization of structural aggregates in these soils. When the wet soils dry, cracks of varying width and depth can form as a result of the decrease in volume. When the cracks form, the depth and extent of cracking are influenced by climate. Repeated large changes in volume frequently result in structural problems for buildings, roads, and other structures. The formation of deep, wide cracks may shear roots of plants. Much of the water from initial rainfall or irrigation infiltrates through the cracks. Once the soil has become wet, however, infiltration rates become slow or very slow. Cracks form extensively in Perry, Portland, and Sharkey soils late in summer and early in fall, when the soils are driest. During this time, cracks of an inch or more in width and extending to a depth of more than 20 inches can form in most years. Cracks that are less extensive and less deep sometimes form in some of the less clayey soils, such as Forestdale and Tensas soils.

Living Organisms

Living organisms affect the processes of soil formation by their major influence on the kind and extent of horizon development. Plant growth and animal activity physically modify the soil, thereby affecting porosity, tilth, and the content of organic matter. Plants use energy from the sun to synthesize compounds necessary for growth. The decomposition of plants returns nutrients to the soil and serves as a major source of organic residue. The decomposition and incorporation of organic matter by micro-organisms enhance soil tilth and generally increase the rate of water infiltration and the available water capacity.

Relatively stable organic compounds in soils generally have a high cation-exchange capacity and thus increase the capacity of the soil to absorb and store nutrients, such as calcium, magnesium, and potassium. The extent of these and other processes and the kind of organic matter produced can vary widely, depending on the kinds of organisms living in and on the soil. For example, the organic matter content of soils that formed under prairie vegetation is typically higher than in soils that formed under forest vegetation *(10, 12)*. The native vegetation on the Tensas, Sharkey, Sterlington, Rilla, Gallion, Mer Rouge, Hebert, Portland, Perry, Dexter, Dundee, and Forestdale soils was mainly mixed bottom land hardwoods and their associated understory and ground cover vegetation. Native vegetation on the Loring, Grenada, Calloway, Calhoun, Liddieville, Dexter, Gigger, and Necessity soils was mixed hardwood and pine. On the Deerford, Foley, Egypt, and Gilbert soils, the native vegetation consisted mostly of hardwoods and associated understory vegetation that is tolerant of the high level of exchangeable sodium present in subsurface horizons of these soils.

The cultivated soils that formed under mixed hardwood and pine forests are generally lower in organic matter content and have a more distinct E horizon than uncultivated soils that formed under only 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 accumulated in and on the soils are influenced by the kind and number of micro-organisms. Aerobic organisms use oxygen from the air to decompose organic matter through rapid oxidation. These organisms are most abundant and prevail for long periods in the better drained and aerated soils, such as Dexter and Liddieville soils. Anaerobic organisms are dominant in the more poorly drained soils for long periods during the year. Anaerobic organisms do not require oxygen from the air, and they decompose organic residues very slowly. These different rates of decomposition can result in greater accumulations of organic matter in poorly drained soils than in better drained soils.

Relief

Major physiographic features of Richland Parish are discussed in the section "Landforms and Surface Geology." Relief and other physiographic features influence soil formation by affecting drainage, runoff, erosion and deposition, and exposure to the sun and wind.

The influence of relief on the soils in Richland Parish is especially evident in runoff rate, drainage, depth to a seasonal high water, and the length of time during which the water table is high. Gigger, Dexter, Necessity, and Gilbert soils, for example, which formed in mixed loess, are in areas with progressively less relief and generally occur at progressively lower elevations. Runoff is medium on Dexter soils, which typically are gently sloping, but it is slow or very slow on the poorly drained, level or depressional Calhoun soils.

Depth to the seasonal high water table shows similar variation related to differences in relief. The depth ranges from more than 6 feet in Dexter soils to less than 2 feet in Gilbert soils. Duration of the high water table is longer in soils that have less relief and are at the lower elevations. In Calhoun soils, for example, the water table is generally within a depth of 1.5 feet for as much as 5 months. In Loring soils it is generally at a depth of 2.0 to 3.0 feet for as much as 3 months.

Soil drainage also is more restricted in areas of less relief and at the lower elevations. Dexter, Gigger, Necessity, and Gilbert soils are well drained, moderately well drained, somewhat poorly drained, and poorly drained, respectively.

Time

The kinds of horizons that form and their degree of development are influenced by the length of time that the other factors of soil formation have been active. A long time is generally required for the development of distinct horizons. In Richland Parish, differences in the time of soil formation amount to several thousand years for some of the soils.

Dundee, Tensas, Sharkey, Sterlington, Rilla, Gallion, Mer Rouge, Hebert, Portland, Perry, Yorktown, and Maurepas soils are believed to be the youngest soils in the parish. They formed in recent alluvial sediments that are probably less than 7,000 years old. Dundee, Sharkey, and Tensas soils formed in alluvium deposited by the Mississippi River. Sterlington, Rilla, Gallion, Mer Rouge, Hebert, Portland, Perry, Yorktown, and Maurepas soils apparently formed in Arkansas River alluvium deposited at a time when the Arkansas River occupied areas west of the Macon Ridge *(21)*.

Calhoun, Calloway, Grenada, and Loring soils formed in loess deposits that are probably about 20,000 years old. These soils all have distinct horizons of secondary accumulation of clay and are acid and highly leached in the upper horizons.

Liddieville soils developed in old braided-stream terrace material, which is the oldest exposed parent material in the parish. This material was deposited by the Arkansas River system approximately 30,000 to 40,000 years ago *(21)*.

Other soils in the parish, mainly Deerford, Dexter, Egypt, Foley, Gigger, and Gilbert soils, formed in more than one kind of parent material. In these soils, a thin layer of loess or similar material overlies older braided-stream terrace material.

Parent Material

Parent material is the original material from which soils develop. Its effects are particularly expressed as differences in soil color, texture, permeability, and degree of leaching. Parent material also has a major influence on mineralogy of the soils and is a significant factor determining their susceptibility to erosion. The soils in Richland Parish formed in unconsolidated material deposited by water and wind. The characteristics, distribution, and depositional pattern of the different parent materials in the parish are described more thoroughly in the section "Landforms and Surface Geology."

Landforms and Surface Geology

Richland Parish has four general kinds of soil parent material. These are the Holocene-aged Arkansas River alluvium, Holocene-aged Mississippi River alluvium, Pleistocene-aged braided-stream alluvium, and Pleistocene-aged loess. The parent materials are unconsolidated and differ in either their nature and source or their time of deposition, or both.

Bayou Macon and Big Creek form the parish boundaries on the east and south. The Boeuf River, Bayou Lafourche, and Lake Lafourche form the northern and western boundaries. All of these streams flow generally from northeast to southwest and provide surface drainage for the entire parish.

The features of the land surface and the nature and distribution of the materials in which the soils formed are the result of events that occurred during and after the late Pleistocene Epoch.

Parent Materials of the Soils on Alluvial Plains

Holocene-aged Arkansas River alluvium. This type of alluvium covers about 45 percent of the surface area of the parish. Areas of soils that formed in this parent material correspond to the Hebert-Rilla-Sterlington, Gallion-Mer Rouge-Hebert, and Perry-Portland general soil map units. The Perry soils in the Forestdale-Perry and Perry-Forestdale general soil map units also formed in Arkansas River alluvium.

The Arkansas River alluvium was deposited about 5,000 to 1,000 years ago *(21)*. It consists of overflow deposits from channels or distributaries of the Boeuf River and backwater clayey deposits from the Ouachita River. In places some mixing of the clayey backwater deposits of the Boeuf and Ouachita Rivers with those of the Mississippi River probably occurred.

Partial sorting of sediments occurs when a stream overflows. The initial decrease in water velocity and transporting capacity results in rapid deposition of sediments. As the velocity of the water decreases, the deposits are initially high in sand content. Later deposits contain silty material and then material that is more clayey. The clayey backswamp deposits are deposited by still or slowly moving water in low areas behind natural levees. Characteristically, this depositional pattern results in long, nearly level slopes that extend from natural levees near streams to clayey backswamps.

The surface elevation in this subarea ranges from about 95 feet above mean sea level on the natural levees along the Boeuf River in the northern part of the parish to about 50 feet in the backswamps near the southern edge of the parish.

The normal distribution of soils from the highest position on natural levees to the lowest in backswamps is Sterlington, Rilla, Hebert, Portland, and Perry soils, in that order. Although Gallion and Mer Rouge soils formed in positions analogous to those of the Rilla soils, they differ because of factors other than landscape position. Mer Rouge soils formed under grassland vegetation and have a higher content of bases and organic matter than the Rilla soils. Gallion soils are leached to a lesser degree than the Rilla soils and are less acid and higher in content of bases than the Rilla soils.

The soils that formed in loamy alluvium, which include Sterlington, Rilla, Hebert, Gallion, and Mer Rouge soils, have a well developed solum characterized by a distinct horizon of secondary accumulation of illuvial clays (argillic horizon). This degree of development reflects the relatively old age of these sediments and the stability of the landscapes. Soils on natural levees along the active meander belts of large rivers typically have indistinct profiles and show no evidence of clay illuviation.

Perry and Portland soils formed mainly in the clayey alluvium of the extensive backswamp areas. These soils do not have horizons that show secondary accumulations of clay. Such horizons develop very slowly, if at all, in clayey material. The high clay content, the expanding lattice characteristic of much of the clay, the high water table, and frequent flooding during soil formation probably retarded the development of these horizons in the Perry and Portland soils. Perry and Portland soils typically are grayish in the upper part of the profile and reddish in the lower part. They are somewhat leached, are acid in the upper part of the profile, and become neutral or more alkaline with depth. Portland soils are in the slightly higher and better drained positions and have reddish horizons at shallower depths than the Perry soils.

The color distribution in the Perry and Portland soils may be the result of one or both of two possible situations. The soils could have formed in a thin layer of clayey, Mississippi River alluvium overlying the redder clayey alluvium of the Arkansas River. The natural gray color of Mississippi River alluvial clays and the landscape relationships are consistent with this explanation. These same colors, however, could also be the result of a difference in the time, duration, and intensity of reducing conditions in these soils, especially after the development of a slightly acid condition in the upper part of the profile. In laboratory tests, slightly acid, reddish, clayey sediments from a similar area became gray in less than 30 days after being submerged in water to which an energy source (sucrose) for organisms had been added and being sealed with a gas trap to prevent introduction of oxygen to the system.

Yorktown soils formed in clayey alluvium accumulated in old oxbow-lakes, sloughs, and other areas that are almost continuously wet or impounded. These soils never dry within the solum and are saturated below a depth of less than a foot for most of the year. Soil horizonation is indistinct, except for the development of an A horizon at the surface. These soils are only slightly leached. Stratification resulting from deposition typically is evident at a depth of 3 feet or less.

Maurepas soils are organic soils (Histosols) that formed in an old oxbow-lake, which is ponded and almost continuously wet. A high water table, a lack of drainage outlets, and runoff or seepage water from higher soils contribute to these wet conditions.

Holocene-aged Mississippi River alluvium. This type of alluvium covers about 8 percent of the parish. Areas of soils that formed in this alluvium correspond to the Sharkey-Tensas general soil map unit. The Forestdale soils in the Forestdale-Perry and Perry-Forestdale general soil map units also formed in Mississippi River alluvium. This alluvium is in two distinct physiographic settings: on the flood plain of Bayou Macon along the eastern edge of the parish, and in backswamps near Big Creek and other streams west of Big Creek.

The elevation in this subarea ranges from about 85 feet above mean sea level on the natural levees along Bayou Macon near the northeastern edge of the parish to about 65 feet in the backswamps near the southeastern edge.

The normal distribution of soils from the highest position on natural levees to the lowest in backswamps is Dundee, Tensas, and Sharkey soils, in that order.

Forestdale soils are in positions analogous to those of the Tensas soils, but they are only on the flood plains of Big Creek and other streams west of Big Creek. They are not associated with the Dundee, Tensas, or Sharkey soils on the landscape.

Parent Materials of the Soils on Terraces

The soils on terraces in Richland Parish formed in loess and braided-stream alluvium of Pleistocene age. These parent materials lie in an area between the recent Mississippi River alluvium to the east and the recent Arkansas River alluvium along the Boeuf River, Bayou Lafourche, and Lake Lafourche to the west. About 47 percent of the parish is within this general area.

Two subareas of the terraces are recognized, but they are difficult to differentiate. Generally, the loess is thicker on the eastern side of the terraces and gradually becomes thinner toward the west. Maximum elevation on the eastern edge of the terraces, or in the area of "thick loess," is about 100 feet. The braided-stream alluvium generally crops out in the higher parts of the landscape and along eroded side slopes on the western part of the terraces. The relationships of the parent materials on the terraces are discussed in the following paragraphs.

Loess. The area mantled by loess corresponds approximately to the Calhoun-Grenada, Gilbert-Gigger-Dexter, Gilbert-Necessity-Egypt, and Foley-Deerford general soil map units. The eastern edge of the terraces rises 10 to 20 feet above the flood plains. The loess

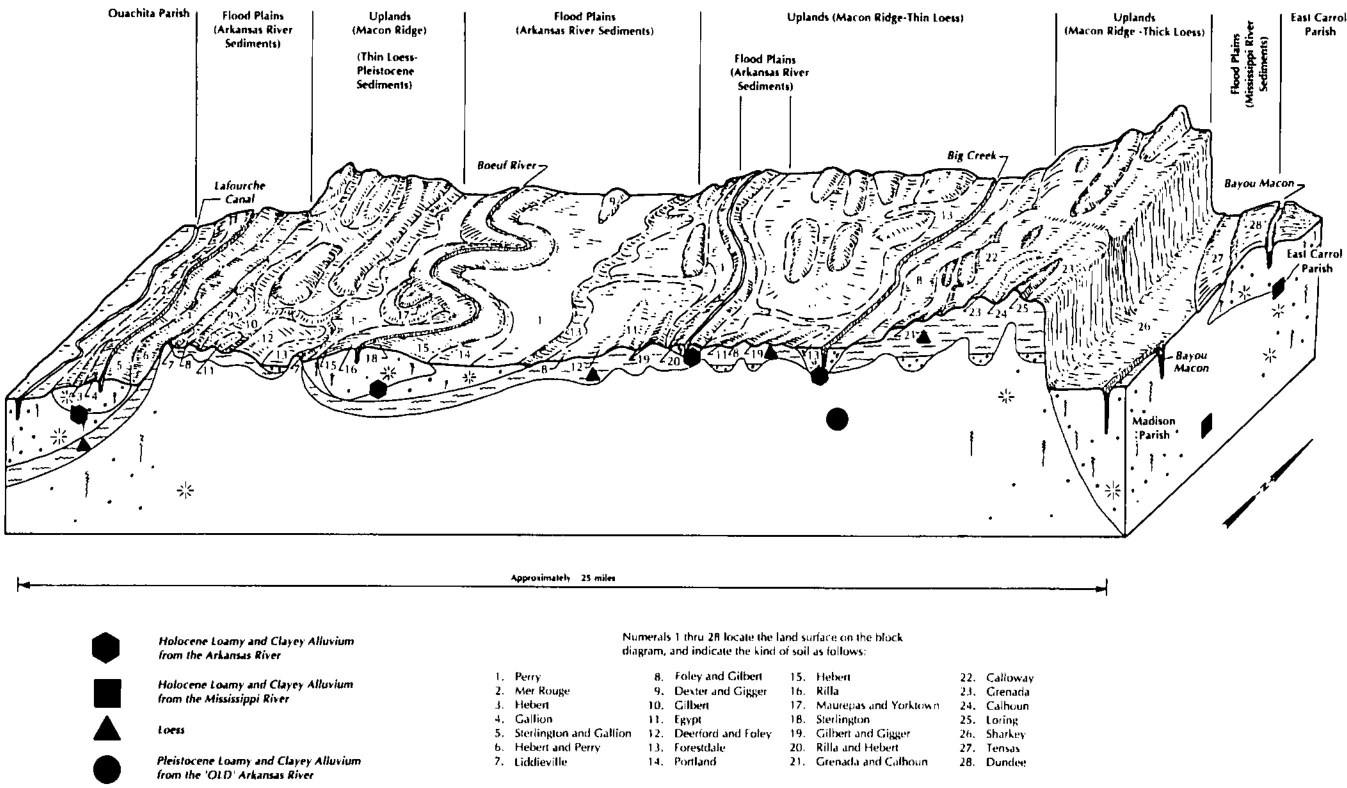

Figure 9.—Relationship of soils, landscape, and parent material in Richland Parish.

thins toward the west, and elevation decreases. On some flood plains in the western part of the parish, the loess is buried beneath recent alluvium.

The loess has a maximum thickness of about 12 feet along the eastern edge of the terraces and becomes progressively thinner toward the west (fig. 9). Where the loess is more than about 4 feet thick, the area is generally referred to as Macon Ridge "thick loess." Loring, Grenada, Calloway, and Calhoun soils formed in thick loess. Where the loess is less than about 4 feet thick, the area is generally referred to as Macon Ridge "thin loess." Dexter, Gigger, Egypt, and Gilbert soils formed partly in thin loess.

The loess throughout the Southern Mississippi Valley Silty Uplands major land resource area is generally thought to have been carried by wind from the flood plain of the Mississippi River at a time when the river was draining actively glaciated areas. During dry periods, winds blowing across the flood plain eroded the alluvium and transported and deposited it as loess over adjacent areas. The loess in Richland Parish is probably 30,000 to 40,000 years old; thus, much weathering of the soil particles has occurred *(14, 23, 31)*. The loess in the western part of the survey area contains small admixtures of the older underlying braided-stream terrace alluvium. In some places at the lower elevations, the loess contains small admixtures of recent clayey alluvium.

Pleistocene-aged alluvium. Braided-stream alluvium is the oldest parent material in the parish. However, most of it is covered by loess. The braided-stream alluvium is thought to be glacial outwash or valley train deposits of the Arkansas River. It is mostly sand and gravel deposited by swiftly flowing, sediment-choked rivers that drained regions of active glaciation from the north and west. Loamy alluvium was deposited over the coarse materials and was in turn covered by more clayey alluvium, particularly in low or impounded areas on the landscape. The braided-stream alluvium in the parish may be 80,000 to 100,000 years old *(21)*.

The typical relationship of soils on terraces and their parent materials is shown in figure 9. Loring, Grenada, Calloway, and Calhoun soils formed in thick loess and do not contain appreciable admixtures of the underlying alluvium within the solum. Loring and Grenada soils are in the higher positions on the landscape and have convex slopes. They have better internal drainage than the Calloway and Calhoun soils. Calloway and Calhoun soils are in the lower positions on the landscape and have level or concave slopes. They are underlain by alluvium that is slightly more clayey than the alluvium that underlies the Loring and Grenada soils.

Egypt, Gigger, and Gilbert soils formed at least partly in thin loess. The solum of these soils generally contains admixtures of the underlying braided-stream alluvium. Gigger soils are generally higher on the landscape and have more convex slopes than the Egypt and Gilbert soils. Also, they have better internal drainage than the Egypt and Gilbert soils. Typically, the lower part of the solum, which formed in the loamy braided-stream alluvium, contains more sand than the upper part. Because they formed in loess that was underlain by more clayey alluvium, Egypt and Gilbert soils contain less sand in the lower part of the solum than the Gigger soils.

Dexter soils formed in thin loess and in the underlying loamy braided-stream alluvium. Liddieville and Necessity soils formed mainly in braided-stream alluvium with little or no loess influence. Dexter and Liddieville soils are well drained and are on ridges, on side slopes, and on the higher parts of the landscape. Foley and Deerford soils are in the lower positions where the loamy braided-stream alluvium is overlain by more clayey alluvium, which in turn is overlain by silty alluvium. This silty alluvium is "loess-like" local alluvium that may have been influenced by loess in places. Necessity soils may have also been influenced by loess in some places.

Forestdale soils are in the lower positions on the landscape, mainly in the central and western parts of the parish. Recent alluvial clays were deposited in these positions during backwater flooding. The clayey alluvium is from both the Mississippi and Arkansas Rivers. Forestdale soils formed in this clayey alluvium and in the older loamy sediments.

The presence of high levels of exchangeable sodium in soils in Richland Parish is associated with specific relationships of the soils, parent material, and landscape. Mainly, it is associated with the slightly more clayey alluvium that accumulated in low or impounded areas over the loamy or silty braided-stream alluvium before the loess was deposited. On the modern landscape, the low or impounded areas can be distinguished as level or nearly level areas that are lower than the surrounding terraces. Deerford, Egypt, Foley, and Gilbert soils have high levels of exchangeable sodium within the solum. Deerford and Foley soils formed in silty alluvium that possibly was mixed with thin loess over silty alluvium that is slightly higher in content of clay than the overlying alluvium. These soils have high levels of sodium in the middle and lower parts of the subsoil. Egypt and Gilbert soils formed in thin loess, in the underlying silty alluvium that has a slightly higher content of clay than the loess, and in the underlying loamy braided-stream alluvium. These soils have high levels of sodium only in the lower part of the solum. Soils that formed in loess that is more than about 4 feet thick do not have high levels of exchangeable sodium within the solum.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers.

Terms commonly used to describe consistence are:
Loose.—Noncoherent when dry or moist; does not hold together in a mass.
Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are

frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay are in the soil. The soil is not a source of gravel or sand for construction purposes.

Excess sodium (in tables). Excess exchangeable sodium is in the soil. The resulting poor physical properties restrict the growth of plants.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

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

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

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

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

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

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

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

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rooting depth (in tables). There is a shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil, adversely affecting the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

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

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

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

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

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

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

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, such as zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-73 at Bastrop, Louisiana)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	57.1	36.1	46.6	80	14	80	4.42	2.19	6.24	7	0.1
February----	60.8	38.8	49.8	81	19	121	4.66	2.45	6.47	7	.5
March-------	68.4	45.4	56.9	86	24	267	5.06	2.45	7.19	8	.0
April-------	77.9	55.2	66.6	90	35	498	5.13	2.42	7.34	7	.0
May---------	85.3	62.1	73.8	95	46	738	4.71	2.20	6.76	6	.0
June--------	91.8	69.3	80.6	101	54	918	3.58	1.09	5.58	5	.0
July--------	94.5	72.1	83.3	102	60	1,032	4.18	2.30	5.70	7	.0
August------	93.9	70.9	82.4	102	58	1,004	3.01	1.23	4.45	5	.0
September---	88.7	65.4	77.1	100	48	813	3.29	1.22	4.94	6	.0
October-----	80.0	53.8	66.7	95	33	518	2.47	.43	4.04	4	.0
November----	68.1	44.7	56.4	86	23	213	4.61	2.41	6.40	5	.0
December----	59.7	38.4	49.1	80	16	114	5.25	2.48	7.50	8	.0
Yearly:											
Average---	77.2	54.4	65.8	---	---	---	---	---	---	---	---
Extreme---	---	---	---	105	12	---	---	---	---	---	---
Total-----	---	---	---	---	---	6,316	50.37	40.83	59.44	75	.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-73 at Bastrop, Louisiana)

Probability	Temperature		
	24 ^{o}F or lower	28 ^{o}F or lower	32 ^{o}F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 8	Mar. 19	Mar. 29
2 years in 10 later than--	Feb. 25	Mar. 11	Mar. 23
5 years in 10 later than--	Feb. 4	Feb. 23	Mar. 10
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 17	Nov. 3	Oct. 23
2 years in 10 earlier than--	Nov. 24	Nov. 9	Oct. 29
5 years in 10 earlier than--	Dec. 8	Nov. 21	Nov. 8

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-73 at Bastrop, Louisiana)

Probability	Daily minimum temperature during growing season		
	Higher than 24 ^{o}F	Higher than 28 ^{o}F	Higher than 32 ^{o}F
	Days	Days	Days
9 years in 10	269	238	213
8 years in 10	280	249	223
5 years in 10	302	270	242
2 years in 10	329	292	261
1 year in 10	365	303	271

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AR	Arents, dredged	1,653	0.5
Ca	Calhoun silt loam	9,423	2.6
Cc	Calhoun-Calloway silt loams, gently undulating	4,470	1.2
Co	Calloway silt loam, 1 to 3 percent slopes	368	0.1
Da	Deerford silt loam	3,023	0.8
Dd	Dexter silt loam, 0 to 1 percent slopes	2,150	0.6
De	Dexter silt loam, 1 to 3 percent slopes	15,907	4.4
Df	Dexter silt loam, 3 to 5 percent slopes	2,517	0.7
Do	Dundee silty clay loam	2,958	0.8
Ds	Dundee-Tensas complex, gently undulating	1,373	0.4
Eg	Egypt silt loam, 1 to 3 percent slopes	2,038	0.6
Fe	Foley silt loam	5,874	1.6
Fr	Forestdale silty clay loam	19,212	5.3
Ft	Forestdale silty clay loam, occasionally flooded	9,962	2.8
Ga	Gallion silt loam	4,282	1.2
Ge	Gigger silt loam, 1 to 3 percent slopes	6,303	1.7
Gg	Gigger-Gilbert silt loams, gently undulating	22,512	6.2
Gk	Gilbert silt loam	28,429	7.8
Gm	Gilbert-Egypt silt loams, gently undulating	20,961	5.8
Gr	Grenada silt loam, 1 to 3 percent slopes	1,363	0.4
Gs	Grenada silt loam, 8 to 12 percent slopes	1,039	0.3
Gu	Grenada-Calhoun silt loams, gently undulating	16,980	4.7
Hb	Hebert silt loam	13,008	3.6
He	Hebert silty clay loam	6,535	1.8
Hp	Hebert-Perry complex, occasionally flooded	3,455	1.0
Ld	Liddieville fine sandy loam, 2 to 5 percent slopes	4,290	1.2
Lo	Loring silt loam, 1 to 5 percent slopes	578	0.2
MA	Maurepas muck	258	0.1
Me	Mer Rouge silt loam	505	0.1
Mg	Mer Rouge-Gallion silt loams	814	0.2
Ne	Necessity silt loam, 1 to 3 percent slopes	4,571	1.3
Ng	Necessity-Gilbert silt loams, gently undulating	20,411	5.7
Pc	Perry silty clay loam	11,763	3.3
Pd	Perry clay	26,086	7.2
Pe	Perry clay, occasionally flooded	12,597	3.5
Po	Portland silty clay loam	8,815	2.4
Pr	Portland clay	10,451	2.9
Ra	Rilla silt loam, 0 to 1 percent slopes	12,199	3.4
Rb	Rilla silt loam, 1 to 3 percent slopes	2,107	0.6
Rh	Rilla-Hebert silt loams, gently undulating	16,151	4.5
Sa	Sharkey clay	2,723	0.8
Sg	Sterlington silt loam, 0 to 1 percent slopes	1,335	0.4
Sr	Sterlington silt loam, 1 to 3 percent slopes	1,442	0.4
St	Sterlington-Hebert silt loams, gently undulating	8,199	2.3
Tc	Tensas silty clay	533	0.1
Ts	Tensas-Sharkey complex	1,136	0.3
YO	Yorktown clay, frequently flooded	2,032	0.6
	Small areas of water	431	0.1
	Large areas of water	5,559	1.5
	Total	360,781	100.0

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
Ca	Calhoun silt loam (where adequately drained)
Cc	Calhoun-Calloway silt loams, gently undulating (where adequately drained)
Co	Calloway silt loam, 1 to 3 percent slopes
Dd	Dexter silt loam, 0 to 1 percent slopes
De	Dexter silt loam, 1 to 3 percent slopes
Df	Dexter silt loam, 3 to 5 percent slopes
Do	Dundee silty clay loam (where adequately drained)
Ds	Dundee-Tensas complex, gently undulating (where adequately drained)
Eg	Egypt silt loam, 1 to 3 percent slopes
Fr	Forestdale silty clay loam (where adequately drained)
Ga	Gallion silt loam
Ge	Gigger silt loam, 1 to 3 percent slopes
Gg	Gigger-Gilbert silt loams, gently undulating (where adequately drained)
Gk	Gilbert silt loam (where adequately drained)
Gm	Gilbert-Egypt silt loams, gently undulating (where adequately drained)
Gr	Grenada silt loam, 1 to 3 percent slopes
Gu	Grenada-Calhoun silt loams, gently undulating (where adequately drained)
Hb	Hebert silt loam (where adequately drained)
He	Hebert silty clay loam (where adequately drained)
Ld	Liddieville fine sandy loam, 2 to 5 percent slopes
Lo	Loring silt loam, 1 to 5 percent slopes
Me	Mer Rouge silt loam
Mg	Mer Rouge-Gallion silt loams
Ne	Necessity silt loam, 1 to 3 percent slopes
Ng	Necessity-Gilbert silt loams, gently undulating (where adequately drained)
Pc	Perry silty clay loam (where adequately drained)
Pd	Perry clay (where adequately drained)
Po	Portland silty clay loam (where adequately drained)
Pr	Portland clay (where adequately drained)
Ra	Rilla silt loam, 0 to 1 percent slopes
Rb	Rilla silt loam, 1 to 3 percent slopes
Rh	Rilla-Hebert silt loams, gently undulating (where adequately drained)
Sa	Sharkey clay (where adequately drained)
Sg	Sterlington silt loam, 0 to 1 percent slopes
Sr	Sterlington silt loam, 1 to 3 percent slopes
St	Sterlington-Hebert silt loams, gently undulating (where adequately drained)
Tc	Tensas silty clay (where adequately drained)
Ts	Tensas-Sharkey complex (where adequately drained)

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

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Cotton lint	Grain sorghum	Rice	Soybeans	Common bermuda-grass	Improved bermuda-grass
		Bu	Lbs	Bu	Bu	Bu	AUM*	AUM*
AR. Arents								
Ca-------------- Calhoun	IIIw	---	400	---	120	25	5.0	---
Cc--------------		75	505	---	---	29	5.2	9.0
Calhoun--------	IIIw							
Calloway-------	IIe							
Co-------------- Calloway	IIe	90	700	---	---	38	5.5	10.5
Da-------------- Deerford	IIIw	---	475	---	---	30	5.7	---
Dd-------------- Dexter	I	90	700	---	---	35	7.0	15.0
De-------------- Dexter	IIe	85	650	---	---	35	7.0	15.0
Df-------------- Dexter	IIIe	80	600	---	---	30	7.0	15.0
Do-------------- Dundee	IIw	85	750	90	---	40	6.5	14.0
Ds--------------		75	692	80	---	40	6.0	10.0
Dundee---------	IIe							
Tensas---------	IIIw							
Eg-------------- Egypt	IIe	70	500	---	110	25	5.5	9.0
Fe-------------- Foley	IIIw	---	650	---	120	30	5.5	9.0
Fr-------------- Forestdale	IIIw	50	---	80	130	35	6.5	---
Ft-------------- Forestdale	IVw	---	---	65	125	30	5.5	---
Ga-------------- Gallion	I	85	825	95	---	35	7.0	15.0
Ge-------------- Gigger	IIe	80	600	---	---	30	5.5	9.5
Gg--------------		70	534	---	---	26	5.0	9.0
Gigger---------	IIe							
Gilbert--------	IIIw							

See footnote at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Cotton lint	Grain sorghum	Rice	Soybeans	Common bermuda-grass	Improved bermuda-grass
		Bu	Lbs	Bu	Bu	Bu	AUM*	AUM*
Gk: Gilbert	IIIw	---	450	---	120	20	5.0	---
Gm:		---	468	---	115	22	5.0	---
Gilbert	IIIw							
Egypt	IIe							
Gr: Grenada	IIe	85	700	---	---	38	5.0	11.0
Gs: Grenada	IVe	---	---	---	---	25	4.5	10.0
Gu:		80	568	---	---	32	5.0	9.5
Grenada	IIe							
Calhoun	IIIw							
Hb: Hebert	IIw	85	775	85	---	35	7.0	14.5
He: Hebert	IIw	80	725	80	---	35	6.5	13.5
Hp: Hebert-Perry	IVw	---	---	70	---	27	6.4	---
Ld: Liddieville	IIe	---	600	---	---	30	7.0	15.0
Lo: Loring	IIe	95	750	---	---	40	5.0	11.0
MA: Maurepas	VIIIw	---	---	---	---	---	---	---
Me: Mer Rouge	I	95	900	---	---	40	8.0	15.5
Mg: Mer Rouge-Gallion	I	90	865	---	---	37	7.5	15.3
Ne: Necessity	IIe	80	625	70	---	35	6.0	15.0
Ng:		---	543	---	120	28	5.2	13.5
Necessity	IIe							
Gilbert	IIIw							
Pc, Pd: Perry	IIIw	---	---	65	130	35	6.5	12.0
Pe: Perry	IVw	---	---	55	120	30	6.0	---

See footnote at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Cotton lint	Grain sorghum	Rice	Soybeans	Common bermuda-grass	Improved bermuda-grass
		Bu	Lbs	Bu	Bu	Bu	AUM*	AUM*
Po-------------- Portland	IIIw	---	---	90	130	35	7.0	13.0
Pr-------------- Portland	IIIw	---	---	85	130	35	6.5	13.0
Ra-------------- Rilla	I	95	900	95	---	40	7.5	15.0
Rb-------------- Rilla	IIe	85	850	90	---	37	7.0	15.0
Rh--------------		85	817	85	---	36	7.0	14.5
Rilla----------	IIe							
Hebert---------	IIIw							
Sa-------------- Sharkey	IIIw	---	---	75	130	40	6.5	10.0
Sg-------------- Sterlington	I	90	850	90	---	35	7.0	15.5
Sr-------------- Sterlington	IIe	85	825	85	---	35	7.0	15.5
St--------------		83	774	85	---	34	7.0	14.6
Sterlington----	IIe							
Hebert---------	IIIw							
Tc-------------- Tensas	IIIw	70	---	85	130	40	6.5	11.0
Ts-------------- Tensas-Sharkey	IIIw	65	---	80	120	37	6.5	10.3
YO-------------- Yorktown	VIIw	---	---	---	---	---	---	---

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

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Ca-------------- Calhoun	9W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	90	9	Loblolly pine, water oak, Shumard oak, cherrybark oak.
						Cherrybark oak------	---	---	
						Water oak-----------	---	---	
						Sweetgum------------	---	---	
Cc**:									
Calhoun--------	9W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	90	9	Loblolly pine, water oak, Shumard oak, cherrybark oak.
						Cherrybark oak------	---	---	
						Water oak-----------	---	---	
						Sweetgum------------	---	---	
Calloway-------	8W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	80	8	Loblolly pine, Shumard oak, cherrybark oak, sweetgum, water oak.
						Cherrybark oak------	80	6	
						Shortleaf pine------	80	9	
						Sweetgum------------	90	7	
						Water oak-----------	90	6	
Co-------------- Calloway	8W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	80	8	Loblolly pine, Shumard oak, cherrybark oak, sweetgum, water oak.
						Cherrybark oak------	80	6	
						Shortleaf pine------	80	9	
						Sweetgum------------	90	7	
						Water oak-----------	90	6	
Da-------------- Deerford	7W	Slight	Moderate	Moderate	Severe	Sweetgum------------	86	7	Loblolly pine, water oak, cherrybark oak.
						Loblolly pine-------	92	10	
						Water oak-----------	82	5	
Dd, De, Df------ Dexter	12A	Slight	Slight	Slight	Moderate	Loblolly pine-------	110	12	Loblolly pine, cherrybark oak, Shumard oak, water oak, sweetgum.
						Cherrybark oak------	---	---	
						Water oak-----------	---	---	
						Sweetgum------------	---	---	
Do-------------- Dundee	12W	Slight	Moderate	Slight	Severe	Cherrybark oak------	105	12	Cherrybark oak, sweetgum, water oak, willow oak, Shumard oak.
						Eastern cottonwood--	100	9	
						Sweetgum------------	100	10	
						Water oak-----------	95	6	
Ds**:									
Dundee---------	12W	Slight	Moderate	Slight	Severe	Cherrybark oak------	105	12	Cherrybark oak, sweetgum, pecan, water oak, willow oak, Shumard oak.
						Eastern cottonwood--	100	9	
						Sweetgum------------	100	10	
						Water oak-----------	95	6	
Tensas---------	4W	Slight	Severe	Moderate	Severe	Green ash-----------	80	4	Nuttall oak, green ash, water oak, willow oak.
						Water oak-----------	95	6	
						Willow oak----------	---	---	
						Sweetgum------------	100	10	
						Nuttall oak---------	---	---	
						Cedar elm-----------	---	---	
						Honeylocust---------	---	---	

See footnotes at end of table.

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

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Eg-------------- Egypt	6W	Slight	Moderate	Slight	Moderate	Sweetgum-----------	85	6	Cherrybark oak, sweetgum, water oak, loblolly pine, Shumard oak, swamp chestnut oak.
						Water oak----------	80	5	
						Loblolly pine-------	80	8	
Fe-------------- Foley	5W	Slight	Moderate	Moderate	Severe	Water oak----------	80	5	Sweetgum, water oak, cherrybark oak, Shumard oak.
						Sweetgum-----------	80	6	
						Cherrybark oak------	80	6	
Fr, Ft---------- Forestdale	9W	Slight	Moderate	Moderate	Severe	Eastern cottonwood--	100	9	Green ash, Nuttall oak, sweetgum, willow oak.
						Green ash----------	78	3	
						Cherrybark oak------	94	9	
						Nuttall oak---------	99	---	
						Water oak----------	90	6	
						Willow oak----------	94	6	
						Sweetgum-----------	100	10	
Ga-------------- Gallion	9A	Slight	Slight	Slight	Moderate	Cherrybark oak------	95	9	Green ash, water oak, sweetgum, pecan, cherrybark oak.
						Green ash----------	80	4	
						Sweetgum-----------	83	6	
						Water oak----------	---	---	
						Pecan---------------	---	---	
						American sycamore---	---	---	
						Eastern cottonwood--	100	9	
Ge-------------- Gigger	7A	Slight	Slight	Slight	Moderate	Cherrybark oak------	85	7	Loblolly pine, cherrybark oak, pecan, water oak, Shumard oak, swamp chestnut oak.
						Water oak----------	90	6	
						Loblolly pine-------	95	10	
						Sweetgum-----------	85	6	
Gg**:									
Gigger---------	7A	Slight	Slight	Slight	Moderate	Cherrybark oak------	85	7	Loblolly pine, cherrybark oak, pecan, water oak, Shumard oak, swamp chestnut oak.
						Water oak----------	90	6	
						Loblolly pine-------	95	10	
						Sweetgum-----------	85	6	
Gilbert--------	6W	Slight	Severe	Moderate	Severe	Sweetgum-----------	80	6	Sweetgum, water oak, loblolly pine, willow oak, cherrybark oak, Shumard oak.
						Water oak----------	80	5	
						Loblolly pine-------	78	8	
Gk-------------- Gilbert	6W	Slight	Severe	Moderate	Severe	Sweetgum-----------	80	6	Sweetgum, water oak, loblolly pine, willow oak, cherrybark oak, Shumard oak.
						Water oak----------	80	5	
						Loblolly pine-------	78	8	
Gm**:									
Gilbert--------	6W	Slight	Severe	Moderate	Severe	Sweetgum-----------	80	6	Sweetgum, water oak, loblolly pine, willow oak, cherrybark oak, Shumard oak.
						Water oak----------	80	5	
						Loblolly pine-------	78	8	

See footnotes at end of table.

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

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Productivity class*	
Gm**:									
Egypt	6W	Slight	Moderate	Slight	Moderate	Sweetgum	85	6	Sweetgum, water oak, loblolly pine, cherrybark oak, Shumard oak.
						Water oak	80	5	
						Loblolly pine	80	8	
Gr Grenada	10A	Slight	Slight	Slight	Moderate	Loblolly pine	95	10	Sweetgum, cherrybark oak, loblolly pine, water oak, southern red oak.
						Cherrybark oak	85	7	
						Water oak	80	5	
						Sweetgum	---	---	
						Southern red oak	---	---	
Gs Grenada	10A	Moderate	Slight	Slight	Moderate	Loblolly pine	95	10	Sweetgum, pecan, cherrybark oak, loblolly pine, water oak, southern red oak.
						Cherrybark oak	85	7	
						Water oak	80	5	
						Sweetgum	---	---	
						Southern red oak	---	---	
Gu**:									
Grenada	10A	Slight	Slight	Slight	Moderate	Loblolly pine	95	10	Sweetgum, pecan, cherrybark oak, loblolly pine, water oak, southern red oak.
						Cherrybark oak	85	7	
						Water oak	80	5	
						Sweetgum	---	---	
						Southern red oak	---	---	
Calhoun	9W	Slight	Moderate	Moderate	Severe	Loblolly pine	90	9	Loblolly pine, cherrybark oak, Shumard oak, water oak.
						Cherrybark oak	---	---	
						Water oak	---	---	
						Sweetgum	---	---	
Hb, He Hebert	8W	Slight	Moderate	Slight	Moderate	Eastern cottonwood	95	8	Green ash, sweetgum, water oak, cherrybark oak, Shumard oak.
						Cherrybark oak	95	9	
						Nuttall oak	90	---	
						Sweetgum	90	7	
						Pecan	---	---	
						Water oak	90	6	
						American sycamore	---	---	
						Green ash	---	---	
Hp**:									
Hebert	8W	Slight	Moderate	Moderate	Moderate	Eastern cottonwood	95	8	Green ash, Shumard oak, sweetgum, water oak, cherrybark oak.
						Cherrybark oak	95	9	
						Nuttall oak	90	---	
						Sweetgum	90	7	
						Pecan	---	---	
						Water oak	90	6	
						American sycamore	---	---	
						Green ash	---	---	
Perry	3W	Slight	Severe	Moderate	Severe	Green ash	75	3	Sweetgum, water oak, Nuttall oak, green ash, willow oak.
						Sweetgum	92	8	
						Water oak	---	---	
						Pecan	---	---	
						Water hickory	---	---	
						Nuttall oak	---	---	

See footnotes at end of table.

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

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Ld-------------- Liddieville	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	90	9	Loblolly pine, pecan, Shumard oak, cherrybark oak, water oak.
						Eastern cottonwood--	100	9	
						Cherrybark oak------	90	8	
						Nuttall oak---------	90	---	
						Sweetgum------------	90	7	
Lo-------------- Loring	10A	Slight	Slight	Slight	Severe	Loblolly pine-------	95	10	Loblolly pine, shortleaf pine, cherrybark oak, water oak, pecan, sweetgum, Shumard oak.
						Southern red oak----	75	4	
						Cherrybark oak------	86	7	
						Sweetgum------------	90	7	
						Water oak-----------	90	6	
Me-------------- Mer Rouge	3A	Slight	Slight	Slight	Moderate	Green ash-----------	70	3	Green ash, water oak, pecan, cherrybark oak.
						Eastern cottonwood--	90	7	
						Pecan---------------	---	---	
						Sweetgum------------	95	8	
						American sycamore---	---	---	
Mg**:									
Mer Rouge------	3A	Slight	Slight	Slight	Moderate	Green ash-----------	70	3	Green ash, water oak, pecan, cherrybark oak.
						Eastern cottonwood--	90	7	
						Pecan---------------	---	---	
						Sweetgum------------	95	8	
						American sycamore---	---	---	
Gallion--------	9A	Slight	Slight	Slight	Moderate	Cherrybark oak------	95	9	Green ash, pecan, water oak, sweetgum, cherrybark oak, Shumard oak.
						Green ash-----------	80	4	
						Sweetgum------------	83	6	
						Water oak-----------	---	---	
						Pecan---------------	---	---	
						American sycamore---	---	---	
						Eastern cottonwood--	100	9	
Ne-------------- Necessity	9W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	90	9	Loblolly pine, water oak, pecan, cherrybark oak, Shumard oak, swamp chestnut oak.
						Sweetgum------------	---	---	
						Cherrybark oak------	---	---	
						Water oak-----------	---	---	
Ng**:									
Necessity------	9W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	90	9	Loblolly pine, water oak, pecan, cherrybark oak, Shumard oak, swamp chestnut oak.
						Sweetgum------------	---	---	
						Cherrybark oak------	---	---	
						Water oak-----------	---	---	
Gilbert--------	6W	Slight	Severe	Moderate	Severe	Sweetgum------------	80	6	Sweetgum, water oak, loblolly pine, willow oak, cherrybark oak, Shumard oak.
						Water oak-----------	80	5	
						Loblolly pine-------	78	8	

See footnotes at end of table.

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

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Pc, Pd, Pe------ Perry	3W	Slight	Severe	Moderate	Severe	Green ash-----------	75	3	Sweetgum, water oak, Nuttall oak, green ash.
						Sweetgum------------	92	8	
						Water oak-----------	---	---	
						Pecan---------------	---	---	
						Water hickory-------	---	---	
						Nuttall oak---------	---	---	
Po, Pr---------- Portland	8W	Slight	Moderate	Moderate	Severe	Nuttall oak---------	90	8	Nuttall oak, water oak, green ash, sweetgum.
						Water oak-----------	90	6	
						Green ash-----------	80	4	
						Eastern cottonwood--	100	9	
						Sweetgum------------	90	7	
Ra, Rb---------- Rilla	9A	Slight	Slight	Slight	Moderate	Eastern cottonwood--	100	9	Pecan, sweetgum, cherrybark oak.
						Cherrybark oak------	100	4	
						Nuttall oak---------	85	---	
						Sweetgum------------	100	10	
						Pecan---------------	---	---	
						American sycamore---	---	---	
Rh**:									
Rilla----------	9A	Slight	Slight	Slight	Moderate	Eastern cottonwood--	100	9	Water oak, Shumard oak, sweetgum, pecan, cherrybark oak.
						Cherrybark oak------	100	4	
						Nuttall oak---------	85	---	
						Sweetgum------------	100	10	
						Pecan---------------	---	---	
						American sycamore---	---	---	
Hebert---------	8W	Slight	Moderate	Slight	Moderate	Eastern cottonwood--	95	8	Sweetgum, pecan, water oak, Shumard oak, cherrybark oak.
						Cherrybark oak------	95	9	
						Nuttall oak---------	90	---	
						Sweetgum------------	90	7	
						Pecan---------------	---	---	
						Water oak-----------	90	6	
						American sycamore---	---	---	
						Green ash-----------	---	---	
Sa-------------- Sharkey	7W	Slight	Severe	Moderate	Severe	Sweetgum------------	90	7	Sweetgum, Nuttall oak, green ash.
						Willow oak----------	100	7	
						Water oak-----------	90	6	
						Nuttall oak---------	90	---	
						Sugarberry----------	---	---	
						Cedar elm-----------	---	---	
						Green ash-----------	---	---	
Sg, Sr---------- Sterlington	3A	Slight	Slight	Slight	Moderate	Green ash-----------	75	3	Pecan, sweetgum, cherrybark oak, water oak, Shumard oak.
						Eastern cottonwood--	---	---	
						Cherrybark oak------	95	9	
						Water oak-----------	90	6	
						Pecan---------------	---	---	
						Sweetgum------------	90	7	
St**:									
Sterlington----	3A	Slight	Slight	Slight	Moderate	Green ash-----------	75	3	Pecan, sweetgum, cherrybark oak, water oak, Shumard oak.
						Eastern cottonwood--	---	---	
						Cherrybark oak------	95	9	
						Water oak-----------	90	6	
						Pecan---------------	---	---	
						Sweetgum------------	90	7	

See footnotes at end of table.

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

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
St**:									
Hebert	8W	Slight	Moderate	Slight	Moderate	Eastern cottonwood	95	8	Sweetgum, pecan, water oak, cherrybark oak, Shumard oak.
						Cherrybark oak	95	9	
						Nuttall oak	90	---	
						Sweetgum	90	7	
						Pecan	---	---	
						Water oak	90	6	
						American sycamore	---	---	
						Green ash	---	---	
Tc Tensas	4W	Slight	Severe	Moderate	Moderate	Green ash	80	4	Nuttall oak, green ash, water oak, willow oak.
						Water oak	95	6	
						Willow oak	---	---	
						Sweetgum	100	10	
						Nuttall oak	---	---	
						Cedar elm	---	---	
						Honeylocust	---	---	
Ts**:									
Tensas	4W	Slight	Severe	Moderate	Moderate	Green ash	80	4	Nuttall oak, green ash, water oak, willow oak.
						Water oak	95	6	
						Willow oak	---	---	
						Sweetgum	100	10	
						Nuttall oak	---	---	
						Cedar elm	---	---	
						Honeylocust	---	---	
Sharkey	7W	Slight	Severe	Moderate	Severe	Sweetgum	90	7	Sweetgum, Nuttall oak, green ash.
						Willow oak	100	7	
						Water oak	90	6	
						Nuttall oak	90	---	
						Sugarberry	---	---	
						Cedar elm	---	---	
						Green ash	---	---	
YO Yorktown	3W	Slight	Severe	Severe	Slight	Baldcypress	70	3	Baldcypress, green ash, water tupelo.
						Water tupelo	---	---	
						Water hickory	---	---	
						Green ash	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AR*. Arents					
Ca-------------------- Calhoun	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cc*:					
Calhoun--------------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Calloway-------------	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Co-------------------- Calloway	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Da-------------------- Deerford	Severe: wetness, excess sodium.	Severe: wetness, excess sodium.	Severe: wetness, excess sodium.	Severe: wetness.	Severe: excess sodium, wetness.
Dd-------------------- Dexter	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
De, Df---------------- Dexter	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Do-------------------- Dundee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Ds*:					
Dundee---------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Tensas---------------	Severe: wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
Eg-------------------- Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Fe-------------------- Foley	Severe: flooding, wetness, percs slowly.	Severe: wetness, excess sodium, percs slowly.	Severe: wetness, percs slowly, excess sodium.	Severe: wetness.	Severe: excess sodium, wetness.
Fr, Ft---------------- Forestdale	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ga Gallion	Slight	Slight	Slight	Slight	Slight.
Ge Gigger	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
Gg*: Gigger	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
Gilbert	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gk Gilbert	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gm*: Gilbert	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Gr Grenada	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Gs Grenada	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Gu*: Grenada	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Calhoun	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Hb, He Hebert	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Hp*: Hebert	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Hp*:					
Perry	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Ld Liddieville	Slight	Slight	Moderate: slope.	Slight	Slight.
Lo Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
MA Maurepas	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
Me Mer Rouge	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Slight.
Mg*:					
Mer Rouge	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight	Slight.
Gallion	Slight	Slight	Slight	Slight	Slight.
Ne Necessity	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Ng*:					
Necessity	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Gilbert	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Pc Perry	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pd, Pe Perry	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Po Portland	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: wetness.	Severe: flooding, too clayey.
Pr Portland	Severe: flooding, wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ra-------------------- Rilla	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
Rb-------------------- Rilla	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Rh*:					
Rilla----------------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Hebert---------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Sa-------------------- Sharkey	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Sg-------------------- Sterlington	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
Sr-------------------- Sterlington	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
St*:					
Sterlington----------	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
Hebert---------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Tc-------------------- Tensas	Severe: wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
Ts*:					
Tensas---------------	Severe: wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
Sharkey--------------	Severe: flooding, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
YO-------------------- Yorktown	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, excess humus.	Severe: too clayey, excess humus, ponding.	Severe: ponding, too clayey, excess humus.	Severe: ponding, flooding, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AR*. Arents											
Ca: Calhoun	Poor	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Good.
Cc*:											
Calhoun	Poor	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Good.
Calloway	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Co: Calloway	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Da: Deerford	Fair	Good	Good	Fair	Good	Fair	Fair	Fair	Good	Good	Fair.
Dd, De, Df: Dexter	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Do: Dundee	Fair	Good	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Ds*:											
Dundee	Fair	Good	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Tensas	Fair	Fair	Fair	Good	---	Good	Good	Good	Fair	Good	Good.
Eg: Egypt	Fair	Good	Good	Good	Fair	Good	Poor	Poor	Good	Good	Poor.
Fe: Foley	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Fr: Forestdale	Fair	Fair	Good	Fair	---	Fair	Good	Good	Fair	Fair	Good.
Ft: Forestdale	Fair	Fair	Fair	Fair	---	Fair	Good	Good	Fair	Fair	Good.
Ga: Gallion	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Ge: Gigger	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gg*:											
Gigger	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gilbert	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Gk: Gilbert	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Gm*:											
Gilbert	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Egypt	Fair	Good	Good	Good	Fair	Good	Poor	Poor	Good	Good	Poor.
Gr Grenada	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gs Grenada	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gu*:											
Grenada	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Calhoun	Poor	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Good.
Hb, He Hebert	Good	Good	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Hp*:											
Hebert	Fair	Fair	Good	Good	Poor	Good	Fair	Fair	Fair	Good	Fair.
Perry	Poor	Fair	Fair	Fair	---	Fair	Fair	Fair	Fair	Fair	Fair.
Ld Liddieville	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lo Loring	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MA Maurepas	Very poor.	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair	Very poor.	Very poor.	Very poor.	Fair.
Me Mer Rouge	Good	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Mg*:											
Mer Rouge	Good	Good	Good	Good	---	Good	Poor	Poor	Good	Good	Poor.
Gallion	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Ne Necessity	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ng*:											
Necessity	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gilbert	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Pc, Pd Perry	Fair	Fair	Fair	Good	---	Good	Good	Good	Fair	Good	Good.
Pe Perry	Poor	Fair	Fair	Fair	---	Fair	Fair	Fair	Fair	Fair	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Po, Pr------------- Portland	Good	Good	Good	Good	---	Good	Good	Good	Good	Good	Good.
Ra, Rb------------- Rilla	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Rh*:											
Rilla-------------	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Hebert------------	Good	Good	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Sa----------------- Sharkey	Fair	Fair	Fair	Good	---	Good	Good	Good	Fair	Good	Good.
Sg, Sr------------- Sterlington	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
St*:											
Sterlington-------	Good	Good	Good	Good	---	Good	Poor	Very poor.	Good	Good	Very poor.
Hebert------------	Good	Good	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Tc----------------- Tensas	Fair	Fair	Fair	Good	---	Good	Good	Good	Fair	Good	Good.
Ts*:											
Tensas------------	Fair	Fair	Fair	Good	---	Good	Fair	Poor	Fair	Good	Fair.
Sharkey-----------	Fair	Fair	Fair	Good	---	Good	Good	Good	Fair	Good	Good.
YO----------------- Yorktown	Very poor.	Very poor.	Very poor.	Poor	Poor	Poor	Poor	Good	Very poor.	Very poor.	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation).

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AR*. Arents					
Ca----------------- Calhoun	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Cc*:					
Calhoun----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Calloway---------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Co----------------- Calloway	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Da----------------- Deerford	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: excess sodium, wetness.
Dd, De------------ Dexter	Severe: cutbanks cave.	Slight-----------	Slight-----------	Severe: low strength.	Slight.
Df----------------- Dexter	Severe: cutbanks cave.	Slight-----------	Moderate: slope.	Severe: low strength.	Slight.
Do----------------- Dundee	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Ds*:					
Dundee-----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Tensas-----------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Severe: too clayey.
Eg----------------- Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Fe----------------- Foley	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: excess sodium, wetness.
Fr, Ft------------ Forestdale	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, shrink-swell, wetness.	Severe: wetness.
Ga----------------- Gallion	Slight-----------	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ge----------------- Gigger	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
Gg*:					
Gigger-----------	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
Gilbert-----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Gk----------------- Gilbert	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Gm*:					
Gilbert-----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Egypt-------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Gr----------------- Grenada	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
Gs----------------- Grenada	Severe: wetness.	Moderate: wetness, slope.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
Gu*:					
Grenada-----------	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
Calhoun-----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Hb, He------------- Hebert	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Hp*:					
Hebert------------	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding.	Moderate: wetness, flooding.
Perry-------------	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, flooding.	Severe: wetness, too clayey.
Ld----------------- Liddieville	Severe: cutbanks cave.	Slight-----------	Slight-----------	Moderate: low strength.	Slight.
Lo----------------- Loring	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MA: Maurepas	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
Me: Mer Rouge	Moderate: wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Mg*:					
Mer Rouge	Moderate: wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Gallion	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Ne: Necessity	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Ng*:					
Necessity	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Gilbert	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Pc: Perry	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness.
Pd: Perry	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness, too clayey.
Pe: Perry	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, flooding.	Severe: wetness, too clayey.
Po: Portland	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Severe: flooding, too clayey.
Pr: Portland	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength.	Severe: too clayey.
Ra, Rb: Rilla	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Rh*:					
Rilla	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
Hebert	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Sa: Sharkey	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.	Severe: wetness, too clayey.
Sg, Sr: Sterlington	Slight	Slight	Slight	Slight	Slight.
St*:					
Sterlington	Slight	Slight	Slight	Slight	Slight.
Hebert	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Tc: Tensas	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Severe: too clayey.
Ts*:					
Tensas	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Severe: too clayey.
Sharkey	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.	Severe: wetness, too clayey.
YO: Yorktown	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AR*. Arents					
Ca----------------- Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cc*:					
Calhoun------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Calloway-----------	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Co----------------- Calloway	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Da----------------- Deerford	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
Dd, De, Df---------- Dexter	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Do----------------- Dundee	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Ds*:					
Dundee-------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Tensas-------------	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Eg----------------- Egypt	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Fe----------------- Foley	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
Fr----------------- Forestdale	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ft: Forestdale	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ga: Gallion	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
Ge: Gigger	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Gg*:					
Gigger	Severe: percs slowly, wetness.	Moderate: seepage, slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gk: Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gm*:					
Gilbert	Severe: wetness, percs slowly.	Slignt	Severe: wetness.	Severe: wetness.	Poor: wetness.
Egypt	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gr: Grenada	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Gs: Grenada	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Gu*:					
Grenada	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Hb, He: Hebert	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Hp*:					
Hebert	Severe: wetness, percs slowly, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Fair: too clayey, wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Hp*:					
Perry	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Ld Liddieville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
Lo Loring	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
MA Maurepas	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.
Me Mer Rouge	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Mg*:					
Mer Rouge	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Gallion	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
Ne Necessity	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ng*:					
Necessity	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pc Perry	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Pd Perry	Severe: wetness, percs slowly.	Severe: flooding, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Pe Perry	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Po, Pr: Portland	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Ra: Rilla	Moderate: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
Rb: Rilla	Moderate: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
Rh*:					
Rilla	Moderate: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
Hebert	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Sa: Sharkey	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Sg: Sterlington	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
Sr: Sterlington	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
St*:					
Sterlington	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
Hebert	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Tc: Tensas	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ts*:					
Tensas	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Sharkey	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
YO: Yorktown	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AR*. Arents				
Ca Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cc*: Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Co Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Da Deerford	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
Dd, De, Df Dexter	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Do Dundee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ds*: Dundee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Tensas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Eg Egypt	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, wetness.
Fe Foley	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
Fr, Ft Forestdale	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Ga Gallion	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ge Gigger	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Gg*:				
Gigger	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Gk Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Gm*:				
Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Egypt	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, wetness.
Gr Grenada	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Gs Grenada	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Gu*:				
Grenada	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Hb Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
He Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Hp*:				
Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Perry	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Ld Liddieville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Lo Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MA: Maurepas	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Me: Mer Rouge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
Mg*:				
Mer Rouge	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
Gallion	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Ne: Necessity	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
Ng*:				
Necessity	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Pc: Perry	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Pd, Pe: Perry	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Po, Pr: Portland	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ra, Rb: Rilla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Rh*:				
Rilla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Sa: Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Sg, Sr: Sterlington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
St*:				
Sterlington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Tc: Tensas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Ts*:				
Tensas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
YO: Yorktown	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
AR*. Arents						
Ca---------------- Calhoun	Slight---------	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Cc*:						
Calhoun----------	Slight---------	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Calloway---------	Moderate: seepage.	Severe: thin layer.	Severe: no water.	Percs slowly---	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Co---------------- Calloway	Moderate: seepage.	Severe: thin layer.	Severe: no water.	Percs slowly---	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Da---------------- Deerford	Slight---------	Severe: wetness, excess sodium, piping.	Severe: no water.	Percs slowly, excess sodium.	Wetness, percs slowly, rooting depth.	Wetness, excess sodium, erodes easily.
Dd, De------------ Dexter	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Df---------------- Dexter	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily.
Do---------------- Dundee	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Favorable------	Wetness--------	Erodes easily.
Ds*:						
Dundee-----------	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Favorable------	Wetness--------	Erodes easily.
Tensas-----------	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, slow intake.	Wetness, erodes easily.
Eg---------------- Egypt	Slight---------	Severe: thin layer, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Fe---------------- Foley	Slight---------	Severe: wetness, excess sodium.	Severe: no water.	Percs slowly, excess sodium.	Wetness, percs slowly, erodes easily.	Wetness, excess sodium, erodes easily.
Fr---------------- Forestdale	Slight---------	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, erodes easily, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
Ft: Forestdale	Slight	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ga: Gallion	Moderate: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Ge: Gigger	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, rooting depth, percs slowly.
Gg*:						
Gigger	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, rooting depth, percs slowly.
Gilbert	Slight	Severe: wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Gk: Gilbert	Slight	Severe: wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Gm*:						
Gilbert	Slight	Severe: wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Egypt	Slight	Severe: thin layer, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Gr: Grenada	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, rooting depth.
Gs: Grenada	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, rooting depth.
Gu*:						
Grenada	Moderate: seepage.	Severe: piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, rooting depth.
Calhoun	Slight	Severe: piping, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Hb, He: Hebert	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable	Wetness, erodes easily.	Erodes easily.
Hp*:						
Hebert	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Flooding	Wetness, flooding, erodes easily.	Erodes easily.
Perry	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, rooting depth, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
Ld: Liddieville	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Favorable.
Lo: Loring	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: no water.	Slope, percs slowly.	Percs slowly, rooting depth, slope.	Erodes easily, rooting depth.
MA: Maurepas	Severe: seepage.	Severe: excess humus, ponding.	Slight	Ponding, flooding, subsides.	Ponding, flooding.	Wetness.
Me: Mer Rouge	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Deep to water	Erodes easily	Erodes easily.
Mg*:						
Mer Rouge	Moderate: seepage.	Severe: piping.	Severe: slow refill.	Deep to water	Erodes easily	Erodes easily.
Gallion	Moderate: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Ne: Necessity	Slight	Moderate: piping, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Ng*:						
Necessity	Slight	Moderate: piping, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Wetness, erodes easily, rooting depth.
Gilbert	Slight	Severe: wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, erodes easily, percs slowly.
Pc: Perry	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, rooting depth, percs slowly.
Pd: Perry	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, rooting depth, percs slowly.
Pe: Perry	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, rooting depth, percs slowly.
Po: Portland	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Pr: Portland	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, percs slowly.
Ra, Rb: Rilla	Moderate: seepage.	Severe: thin layer.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
Rh*:						
Rilla------------	Moderate: seepage.	Severe: thin layer.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily	Erodes easily.
Hebert-----------	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable------	Wetness, erodes easily.	Erodes easily.
Sa---------------- Sharkey	Slight---------	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly---	Wetness, slow intake.	Wetness, percs slowly.
Sg, Sr------------ Sterlington	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
St*:						
Sterlington------	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Hebert-----------	Moderate: seepage.	Severe: thin layer, wetness.	Severe: slow refill.	Favorable------	Wetness, erodes easily.	Erodes easily.
Tc---------------- Tensas	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, slow intake.	Wetness, erodes easily.
Ts*:						
Tensas-----------	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly---	Wetness, slow intake.	Wetness, erodes easily.
Sharkey----------	Slight---------	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly---	Wetness, slow intake.	Wetness, percs slowly.
YO---------------- Yorktown	Slight---------	Severe: hard to pack, ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Wetness, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
AR*. Arents											
Ca---------------Calhoun	0-23	Silt loam--------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	23-45	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	95-100	30-45	11-24
	45-60	Silt loam--------	CL, CL-ML	A-4	0	100	100	100	90-100	20-30	5-10
Cc*:											
Calhoun---------	0-20	Silt loam--------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	20-41	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	95-100	30-45	11-24
	41-60	Silt loam--------	CL, CL-ML	A-4	0	100	100	100	90-100	20-30	5-10
Calloway--------	0-28	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	28-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	45-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Co---------------Calloway	0-17	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	17-51	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	51-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Da---------------Deerford	0-17	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	95-100	<28	NP-7
	17-51	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	100	95-100	32-49	11-25
	51-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4, A-7-6	0	100	100	90-100	85-100	25-49	5-25
Dd, De, Df-------Dexter	0-6	Silt loam--------	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	45-75	<25	NP-4
	6-10	Silt loam, loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	65-90	15-38	5-16
	10-32	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	90-100	70-90	28-40	8-18
	32-60	Sandy clay loam, fine sandy loam, loamy fine sand.	SC, SM, CL, ML	A-6, A-4, A-2-4	0	100	100	75-95	25-55	10-30	NP-15
Do---------------Dundee	0-5	Silty clay loam	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	3-11
	5-43	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	90-100	85-100	28-44	12-22
	43-60	Loam, very fine sandy loam, silt loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	<30	NP-8

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
Ds*:											
Dundee----------	0-8	Silt loam--------	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	3-11
	8-40	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	90-100	85-100	28-44	12-22
	40-60	Loam, very fine sandy loam, silt loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	<30	NP-8
Tensas----------	0-5	Silty clay-------	CH, CL	A-7-6	0	100	100	100	95-100	46-70	22-40
	5-31	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	31-60	Very fine sandy loam, silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	25-40	5-17
Eg--------------- Egypt	0-10	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	90-100	<27	NP-7
	10-48	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	48-60	Silty clay loam, loam, silt loam.	CL, CL-ML	A-6, A-7-6, A-4	0	100	100	90-100	70-100	25-43	5-20
Fe--------------- Foley	0-4	Silt loam--------	CL, CL-ML	A-4, A-6	0	100	100	85-100	50-90	20-30	4-12
	4-9	Silt loam, silt, very fine sandy loam.	CL, CL-ML, ML	A-4, A-6	0	100	100	80-100	50-90	<30	2-12
	9-39	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	90-100	70-90	30-45	11-25
	39-60	Silt loam--------	CL	A-4, A-6	0	100	100	90-100	70-90	25-35	7-15
Fr, Ft----------- Forestdale	0-4	Silty clay loam	CL, CH	A-6, A-7	0	100	100	95-100	90-100	30-58	12-30
	4-34	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	90-100	40-65	20-40
	34-60	Silty clay loam, silt loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	95-100	75-100	20-50	5-30
Ga--------------- Gallion	0-7	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	100	100	90-100	<28	NP-11
	7-40	Silt loam, silty clay loam, clay loam.	CL	A-6	0	100	100	100	90-100	28-40	11-17
	40-60	Silty clay loam, very fine sandy loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	23-34	4-12
Ge--------------- Gigger	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	85-100	<27	NP-7
	6-26	Silty clay loam, silt loam.	CL	A-7-6, A-6	0	100	100	95-100	85-100	35-47	15-23
	26-36	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	100	100	95-100	85-100	28-43	5-20
	36-60	Loam, clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	85-95	51-80	25-40	5-18

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Gg*:											
Gigger----------	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	85-100	<27	NP-7
	6-24	Silty clay loam, silt loam.	CL	A-7-6, A-6	0	100	100	95-100	85-100	35-47	15-23
	24-34	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7-6	0	100	100	95-100	85-100	28-43	5-20
	34-54	Loam, clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	85-95	51-80	25-40	5-18
	54-60	Loam, clay loam, fine sandy loam.	CL, SC, ML, SM	A-6, A-4	0	100	100	75-95	40-80	<40	NP-18
Gilbert---------	0-18	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	18-37	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	37-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Gk--------------- Gilbert	0-16	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	16-44	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	44-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Gm*:											
Gilbert---------	0-12	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	12-46	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	46-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Egypt-----------	0-16	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	90-100	<27	NP-7
	16-41	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	41-60	Silty clay loam, loam, silt loam.	CL, CL-ML	A-6, A-7-6, A-4	0	100	100	90-100	70-100	25-43	5-20
Gr, Gs----------- Grenada	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	90-100	25-31	4-7
	6-29	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	95-100	90-100	27-40	8-19
	29-33	Silt loam--------	CL-ML, CL	A-4	0	100	100	95-100	90-100	20-30	5-10
	33-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	95-100	90-100	25-45	5-24
Gu*:											
Grenada---------	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	90-100	25-31	4-7
	6-23	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	100	95-100	90-100	27-40	8-19
	23-27	Silt loam--------	CL-ML, CL	A-4	0	100	100	95-100	90-100	20-30	5-10
	27-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	95-100	90-100	25-45	5-24
Calhoun---------	0-16	Silt loam--------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	16-43	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	95-100	30-45	11-24
	43-60	Silt loam--------	CL, CL-ML	A-4	0	100	100	100	90-100	20-30	5-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
Hb: Hebert	0-10	Silt loam	ML, CL-ML	A-4	0	100	100	100	75-100	<27	NP-7
	10-44	Loam, silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	85-100	31-45	11-22
	44-60	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
He: Hebert	0-8	Silty clay loam	CL	A-6	0	100	100	100	80-100	31-40	11-18
	8-42	Loam, silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	85-100	31-45	11-22
	42-60	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
Hp*:											
Hebert	0-10	Silty clay loam	CL	A-6	0	100	100	100	80-100	31-40	11-18
	10-45	Loam, silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	85-100	31-45	11-22
	45-60	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
Perry	0-6	Clay	CH, CL	A-7-6	0	100	100	100	95-100	45-75	22-45
	6-45	Clay	CH	A-7-6	0	100	100	100	95-100	60-80	33-50
	45-60	Clay, silty clay	CH, CL	A-7-6	0	90-100	85-100	75-100	70-100	45-80	22-50
Ld: Liddieville	0-5	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	40-65	<26	NP-7
	5-40	Clay loam, loam, sandy clay loam.	CL	A-6, A-4	0	100	100	85-100	50-75	29-40	8-18
	40-49	Loam, very fine sandy loam, fine sandy loam.	CL-ML, SM, CL, SC	A-4	0	100	100	75-100	40-65	23-30	3-10
	49-60	Loam, fine sandy loam, loamy fine sand.	SM, ML	A-4, A-2	0	100	100	60-75	30-65	<23	NP-3
Lo: Loring	0-7	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	<35	NP-15
	7-28	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	0	100	100	95-100	90-100	32-48	10-20
	28-60	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0	100	100	95-100	90-100	30-45	10-22
MA: Maurepas	0-60	Muck	PT	A-8	0	---	---	---	---	---	---
Me: Mer Rouge	0-4	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	80-100	<30	NP-10
	4-28	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	70-90	70-90	70-90	50-85	31-45	11-22
	28-60	Silt loam, very fine sandy loam, loam.	CL-ML, CL, ML	A-4, A-6	0	70-90	70-90	70-90	50-85	<37	NP-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Mg*:											
Mer Rouge	0-4	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	80-100	<30	NP-10
	4-37	Silty clay loam, silt loam, loam.	CL	A-6, A-7-6	0	70-90	70-90	70-90	50-85	31-45	11-22
	37-60	Silt loam, very fine sandy loam, loam.	CL-ML, CL, ML	A-4, A-6	0	70-90	70-90	70-90	50-85	<37	NP-15
Gallion	0-6	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	100	90-100	<28	NP-11
	6-35	Silt loam, silty clay loam, clay loam.	CL	A-6	0	100	100	100	90-100	28-40	11-17
	35-60	Silty clay loam, very fine sandy loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	23-34	4-12
Ne: Necessity	0-6	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-100	<27	NP-7
	6-29	Silt loam, clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
	29-33	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-100	23-27	3-7
	33-60	Loam, clay loam, silt loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
Ng*:											
Necessity	0-7	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-100	<27	NP-7
	7-27	Silt loam, clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
	27-31	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-100	23-27	3-7
	31-51	Loam, clay loam, silt loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
	51-60	Loam, clay loam, silt loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
Gilbert	0-11	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	11-33	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	90-100	32-45	11-22
	33-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Pc: Perry	0-6	Silty clay loam	CL, CH	A-7-6	0	100	100	100	95-100	42-65	22-40
	6-40	Clay	CH	A-7-6	0	100	100	100	95-100	60-80	33-50
	40-60	Clay, silty clay	CH, CL	A-7-6	0	90-100	85-100	75-100	70-100	45-80	22-50
Pd, Pe: Perry	0-6	Clay	CH, CL	A-7-6	0	100	100	100	95-100	45-75	22-45
	6-31	Clay	CH	A-7-6	0	100	100	100	95-100	60-80	33-50
	31-60	Clay, silty clay	CH, CL	A-7-6	0	90-100	85-100	75-100	70-100	45-80	22-50
Po: Portland	0-6	Silty clay loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	25-43	7-22
	6-24	Clay	CH	A-7	0	100	100	90-100	75-95	60-80	40-60
	24-44	Clay, silty clay	CH	A-7	0	100	98-100	90-100	75-95	60-80	40-60
	44-60	Clay, silty clay	CH	A-7	0	100	98-100	90-100	75-95	60-80	40-60
Pr: Portland	0-5	Clay	CH	A-7	0	100	100	90-100	75-95	45-65	25-40
	5-20	Clay	CH	A-7	0	100	100	90-100	75-95	60-80	40-60
	20-60	Clay, silty clay	CH	A-7	0	100	98-100	90-100	75-95	60-80	40-60

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Ra, Rb----------- Rilla	0-10	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<31	NP-10
	10-50	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	100	90-100	28-40	8-17
	50-60	Silty clay loam, silty clay, very fine sandy loam.	CL-ML, CL	A-4, A-6, A-7-6	0	100	100	100	75-100	23-45	4-21
Rh*:											
Rilla-----------	0-8	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<31	NP-10
	8-36	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	100	90-100	28-40	8-17
	36-60	Silty clay loam, silty clay, very fine sandy loam.	CL-ML, CL	A-4, A-6, A-7-6	0	100	100	100	75-100	23-45	4-21
Hebert----------	0-12	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	75-100	<27	NP-7
	12-40	Loam, silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	85-100	31-45	11-22
	40-60	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
Sa--------------- Sharkey	0-9	Clay-------------	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	9-49	Clay-------------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	49-60	Clay, silty clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
Sg, Sr----------- Sterlington	0-10	Silt loam--------	ML	A-4	0	100	100	90-100	60-95	14-23	NP-7
	10-36	Silt loam, very fine sandy loam, loam.	CL-ML, ML	A-4	0	100	100	90-100	80-95	15-28	NP-7
	36-60	Very fine sandy loam, silt loam, loam.	ML, CL-ML	A-4	0	100	100	90-100	80-95	15-28	NP-7
St*:											
Sterlington-----	0-5	Silt loam--------	ML	A-4	0	100	100	90-100	60-95	14-23	NP-7
	5-50	Silt loam, very fine sandy loam, loam.	CL-ML, ML	A-4	0	100	100	90-100	80-95	15-28	NP-7
	50-60	Very fine sandy loam, silt loam, loam.	ML, CL-ML	A-4	0	100	100	90-100	80-95	15-28	NP-7
Hebert----------	0-16	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	75-100	<27	NP-7
	16-39	Loam, silt loam, silty clay loam.	CL	A-6, A-7-6	0	100	100	100	85-100	31-45	11-22
	39-60	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
Tc--------------- Tensas	0-6	Silty clay-------	CH, CL	A-7-6	0	100	100	100	95-100	46-70	22-40
	6-27	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	27-60	Silty clay loam, silt loam, loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	25-40	5-17

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Ts*:											
Tensas----------	0-4	Silty clay-------	CH, CL	A-7-6	0	100	100	100	95-100	46-70	22-40
	4-27	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	27-60	Silty clay loam, silt loam, loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	25-40	5-17
Sharkey---------	0-6	Clay-------------	CH, CL	A-7-6, A-7-5	0	100	100	100	95-100	46-85	22-50
	6-42	Clay-------------	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
	42-60	Clay, silty clay	CH	A-7-6, A-7-5	0	100	100	100	95-100	56-85	30-50
YO--------------- Yorktown	0-9	Clay-------------	MH, CH, OH	A-7	0	100	100	100	95-100	55-75	24-45
	9-51	Clay-------------	CH	A-7	0	100	100	100	95-100	60-80	32-50
	51-60	Clay-------------	CH	A-7	0	100	100	95-100	90-100	60-80	32-50

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AR*. Arents										
Ca---------------- Calhoun	0-23	10-27	1.30-1.65	0.2-0.6	0.21-0.23	3.6-6.0	Low---------	0.49	5	.5-4
	23-45	22-35	1.30-1.70	0.06-0.2	0.20-0.22	3.6-5.5	Moderate----	0.43		
	45-60	10-27	1.40-1.70	0.2-0.6	0.21-0.23	3.6-7.8	Low---------	0.43		
Cc*:										
Calhoun---------	0-20	10-27	1.30-1.65	0.2-0.6	0.21-0.23	3.6-6.0	Low---------	0.49	5	.5-4
	20-41	22-35	1.30-1.70	0.06-0.2	0.20-0.22	3.6-5.5	Moderate----	0.43		
	41-60	10-27	1.40-1.70	0.2-0.6	0.21-0.23	3.6-7.8	Low---------	0.43		
Calloway--------	0-28	10-30	1.40-1.55	0.6-2.0	0.20-0.23	4.5-6.0	Low---------	0.49	3	.5-2
	28-45	10-32	1.35-1.55	0.06-0.2	0.09-0.12	4.5-6.0	Low---------	0.43		
	45-60	16-32	1.45-1.55	0.06-0.2	0.09-0.12	5.1-6.0	Low---------	0.43		
Co---------------- Calloway	0-17	10-30	1.40-1.55	0.6-2.0	0.20-0.23	4.5-6.0	Low---------	0.49	3	.5-2
	17-51	10-32	1.35-1.55	0.06-0.2	0.09-0.12	4.5-6.0	Low---------	0.43		
	51-60	16-32	1.45-1.55	0.06-0.2	0.09-0.12	5.1-6.0	Low---------	0.43		
Da---------------- Deerford	0-17	5-27	1.30-1.70	0.6-2.0	0.21-0.23	4.5-6.5	Low---------	0.49	3	.5-4
	17-51	10-35	1.30-1.80	0.06-0.2	0.12-0.18	4.5-8.4	Moderate----	0.49		
	51-60	10-35	1.30-1.80	0.2-0.6	0.12-0.18	6.6-8.4	Moderate----	0.49		
Dd, De, Df------- Dexter	0-6	10-27	1.30-1.70	0.6-2.0	0.15-0.24	4.5-7.3	Low---------	0.43	5	.5-4
	6-10	10-27	1.30-1.70	0.6-2.0	0.15-0.24	4.5-6.0	Low---------	0.43		
	10-32	10-35	1.40-1.70	0.6-2.0	0.15-0.24	4.5-6.0	Low---------	0.32		
	32-60	10-30	1.30-1.70	0.6-6.0	0.08-0.18	4.5-6.0	Low---------	0.24		
Do---------------- Dundee	0-5	10-30	1.30-1.70	0.6-2.0	0.15-0.20	4.5-6.0	Low---------	0.43	5	.5-2
	5-43	18-34	1.30-1.70	0.2-0.6	0.15-0.20	4.5-6.0	Moderate----	0.32		
	43-60	18-25	1.30-1.70	0.6-2.0	0.15-0.20	4.5-7.3	Low---------	0.32		
Ds*:										
Dundee----------	0-8	10-30	1.30-1.70	0.6-2.0	0.15-0.20	4.5-6.0	Low---------	0.43	5	.5-2
	8-40	18-34	1.30-1.70	0.2-0.6	0.15-0.20	4.5-6.0	Moderate----	0.32		
	40-60	18-25	1.30-1.70	0.6-2.0	0.15-0.20	4.5-7.3	Low---------	0.32		
Tensas----------	0-5	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-7.3	High--------	0.32	5	.5-4
	5-31	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-6.0	Very high---	0.32		
	31-60	10-39	1.30-1.70	0.2-2.0	0.20-0.23	5.1-7.3	Low---------	0.37		
Eg---------------- Egypt	0-10	8-25	1.30-1.65	0.6-2.0	0.21-0.23	4.5-6.0	Low---------	0.49	4	.5-4
	10-48	18-35	1.30-1.85	0.06-0.2	0.16-0.20	4.5-6.5	Moderate----	0.43		
	48-60	18-35	1.30-1.70	0.06-0.2	0.09-0.12	6.6-9.0	Moderate----	0.49		
Fe---------------- Foley	0-4	10-20	1.25-1.60	0.6-2.0	0.16-0.22	4.5-6.0	Low---------	0.43	3	.5-4
	4-9	5-20	1.25-1.50	0.2-0.6	0.16-0.24	5.1-6.0	Low---------	0.43		
	9-39	20-35	1.25-1.50	<0.06	0.18-0.22	5.1-9.0	Moderate----	0.43		
	39-60	15-25	1.25-1.50	<0.06	0.16-0.22	6.6-9.0	Low---------	0.49		
Fr, Ft----------- Forestdale	0-4	25-38	1.50-1.55	0.2-0.6	0.20-0.22	4.5-6.0	Moderate----	0.37	5	.5-2
	4-34	35-60	1.20-1.60	<0.06	0.14-0.18	4.5-6.0	High--------	0.28		
	34-60	10-35	1.45-1.55	0.2-0.6	0.17-0.22	4.5-7.8	Moderate----	0.37		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ga---------------- Gallion	0-7	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-7.3	Low----------	0.43	5	.5-2
	7-40	14-35	1.35-1.70	0.6-2.0	0.20-0.22	5.6-8.4	Moderate----	0.32		
	40-60	14-35	1.35-1.70	0.6-2.0	0.20-0.23	5.6-8.4	Low----------	0.37		
Ge---------------- Gigger	0-6	8-25	1.30-1.65	0.6-2.0	0.18-0.23	3.6-7.3	Low----------	0.49	3	.5-2
	6-26	18-35	1.30-1.70	0.6-2.0	0.18-0.22	3.6-6.0	Low----------	0.43		
	26-36	18-35	1.30-1.70	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.43		
	36-60	18-30	1.30-1.80	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.32		
Gg*:										
Gigger-----------	0-6	8-25	1.30-1.65	0.6-2.0	0.18-0.23	3.6-7.3	Low----------	0.49	3	.5-2
	6-24	18-35	1.30-1.70	0.6-2.0	0.18-0.22	3.6-6.0	Low----------	0.43		
	24-34	18-35	1.30-1.70	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.43		
	34-54	18-30	1.30-1.80	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.32		
	54-60	8-30	1.30-1.80	0.2-0.6	0.10-0.17	4.5-6.0	Low----------	0.32		
Gilbert----------	0-18	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low----------	0.43	4	.5-4
	18-37	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate----	0.43		
	37-60	18-35	1.40-1.65	<0.06	0.14-0.23	6.6-9.0	Moderate----	0.43		
Gk---------------- Gilbert	0-16	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low----------	0.43	4	.5-4
	16-44	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate----	0.43		
	44-60	18-35	1.40-1.65	<0.06	0.14-0.23	6.6-9.0	Moderate----	0.43		
Gm*:										
Gilbert----------	0-12	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low----------	0.43	4	.5-4
	12-46	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate----	0.43		
	46-60	18-35	1.40-1.65	<0.06	0.14-0.23	6.6-9.0	Moderate----	0.43		
Egypt------------	0-16	8-25	1.30-1.65	0.6-2.0	0.21-0.23	4.5-6.0	Low----------	0.49	4	.5-4
	16-41	18-35	1.30-1.85	0.06-0.2	0.16-0.20	4.5-6.5	Moderate----	0.43		
	41-60	18-35	1.30-1.70	0.06-0.2	0.09-0.12	6.6-9.0	Moderate----	0.49		
Gr, Gs------------ Grenada	0-6	12-16	1.40-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.49	3	.5-4
	6-29	18-30	1.40-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.43		
	29-33	12-16	1.35-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.49		
	33-60	15-32	1.45-1.60	0.06-0.2	0.10-0.12	4.5-7.3	Low----------	0.37		
Gu*:										
Grenada----------	0-6	12-16	1.40-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.49	3	.5-4
	6-23	18-30	1.40-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.43		
	23-27	12-16	1.35-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.49		
	27-60	15-32	1.45-1.60	0.06-0.2	0.10-0.12	4.5-7.3	Low----------	0.37		
Calhoun----------	0-16	10-27	1.30-1.65	0.2-0.6	0.21-0.23	3.6-6.0	Low----------	0.49	5	.5-4
	16-43	22-35	1.30-1.70	0.06-0.2	0.20-0.22	3.6-5.5	Moderate----	0.43		
	43-60	10-27	1.40-1.70	0.2-0.6	0.21-0.23	3.6-7.8	Low----------	0.43		
Hb---------------- Hebert	0-10	10-27	1.30-1.65	0.6-2.0	0.21-0.23	4.5-7.3	Low----------	0.43	5	.5-4
	10-44	14-35	1.30-1.70	0.2-0.6	0.18-0.22	4.5-6.5	Moderate----	0.32		
	44-60	10-35	1.30-1.70	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37		
He---------------- Hebert	0-8	27-35	1.40-1.70	0.2-0.6	0.20-0.22	4.5-7.3	Moderate----	0.37	5	.5-4
	8-42	14-35	1.30-1.70	0.2-0.6	0.18-0.22	4.5-6.5	Moderate----	0.32		
	42-60	10-35	1.30-1.70	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37		
Hp*:										
Hebert-----------	0-10	27-35	1.35-1.70	0.2-0.6	0.20-0.22	4.5-7.3	Moderate----	0.37	5	.5-4
	10-45	14-35	1.30-1.65	0.2-0.6	0.18-0.22	4.5-6.5	Moderate----	0.32		
	45-60	10-35	1.30-1.65	0.6-2.0	0.18-0.22	5.1-7.8	Low----------	0.37		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Hp*:										
Perry-----------	0-6	40-80	1.20-1.55	<0.06	0.17-0.20	4.5-6.0	High--------	0.32	5	.5-4
	6-45	55-85	1.17-1.40	<0.06	0.17-0.20	5.1-7.3	Very high---	0.28		
	45-60	55-85	1.17-1.35	<0.06	0.17-0.20	6.1-8.4	Very high---	0.28		
Ld--------------- Liddieville	0-5	10-20	1.30-1.60	0.6-2.0	0.12-0.18	4.5-7.3	Low---------	0.32	5	.5-3
	5-40	18-30	1.30-1.65	0.6-2.0	0.15-0.20	4.5-7.3	Low---------	0.28		
	40-49	15-25	1.30-1.65	0.6-2.0	0.12-0.20	4.5-7.3	Low---------	0.32		
	49-60	3-10	1.35-1.70	0.6-6.0	0.08-0.16	4.5-7.3	Low---------	0.32		
Lo--------------- Loring	0-7	8-18	1.30-1.50	0.6-2.0	0.20-0.23	3.6-6.0	Low---------	0.49	3	.4-2
	7-28	18-32	1.40-1.50	0.6-2.0	0.20-0.22	3.6-6.0	Low---------	0.43		
	28-60	15-30	1.50-1.70	0.06-0.2	0.06-0.13	3.6-6.0	Low---------	0.43		
MA--------------- Maurepas	0-60	---	0.05-0.25	6.0-20.0	0.20-0.50	4.5-6.5	Low---------	----	---	---
Me--------------- Mer Rouge	0-4	10-26	1.30-1.65	0.6-2.0	0.21-0.23	6.1-7.3	Low---------	0.37	5	1-4
	4-28	14-35	1.35-1.70	0.2-0.6	0.20-0.22	6.1-7.8	Moderate----	0.32		
	28-60	10-27	1.35-1.65	0.2-2.0	0.20-0.23	6.6-8.4	Low---------	0.32		
Mg*:										
Mer Rouge-------	0-4	10-26	1.30-1.65	0.6-2.0	0.21-0.23	6.1-7.3	Low---------	0.37	5	1-4
	4-37	14-35	1.35-1.70	0.2-0.6	0.20-0.22	6.1-7.8	Moderate----	0.32		
	37-60	10-27	1.35-1.65	0.2-2.0	0.20-0.23	6.6-8.4	Low---------	0.32		
Gallion---------	0-6	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-7.3	Low---------	0.43	5	.5-2
	6-35	14-35	1.35-1.70	0.6-2.0	0.20-0.22	5.6-8.4	Moderate----	0.32		
	35-60	14-35	1.35-1.70	0.6-2.0	0.20-0.23	5.6-8.4	Low---------	0.37		
Ne--------------- Necessity	0-6	5-15	1.32-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low---------	0.49	3	.5-3
	6-29	18-32	1.40-1.80	0.06-0.2	0.15-0.20	3.6-6.0	Low---------	0.37		
	29-33	5-15	1.50-1.90	0.2-0.6	0.18-0.22	4.5-6.0	Low---------	0.43		
	33-60	18-30	1.50-1.90	0.06-0.2	0.15-0.20	4.5-6.5	Low---------	0.37		
Ng*:										
Necessity-------	0-7	5-15	1.32-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low---------	0.49	3	.5-3
	7-27	18-32	1.40-1.80	0.06-0.2	0.15-0.20	3.6-6.0	Low---------	0.37		
	27-31	5-15	1.50-1.90	0.2-0.6	0.18-0.22	4.5-6.0	Low---------	0.43		
	31-51	18-30	1.50-1.90	0.06-0.2	0.15-0.20	4.5-6.5	Low---------	0.37		
	51-60	18-30	1.30-1.65	0.2-0.6	0.18-0.22	4.5-6.0	Low---------	0.37		
Gilbert---------	0-11	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low---------	0.43	4	.5-4
	11-33	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate----	0.43		
	33-60	18-35	1.40-1.65	<0.06	0.14-0.23	6.6-9.0	Moderate----	0.43		
Pc--------------- Perry	0-6	27-49	1.35-1.70	0.06-0.2	0.18-0.22	4.5-6.0	High--------	0.37	5	.5-4
	6-40	55-85	1.17-1.40	<0.06	0.17-0.20	5.1-7.3	Very high---	0.28		
	40-60	55-85	1.17-1.35	<0.06	0.17-0.20	6.1-8.4	Very high---	0.28		
Pd, Pe----------- Perry	0-6	40-80	1.20-1.55	<0.06	0.17-0.20	4.5-6.0	High--------	0.32	5	.5-4
	6-31	55-85	1.17-1.40	<0.06	0.17-0.20	5.1-7.3	Very high---	0.28		
	31-60	55-85	1.17-1.35	<0.06	0.17-0.20	6.1-8.4	Very high---	0.28		
Po--------------- Portland	0-6	15-35	1.25-1.55	0.2-2.0	0.16-0.24	4.5-5.5	Low---------	0.43	5	1-4
	6-24	60-85	1.15-1.45	<0.06	0.12-0.18	4.5-6.0	High--------	0.32		
	24-44	55-85	1.15-1.45	<0.06	0.12-0.18	6.1-8.4	High--------	0.32		
	44-60	55-85	1.15-1.45	<0.06	0.12-0.18	6.1-8.4	High--------	0.32		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Pr----------------	0-5	40-60	1.15-1.50	<0.06	0.12-0.18	4.5-5.5	High--------	0.32	5	1-4
Portland	5-20	60-85	1.15-1.45	<0.06	0.12-0.18	4.5-6.0	High--------	0.32		
	20-60	55-85	1.15-1.45	<0.06	0.12-0.18	6.1-8.4	High--------	0.32		
Ra, Rb-----------	0-10	14-27	1.30-1.70	0.6-2.0	0.21-0.23	4.5-7.3	Low---------	0.43	5	.5-5
Rilla	10-50	18-35	1.30-1.70	0.6-2.0	0.20-0.22	3.6-5.5	Moderate----	0.32		
	50-60	20-50	1.30-1.70	0.6-2.0	0.18-0.22	4.5-7.3	Low---------	0.32		
Rh*:										
Rilla-----------	0-8	14-27	1.30-1.70	0.6-2.0	0.21-0.23	4.5-7.3	Low---------	0.43	5	.5-5
	8-36	18-35	1.30-1.70	0.6-2.0	0.20-0.22	3.6-5.5	Moderate----	0.32		
	36-60	20-50	1.30-1.70	0.6-2.0	0.18-0.22	4.5-7.3	Low---------	0.32		
Hebert----------	0-12	10-27	1.30-1.65	0.6-2.0	0.21-0.23	4.5-7.3	Low---------	0.43	5	.5-4
	12-40	14-35	1.30-1.70	0.2-0.6	0.18-0.22	4.5-6.5	Moderate----	0.32		
	40-60	10-35	1.30-1.70	0.6-2.0	0.18-0.22	5.1-7.8	Low---------	0.37		
Sa----------------	0-9	40-60	1.20-1.50	<0.06	0.07-0.14	5.1-7.3	Very high---	0.32	5	.5-4
Sharkey	9-49	60-90	1.20-1.50	<0.06	0.07-0.14	5.1-8.4	Very high---	0.28		
	49-60	60-90	1.20-1.50	<0.06	0.07-0.14	6.6-8.4	Very high---	0.28		
Sg, Sr-----------	0-10	10-18	1.30-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low---------	0.43	5	.5-4
Sterlington	10-36	10-18	1.30-1.70	0.6-2.0	0.18-0.22	4.5-6.5	Low---------	0.37		
	36-60	10-22	1.30-1.70	0.6-2.0	0.18-0.22	4.5-7.3	Low---------	0.37		
St*:										
Sterlington-----	0-5	10-18	1.30-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low---------	0.43	5	.5-4
	5-50	10-18	1.30-1.70	0.6-2.0	0.18-0.22	4.5-6.5	Low---------	0.37		
	50-60	10-22	1.30-1.70	0.6-2.0	0.18-0.22	4.5-7.3	Low---------	0.37		
Hebert----------	0-16	10-27	1.30-1.65	0.6-2.0	0.21-0.23	4.5-7.3	Low---------	0.43	5	.5-4
	16-39	14-35	1.30-1.70	0.2-0.6	0.18-0.22	4.5-6.5	Moderate----	0.32		
	39-60	10-35	1.30-1.70	0.6-2.0	0.18-0.22	5.1-7.8	Low---------	0.37		
Tc----------------	0-6	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-7.3	High--------	0.32	5	.5-4
Tensas	6-27	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-6.0	Very high	0.32		
	27-60	10-39	1.30-1.70	0.2-2.0	0.20-0.23	5.1-7.3	Low---------	0.37		
Ts*:										
Tensas----------	0-4	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-7.3	High--------	0.32	5	.5-4
	4-27	40-60	1.20-1.50	<0.06	0.15-0.19	4.5-6.0	Very high---	0.32		
	27-60	10-39	1.30-1.70	0.2-2.0	0.20-0.23	5.1-7.3	Low---------	0.37		
Sharkey---------	0-6	40-60	1.20-1.50	<0.06	0.07-0.14	5.1-8.4	Very high---	0.32	5	.5-4
	6-42	60-90	1.20-1.50	<0.06	0.07-0.14	5.6-8.4	Very high---	0.28		
	42-60	60-90	1.20-1.50	<0.06	0.07-0.14	6.6-8.4	Very high---	0.28		
YO----------------	0-9	40-65	1.15-1.45	<0.06	0.12-0.18	4.5-6.0	High--------	0.32	5	.5-4
Yorktown	9-51	60-80	1.15-1.45	<0.06	0.12-0.18	4.5-6.0	Very high---	0.32		
	51-60	60-80	1.15-1.45	<0.06	0.12-0.18	4.5-6.5	Very high---	0.32		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
AR*. Arents									
Ca-------------- Calhoun	D	Rare-------	---	---	0-1.5	Perched	Dec-Apr	High-----	Moderate.
Cc*:									
Calhoun-------	D	Rare-------	---	---	0-1.5	Perched	Dec-Apr	High-----	Moderate.
Calloway------	C	None-------	---	---	1.0-2.0	Perched	Jan-Apr	High-----	Moderate.
Co-------------- Calloway	C	None-------	---	---	1.0-2.0	Perched	Jan-Apr	High-----	Moderate.
Da-------------- Deerford	D	None-------	---	---	0.5-1.5	Perched	Dec-Apr	High-----	Moderate.
Dd, De, Df----- Dexter	B	None-------	---	---	>6.0	---	---	Moderate	Moderate.
Do-------------- Dundee	C	None-------	---	---	1.5-3.5	Apparent	Jan-Apr	High-----	Moderate.
Ds*:									
Dundee--------	C	None-------	---	---	1.5-3.5	Apparent	Jan-Apr	High-----	Moderate.
Tensas--------	D	None-------	---	---	1.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Eg-------------- Egypt	D	None-------	---	---	0.5-2.0	Perched	Dec-Apr	High-----	Moderate.
Fe-------------- Foley	D	Rare-------	---	---	0.5-1.5	Perched	Dec-Apr	High-----	Low.
Fr-------------- Forestdale	D	Rare-------	---	---	0.5-2.0	Apparent	Jan-Apr	High-----	Moderate.
Ft-------------- Forestdale	D	Occasional	Brief to long.	Jan-Apr	0.5-2.0	Apparent	Jan-Apr	High-----	Moderate.
Ga-------------- Gallion	B	None-------	---	---	>6.0	---	---	Moderate	Low.
Ge-------------- Gigger	C	None-------	---	---	2.0-3.0	Perched	Jan-Mar	Moderate	Moderate.
Gg*:									
Gigger--------	C	None-------	---	---	2.0-3.0	Perched	Jan-Mar	Moderate	Moderate.
Gilbert-------	D	Rare-------	---	---	0-1.5	Perched	Dec-Apr	High-----	Moderate.
Gk-------------- Gilbert	D	Rare-------	---	---	0-1.5	Perched	Dec-Apr	High-----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
Gm*:									
Gilbert	D	Rare	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Egypt	D	None	---	---	0.5-2.0	Perched	Dec-Apr	High	Moderate.
Gr, Gs Grenada	C	None	---	---	1.5-2.5	Perched	Jan-Apr	Moderate	Moderate.
Gu*:									
Grenada	C	None	---	---	1.5-2.5	Perched	Jan-Apr	Moderate	Moderate.
Calhoun	D	Rare	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Hb, He Hebert	C	None	---	---	1.5-3.0	Apparent	Dec-Apr	High	Moderate.
Hp*:									
Hebert	C	Occasional	Brief to very long.	Dec-Apr	1.5-3.0	Apparent	Dec-Apr	High	Moderate.
Perry	D	Occasional	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Jun	High	Moderate.
Ld Liddieville	B	None	---	---	>6.0	---	---	Moderate	Low.
Lo Loring	C	None	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
MA Maurepas	D	Frequent	Brief to very long.	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High	High.
Me Mer Rouge	B	None	---	---	3.0-5.0	Apparent	Dec-Apr	High	Low.
Mg*:									
Mer Rouge	B	None	---	---	3.0-5.0	Apparent	Dec-Apr	High	Low.
Gallion	B	None	---	---	>6.0	---	---	Moderate	Low.
Ne Necessity	C	None	---	---	1.0-2.0	Perched	Dec-Mar	High	Moderate.
Ng*:									
Necessity	C	None	---	---	1.0-2.0	Perched	Dec-Mar	High	Moderate.
Gilbert	D	Rare	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Pc Perry	D	None	---	---	0-2.0	Apparent	Dec-Jun	High	Moderate.
Pd Perry	D	Rare	---	---	0-2.0	Apparent	Dec-Jun	High	Moderate.
Pe Perry	D	Occasional	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Jun	High	Moderate.
Po Portland	D	None	---	---	1.0-2.0	Perched	Dec-May	High	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
Pr-------------- Portland	D	Rare-------	---	---	1.0-2.0	Perched	Dec-May	High-----	Moderate.
Ra, Rb--------- Rilla	B	None-------	---	---	4.0-6.0	Apparent	Dec-Apr	Moderate	High.
Rh*:									
Rilla---------	B	None-------	---	---	4.0-6.0	Apparent	Dec-Apr	Moderate	High.
Hebert--------	C	None-------	---	---	1.5-3.0	Apparent	Dec-Apr	High-----	Moderate.
Sa-------------- Sharkey	D	Rare-------	---	---	0-2.0	Apparent	Dec-Apr	High-----	Moderate.
Sg, Sr--------- Sterlington	B	None-------	---	---	>6.0	---	---	Low------	Moderate.
St*:									
Sterlington---	B	None-------	---	---	>6.0	---	---	Low------	Moderate.
Hebert--------	C	None-------	---	---	1.5-3.0	Apparent	Dec-Apr	High-----	Moderate.
Tc-------------- Tensas	D	None-------	---	---	1.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Ts*:									
Tensas--------	D	None-------	---	---	1.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Sharkey-------	D	Rare-------	---	---	0-2.0	Apparent	Dec-Apr	High-----	Moderate.
YO-------------- Yorktown	D	Frequent---	Very long.	Oct-Aug	+5-0.5	Apparent	Oct-Aug	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS

(Analyses by the Soil Fertility Laboratory, Louisiana Agricultural Experiment Station. Dashes indicate that analyses were not made)

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Calhoun silt loam:[1] (S87LA-83-1)	Ap	0-6	4.0	1.61	61	4.0	2.0	0.3	0.0	3.4	0.5	14.4	10.2	20.7	30.5	33.3	0.0	2.00
	Eg1	6-14	4.1	0.54	27	2.4	2.0	0.3	0.2	5.2	1.1	14.4	11.2	19.3	25.4	46.6	1.0	1.20
	Eg2	14-23	4.4	0.32	25	4.0	3.0	0.2	1.0	6.2	0.8	16.2	15.2	24.4	33.6	40.8	4.1	1.30
	Btg1	23-32	4.2	0.15	28	6.0	5.0	0.2	1.2	6.2	0.3	16.8	18.9	29.2	42.5	32.9	4.1	1.20
	Btg2	32-45	4.1	0.01	53	7.3	7.0	0.3	2.4	3.0	0.3	12.0	20.3	29.0	58.6	14.8	8.3	1.00
	BCg	45-60	4.0	0.01	64	7.0	7.0	0.3	3.1	2.0	0.0	12.0	19.4	29.4	59.2	10.3	10.5	1.00
Calhoun silt loam:[2] (S86LA-83-14)	Ap	0-5	4.3	2.53	124	3.2	1.4	0.2	0.1	2.7	0.1	14.7	7.7	19.6	25.0	35.1	0.5	2.30
	Eg1	5-13	4.6	0.68	122	2.5	1.3	0.0	0.1	3.6	0.4	9.0	7.9	12.9	30.2	45.6	0.8	1.90
	Eg2	13-22	4.8	0.28	92	3.2	2.5	0.1	0.7	6.6	0.0	12.6	13.1	19.1	34.0	50.4	3.7	1.30
	Btg1	22-32	4.6	0.28	103	4.7	4.3	0.2	1.5	7.0	0.0	15.6	17.7	26.3	40.7	39.5	5.7	1.10
	Btg2	32-42	4.3	0.10	81	5.6	7.0	0.3	3.9	2.9	0.5	14.1	20.2	30.9	54.4	14.4	12.6	0.80
	BC	42-55	4.5	0.10	214	6.7	7.3	0.5	5.5	0.9	0.3	7.8	21.2	27.8	71.9	4.2	19.8	0.90
	C	55-60	6.5	0.06	297	7.9	7.6	0.4	5.8	0.0	0.0	4.8	21.7	26.5	81.9	0.0	21.9	1.00
Calloway silt loam:[1] (S86LA-83-19)	Ap1	0-6	5.3	0.81	108	3.6	1.0	0.4	0.0	0.3	0.1	5.7	5.4	10.7	46.7	5.6	0.0	3.60
	Ap2	6-10	4.9	0.41	63	4.1	1.1	0.1	0.1	0.4	0.4	6.6	6.2	12.0	45.0	6.5	0.8	3.70
	B/E	10-25	4.7	0.10	33	1.9	2.0	0.2	0.1	3.8	0.1	11.4	8.1	15.6	26.9	46.9	0.6	1.00
	E	25-28	4.9	0.06	17	1.0	2.6	0.1	0.3	4.1	0.3	9.3	8.4	13.3	30.1	48.8	2.3	0.40
	Btx1	28-39	4.9	0.06	11	1.8	7.5	0.4	1.4	5.6	0.0	12.6	16.7	23.7	46.8	33.5	5.9	0.20
	Btx2	39-45	4.9	0.06	13	2.1	6.6	0.3	1.7	4.8	0.0	12.0	15.5	22.7	47.1	31.0	7.5	0.30
	Btx3	45-60	5.7	0.01	14	2.6	6.6	0.2	2.1	0.9	0.5	6.6	12.9	18.1	63.5	7.0	11.6	0.40
Deerford silt loam:[1, 3] (S86LA-83-16)	Ap	0-6	4.5	1.07	26	2.7	1.2	0.3	0.2	1.1	0.3	8.4	5.8	12.8	34.4	19.0	1.6	2.30
	E	6-10	4.2	0.46	5	1.7	1.1	0.1	0.3	1.3	0.7	6.0	5.2	9.2	34.8	25.0	3.3	1.50
	E/B	10-17	4.3	0.10	5	1.3	1.3	0.1	0.5	2.2	0.4	8.1	5.8	11.3	28.3	37.9	4.4	1.00
	Btn1	17-29	4.9	0.15	5	1.2	5.0	0.2	2.3	1.3	0.7	8.4	10.7	17.1	50.9	12.1	13.5	0.20
	Btn2	29-40	6.8	0.06	5	1.5	7.3	0.2	4.7	0.0	0.0	3.9	13.7	17.6	77.8	0.0	26.7	0.20
	BCn	40-51	7.5	0.37	8	1.5	4.8	0.2	4.6	0.0	0.0	1.5	11.1	12.6	88.1	0.0	36.5	0.30
	Cn	51-60	8.0	0.28	16	1.5	4.4	0.1	4.2	0.0	0.0	1.2	10.2	11.4	89.5	0.0	36.8	0.30

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	-------Milliequivalents/100 grams of soil								--------	Pct	Pct	Pct	
Dexter silt loam:[1, 4] (S87LA-83-64)	Ap	0-6	5.5	0.59	66	3.0	1.0	0.4	0.0	0.2	0.0	3.6	4.6	8.0	55.0	3.9	0.0	3.00
	BA	6-10	5.1	0.19	15	4.0	2.0	0.2	0.0	1.8	1.6	5.4	9.6	11.6	53.4	18.7	0.0	2.00
	Bt1	10-17	5.3	0.19	31	5.0	4.0	0.3	0.1	1.8	0.6	10.8	11.8	20.2	46.5	15.3	0.5	1.30
	Bt2	17-25	4.8	0.06	37	3.1	4.0	0.3	0.1	2.9	0.0	13.2	10.4	20.7	36.2	27.9	0.5	0.80
	Bt3	25-32	4.9	0.01	32	3.0	3.4	0.2	0.1	1.8	0.0	12.6	8.5	19.3	34.7	21.2	0.5	0.90
	2BC1	32-44	4.8	0.01	25	2.1	3.4	0.2	0.1	2.3	0.0	11.4	8.1	17.2	33.7	28.7	0.6	0.60
	2BC2	44-59	5.0	0.01	18	2.1	3.3	0.2	0.1	1.0	0.0	9.6	6.7	15.3	37.3	14.9	0.7	0.60
	3C	59-60	5.2	0.01	21	2.1	3.0	0.1	0.1	0.5	0.0	6.0	5.8	11.3	46.9	8.6	0.9	0.70
Dexter silt loam:[5] (S86LA-83-4)	Ap	0-6	5.5	1.07	54	2.8	0.9	0.5	0.0	2.5	0.1	6.0	6.8	10.2	41.2	36.8	0.0	3.10
	BA	6-10	5.4	0.46	26	3.3	1.6	0.2	0.0	2.4	0.6	6.0	8.1	11.1	45.9	29.6	0.0	2.10
	Bt1	10-17	5.4	0.24	41	5.3	4.3	0.4	0.1	9.8	0.2	10.5	20.1	20.6	49.0	48.8	0.5	1.20
	Bt2	17-25	5.0	0.15	68	3.7	4.5	0.4	0.1	7.4	0.6	12.9	16.7	21.6	40.3	44.3	0.5	0.80
	Bt3	25-32	4.8	0.10	60	2.5	3.3	0.3	0.1	2.3	0.3	11.4	8.8	17.6	35.2	26.1	0.6	0.80
	2BC1	32-44	4.9	0.10	48	1.6	2.6	0.2	0.2	2.3	0.3	10.2	7.2	14.8	31.1	31.9	1.4	0.60
	2BC2	44-59	5.0	0.06	36	1.4	2.6	0.2	0.2	2.5	0.3	9.0	7.2	13.4	32.8	34.7	1.5	0.50
Dundee silty clay loam:[1] (S86LA-86-12)	Ap	0-5	5.5	1.12	172	10.7	3.5	0.7	0.1	0.0	0.2	9.6	15.2	24.6	61.0	0.0	0.4	3.10
	Btg1	5-12	6.0	0.28	242	12.4	4.1	0.6	0.1	0.0	0.0	9.6	17.2	26.8	64.2	0.0	0.4	3.00
	Btg2	12-28	6.1	0.28	220	11.9	4.3	0.6	0.1	0.0	0.0	7.8	16.9	24.7	68.4	0.0	0.4	2.80
	Btg3	28-36	6.1	0.19	188	10.9	4.1	0.5	0.1	0.0	0.0	6.6	15.6	22.2	70.3	0.0	0.5	2.70
	Btg4	36-43	6.2	0.19	203	12.1	4.8	0.6	0.1	0.0	0.0	6.3	17.6	23.9	73.6	0.0	0.4	2.50
	Cg1	43-53	6.2	0.19	213	12.3	4.7	0.5	0.1	0.0	0.0	6.9	17.6	24.5	71.8	0.0	0.4	2.60
	Cg2	53-60	6.3	0.19	232	12.0	4.6	0.5	0.1	0.0	0.0	6.3	17.2	23.5	73.2	0.0	0.4	2.60
Egypt silt loam:[1, 6] (S86LA-83-9)	Ap	0-6	4.6	1.12	20	3.0	1.8	0.1	0.1	1.1	0.3	9.0	6.4	14.0	35.7	17.2	0.7	1.70
	E	6-16	5.2	0.24	7	2.1	2.5	0.1	0.2	2.0	0.2	8.4	7.1	13.3	36.8	28.2	1.5	0.80
	B/E	16-21	5.3	0.15	6	3.2	8.3	0.3	0.8	3.1	0.1	8.7	15.8	21.3	59.2	19.6	3.8	0.40
	Bt1	21-33	5.6	0.19	8	4.1	9.2	0.3	1.4	---	---	6.6	---	21.6	69.4	---	6.5	0.40
	Bt2	33-41	6.4	0.19	9	4.6	9.8	0.3	1.8	---	---	6.0	---	22.5	73.3	---	8.0	0.50
	Btn1	41-55	7.7	0.01	44	3.1	13.2	0.2	4.0	---	---	8.4	---	28.9	70.9	---	13.8	0.20
	Btn2	55-60	8.2	0.01	48	4.2	15.0	0.2	4.2	---	---	7.8	---	31.4	75.2	---	13.4	0.30

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Foley silt loam:[1] (S87LA-83-3)	Ap	0-4	4.8	1.56	17	6.0	4.0	0.2	0.2	0.8	0.3	9.0	11.5	19.4	53.6	7.0	1.0	1.50
	Eg	4-9	5.2	0.68	10	4.4	4.2	0.1	0.3	1.0	0.5	6.0	10.5	15.0	60.0	9.6	2.0	1.00
	B/E	9-13	5.3	0.41	10	4.0	6.0	0.4	1.0	0.8	0.3	5.4	12.5	16.8	67.9	6.4	6.0	0.70
	Btg	13-21	6.2	0.28	11	5.0	10.2	0.2	2.0	---	---	6.0	---	23.4	74.4	---	8.5	0.50
	Btng1	21-29	6.9	0.01	21	4.2	14.0	0.2	4.0	---	---	4.8	---	27.2	82.4	---	14.7	0.30
	Btng2	29-39	7.6	0.01	51	3.2	16.1	0.3	5.0	---	---	3.6	---	28.2	87.2	---	17.7	0.20
	BCg	39-52	7.8	0.01	104	2.4	18.2	0.3	4.0	---	---	4.8	---	29.7	83.8	---	13.5	0.10
	Cg	52-60	8.0	0.01	158	3.2	16.1	0.2	5.0	---	---	4.8	---	29.3	83.6	---	17.1	0.20
Foley silt loam:[7] (S86LA-83-15)	Ap	0-5	4.6	2.89	82	4.3	2.4	0.3	0.2	1.3	0.3	13.8	8.8	21.0	34.3	14.8	1.0	1.80
	E1	5-10	5.7	0.81	19	4.0	3.5	0.1	0.3	0.4	0.4	4.8	8.7	12.7	62.2	4.6	2.4	1.10
	E2	10-15	6.0	0.50	7	3.8	5.5	0.1	0.6	0.0	0.0	4.5	10.0	14.5	69.0	0.0	4.1	0.70
	B/E	15-22	6.3	0.41	7	4.7	8.9	0.2	1.4	0.0	0.0	5.1	15.2	20.3	74.9	0.0	6.9	0.50
	Btg1	22-27	6.9	0.24	18	4.8	12.8	0.4	2.2	0.0	0.0	5.4	20.2	25.6	78.9	0.0	8.6	0.40
	Btg2	27-42	7.9	0.01	81	3.7	10.5	0.3	2.0	0.0	0.0	3.0	16.5	19.5	84.6	0.0	10.3	0.40
	BC	42-52	8.6	0.06	92	7.6	10.9	0.2	1.5	0.0	0.0	0.0	20.2	20.2	100.0	0.0	7.4	0.70
	C	52-60	9.0	0.00	105	12.7	13.0	0.2	2.4	0.0	0.0	0.0	28.3	28.3	100.0	0.0	8.5	1.00
Forestdale silty clay loam:[1] (S86LA-83-22)	Ap	0-4	5.7	1.83	113	13.0	5.1	0.5	0.1	0.0	0.2	9.6	18.9	28.3	66.1	0.0	0.4	2.50
	Btg1	4-10	5.5	0.90	40	14.4	6.6	0.5	0.4	0.2	0.2	10.8	22.3	32.7	67.0	0.9	1.2	2.20
	Btg2	10-18	5.4	0.46	12	13.8	9.6	0.3	0.8	0.2	0.2	8.4	24.9	32.9	74.5	0.8	2.4	1.40
	Btg3	18-34	5.5	0.19	17	12.5	14.6	0.3	1.3	0.0	0.2	7.8	28.9	36.5	78.6	0.0	3.6	0.90
	2BCg1	34-43	6.1	0.19	27	9.9	14.1	0.3	1.9	0.0	0.0	6.9	26.2	33.1	79.2	0.0	5.7	0.70
	2BCg2	43-60	6.7	0.00	56	11.7	6.9	0.3	2.4	0.0	0.0	3.6	21.3	24.9	85.5	0.0	9.6	1.70
Gallion silt loam:[1] (S86LA-83-5)	Ap	0-7	5.6	0.68	73	5.6	1.6	0.2	0.1	0.1	0.1	1.2	7.7	8.7	86.2	1.3	1.1	3.50
	Bt1	7-18	6.5	0.37	5	12.0	3.1	0.4	0.1	---	---	2.2	---	17.8	87.6	---	0.6	3.90
	Bt2	18-24	7.2	0.19	49	18.1	2.3	0.2	0.2	---	---	1.0	---	21.8	95.4	---	0.9	7.90
	BC	24-40	7.2	0.24	13	16.2	3.2	0.4	0.2	---	---	1.8	---	21.8	91.7	---	0.9	5.10
	C	40-60	7.6	0.10	17	24.5	2.5	0.2	0.4	---	---	0.6	---	28.2	97.9	---	1.4	9.80
Gigger silt loam:[1] (S86LA-83-10)	Ap	0-6	6.6	1.56	99	6.9	1.4	0.4	0.1	0.0	0.0	6.0	8.8	14.8	59.5	0.0	0.7	4.90
	Bt1	6-15	5.6	0.28	82	3.6	1.7	0.1	0.1	0.2	0.2	7.2	5.9	12.7	43.3	3.4	0.8	2.10
	Bt2	15-24	5.0	0.19	37	3.8	3.1	0.3	0.1	1.3	0.3	11.1	8.9	18.4	39.7	14.6	0.5	1.20
	Btx1	24-34	5.3	0.10	17	4.1	4.3	0.3	0.5	1.3	0.3	11.4	10.8	20.6	44.7	12.0	2.4	1.00
	2Btx2	34-45	5.4	0.10	16	4.6	5.4	0.4	0.8	0.8	0.4	10.8	12.4	22.0	50.9	6.5	3.6	0.90
	2Btx3	45-54	5.4	0.15	14	4.0	5.0	0.3	1.1	0.7	0.5	9.0	11.6	19.4	53.6	6.0	5.7	0.80
	2Bt	54-60	5.6	0.01	14	2.6	3.6	0.1	1.1	0.5	0.3	5.7	8.2	13.1	56.5	6.1	8.4	0.70

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Gilbert silt loam:[1] (S87LA-83-4)	Ap	0-6	4.5	1.16	86	2.4	2.5	0.3	0.1	1.6	0.5	10.2	7.4	15.5	34.2	21.6	0.6	1.00
	Eg	6-16	4.7	0.37	16	4.0	3.0	0.1	0.4	2.2	0.6	7.8	10.3	15.3	49.0	21.4	2.6	1.30
	B/E	16-23	4.8	0.19	32	5.0	5.0	0.2	1.3	2.6	1.0	11.4	15.1	22.9	50.2	17.2	5.7	1.00
	Btg1	23-39	4.8	0.10	52	6.2	9.0	0.4	4.0	1.2	0.3	10.2	21.1	29.8	65.8	5.7	13.4	0.70
	Btg2	39-44	5.2	0.15	100	6.3	10.0	0.2	5.0	0.6	0.1	11.4	22.2	32.9	65.3	2.7	15.2	0.60
	Btng	44-60	7.0	0.01	323	8.2	15.1	1.0	7.1	0.4	0.2	8.4	32.0	39.8	78.9	1.3	17.8	0.50
Grenada silt loam:[1] (S87LA-83-5)	Ap	0-6	5.0	0.68	55	2.2	1.0	0.4	0.1	3.6	3.1	10.8	10.4	14.5	25.5	34.6	0.7	2.20
	Bw1	6-16	4.8	0.15	42	3.2	1.4	0.1	0.1	1.4	0.0	7.8	6.2	12.6	38.1	22.6	0.8	2.30
	Bw2	16-23	5.0	0.00	25	2.0	2.2	0.2	0.2	4.6	0.6	15.0	9.8	19.6	23.5	46.9	1.0	0.90
	E	23-27	4.9	0.01	15	1.4	3.0	0.2	1.0	5.6	0.7	14.4	11.9	20.0	28.0	47.1	5.0	0.50
	Btx1	27-37	4.7	0.01	22	2.0	4.2	0.3	1.0	5.6	0.0	15.6	13.1	23.1	32.5	42.7	4.3	0.50
	Btx2	37-47	4.8	0.01	22	2.3	5.1	0.2	1.3	5.6	0.4	16.2	14.9	25.1	35.5	37.6	5.2	0.50
	Btx3	47-56	5.1	0.01	30	3.0	5.3	0.2	2.0	3.6	0.4	14.4	14.5	24.9	42.2	24.8	8.0	0.60
	Btx4	56-60	5.0	0.01	35	4.0	6.0	1.0	2.0	1.2	0.0	12.6	14.2	25.6	50.8	8.5	7.8	0.70
Hebert silt loam:[1] (S86LA-83-17)	Ap1	0-2	4.9	1.38	113	7.2	2.0	0.9	0.1	0.2	0.2	8.7	10.6	18.9	54.0	1.9	0.5	3.60
	Ap2	2-5	4.8	0.68	55	3.6	1.1	0.4	0.1	0.4	0.4	4.8	6.0	10.0	52.0	6.7	1.0	3.30
	E	5-10	5.8	0.32	50	3.5	1.9	0.1	0.1	0.0	0.2	2.4	5.8	8.0	70.0	0.0	1.3	1.80
	Bt1	10-17	5.8	0.28	50	5.0	5.4	0.2	0.3	0.0	0.4	6.0	11.3	16.9	64.5	0.0	1.8	0.90
	Bt2	17-27	5.5	0.15	64	4.4	6.3	0.3	0.5	0.5	0.5	6.0	12.5	17.5	65.7	4.0	2.9	0.70
	Bt3	27-39	5.4	0.15	80	4.1	6.4	0.3	1.0	0.7	0.3	6.6	12.8	18.4	64.1	5.5	5.4	0.60
	Bt4	39-44	5.2	0.01	96	3.2	4.6	0.2	1.2	0.4	0.4	5.4	10.0	14.6	63.0	4.0	8.2	0.70
	BC1	44-50	5.3	0.01	97	2.8	3.8	0.2	1.2	0.2	0.3	4.2	8.5	12.2	65.6	2.4	9.8	0.70
	BC2	50-60	5.7	0.00	81	2.8	4.0	0.2	1.4	0.2	0.0	2.7	8.6	11.1	75.7	2.3	12.6	0.70
Liddieville fine sandy loam:[1] (S87LA-83-6)	Ap	0-5	5.1	0.63	18	1.2	0.3	0.2	0.0	1.6	1.2	7.2	4.5	8.9	19.1	35.6	0.0	4.00
	B/A	5-12	5.1	0.19	21	2.0	1.0	0.1	0.0	0.6	0.0	4.8	3.7	7.9	39.2	16.2	0.0	2.00
	Bt1	12-27	5.1	0.10	21	3.2	2.2	0.2	0.0	2.0	0.0	9.0	7.6	14.6	38.4	26.3	0.0	1.50
	Bt2	27-40	5.0	0.01	19	1.4	2.4	0.2	0.0	3.2	0.5	10.2	7.7	14.2	28.2	41.6	0.0	0.60
	BC	40-49	5.0	0.01	20	1.0	1.2	0.2	0.0	2.0	0.0	6.0	4.4	8.4	28.6	45.5	0.0	0.80
	C	49-60	5.0	0.01	19	1.0	1.0	0.1	0.0	1.2	0.0	2.4	3.3	4.5	46.7	36.4	0.0	1.00
Liddieville fine sandy loam:[8] (S85LA-83-2)	Ap	0-7	5.5	0.63	33	2.9	0.4	0.2	0.0	0.0	0.0	1.5	3.5	5.0	69.9	0.0	0.0	7.00
	BA	7-11	5.7	0.50	18	4.1	0.5	0.3	0.0	0.0	0.0	2.5	4.8	7.3	66.0	0.0	0.0	8.00
	Bt1	11-23	5.8	0.54	5	7.1	1.1	0.3	0.0	0.0	0.0	4.0	8.5	12.5	68.0	0.0	0.0	6.30
	Bt2	23-33	5.4	0.46	6	5.7	1.3	0.2	0.1	0.0	0.0	3.5	7.2	10.7	67.4	0.0	0.5	4.30
	BC	33-39	5.3	0.37	6	3.9	1.0	0.1	0.0	0.0	0.0	2.5	5.0	7.5	66.7	0.0	0.0	3.80
	C	39-60	5.2	0.32	9	2.8	0.9	0.1	0.0	0.0	0.0	1.5	3.8	5.3	71.8	0.0	0.0	3.10

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Loring silt loam:[1, 9] (S87LA-83-7)	Ap	0-7	4.2	0.46	78	1.4	0.3	0.4	0.0	1.6	0.0	9.6	3.7	11.7	17.9	43.2	0.0	4.70
	BA	7-12	4.7	0.10	80	2.2	1.0	0.3	0.0	2.0	1.2	9.0	6.7	12.5	28.0	29.9	0.0	2.20
	Bt1	12-20	4.4	0.01	110	2.2	3.0	0.4	0.1	4.5	0.0	14.4	10.2	20.1	28.4	44.1	0.5	0.70
	Bt2	20-28	4.1	0.06	103	1.2	4.0	0.3	0.1	5.6	0.0	16.2	11.2	21.8	25.7	50.0	0.5	0.30
	Btx1	28-35	4.4	0.01	84	1.0	3.0	1.0	0.1	5.2	0.0	15.0	10.3	20.1	25.4	50.5	0.5	0.30
	Btx2	35-45	4.8	0.01	66	1.1	3.2	0.4	1.0	4.3	0.0	15.0	10.0	20.7	27.5	43.0	4.8	0.30
	Btx3	45-60	5.1	0.01	42	2.0	4.0	0.3	1.0	3.4	0.0	12.6	10.7	19.9	36.7	31.8	5.0	0.50
Maurepas muck:[1, 10] (S86LA-83-7)	Oa1	0-10	5.2	32.00	122	21.9	7.2	1.5	0.2	0.4	0.4	36.6	31.6	67.4	45.7	1.3	0.3	3.00
	Oa2	10-22	5.2	30.60	58	32.3	8.7	0.9	0.4	0.3	0.3	60.6	42.9	102.9	41.1	0.7	0.4	3.70
	Oa3	22-37	4.9	26.00	41	33.1	9.5	0.9	0.4	0.2	0.3	57.6	44.4	101.5	43.3	0.5	0.4	3.50
	Oa4	37-60	4.7	23.40	27	24.3	7.7	0.7	0.6	---	---	56.7	---	90.0	37.0	---	0.7	3.20
Mer Rouge silt loam:[1] (S86LA-83-18)	Ap	0-4	6.1	1.69	112	9.1	1.8	0.4	0.0	0.0	0.0	5.4	11.3	16.7	67.7	0.0	0.0	5.10
	Bt1	4-17	6.5	1.16	55	10.8	3.3	0.2	0.1	0.0	0.0	4.8	14.4	19.2	75.0	0.0	0.5	3.30
	Bt2	17-24	6.7	0.50	47	11.4	3.0	0.2	0.1	0.0	0.0	3.9	14.7	18.6	79.0	0.0	0.5	3.80
	Bt3	24-37	7.5	0.24	87	13.6	2.2	0.2	0.1	0.0	0.0	1.5	16.1	17.6	91.5	0.0	0.6	6.20
	Bk1	37-41	8.0	0.24	16	24.4	1.7	0.2	0.1	0.0	0.0	1.0	26.4	27.4	96.4	0.0	0.4	14.40
	Bk2	41-46	8.1	0.15	92	14.3	1.3	0.1	0.1	0.0	0.0	1.2	15.8	17.0	92.9	0.0	0.6	11.00
	BC	46-54	8.2	0.19	35	23.2	2.2	0.2	0.1	0.0	0.0	0.0	25.7	25.7	100.0	0.0	0.4	10.50
	C	54-60	8.3	0.06	78	18.8	2.1	0.1	0.1	0.0	0.0	0.0	21.1	21.1	100.0	0.0	0.5	9.00
Mer Rouge silt loam:[11] (S86LA-83-21)	Ap	0-4	6.6	1.30	30	13.4	3.4	0.3	0.1	0.0	0.2	6.0	17.4	23.2	74.1	0.0	0.4	3.90
	Bt1	4-12	6.0	0.99	24	14.5	4.0	0.3	0.1	0.0	0.0	6.0	18.9	24.9	75.9	0.0	0.4	3.60
	Bt2	12-18	6.4	0.50	37	14.4	3.9	0.3	0.1	0.0	0.0	6.0	18.7	24.7	75.7	0.0	0.4	3.70
	Bt3	18-28	6.7	0.32	70	13.5	3.2	0.2	0.2	0.0	0.0	3.0	17.1	20.1	85.1	0.0	1.0	4.20
	BC1	28-38	7.3	0.24	89	24.4	2.8	0.2	0.2	0.0	0.0	1.8	27.6	29.4	93.9	0.0	0.7	8.70
	BC2	38-43	7.7	0.28	123	26.1	3.0	0.3	0.3	0.0	0.0	1.0	29.7	30.7	96.7	0.0	1.0	8.70
	BC3	43-52	7.7	0.15	165	16.4	3.9	0.3	0.4	0.0	0.0	1.2	21.0	22.2	94.6	0.0	1.8	4.20
	C	52-60	7.7	0.28	177	19.7	5.1	0.4	0.8	0.0	0.0	1.8	26.0	27.8	93.5	0.0	2.9	3.90
Necessity silt loam:[1, 12] (S86LA-83-20)	Ap	0-7	4.7	0.77	23	5.4	2.3	0.2	0.2	0.5	0.5	5.7	9.1	13.8	58.7	5.5	1.4	2.30
	Bt1	7-16	4.4	0.32	5	5.2	3.0	0.1	0.3	2.3	0.3	9.0	11.2	17.6	48.9	20.5	1.7	1.70
	B/E	16-27	4.6	0.19	5	4.3	3.1	0.1	0.3	2.9	0.1	10.8	10.8	18.6	41.9	26.9	1.6	1.40
	E	27-31	4.9	0.15	5	3.2	3.5	0.2	0.6	3.6	0.0	10.2	11.1	17.7	42.4	32.4	3.4	0.90
	Btx1	31-41	5.1	0.06	5	3.8	6.5	0.3	1.1	3.6	0.0	11.4	15.3	23.1	50.6	23.5	4.8	0.60
	Btx2	41-51	5.3	0.06	5	3.7	6.5	0.2	1.2	1.7	0.3	7.8	13.6	19.4	59.8	12.5	6.2	0.60
	BC	51-60	6.5	0.01	5	3.0	6.0	0.1	1.8	0.0	0.0	2.4	10.9	13.3	82.0	0.0	13.5	0.50

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	-------Milliequivalents/100 grams of soil--------									Pct	Pct	Pct	
Perry clay:[1] (S85LA-83-6)	Ap	0-6	5.5	1.69	18	29.3	13.2	0.9	0.0	0.0	0.0	12.0	43.4	55.4	78.3	0.0	0.0	2.22
	Bg1	6-14	5.2	1.12	22	28.1	14.8	0.9	0.0	0.6	0.0	12.5	44.4	56.3	77.8	1.4	0.0	1.90
	Bg2	14-21	5.3	1.03	7	28.9	17.3	0.9	0.0	0.0	0.0	11.5	47.1	58.6	80.4	0.0	0.0	1.67
	2Bw	21-31	6.1	0.77	21	31.5	20.3	0.8	2.2	0.0	0.0	8.5	54.9	63.4	86.6	0.0	3.5	1.55
	2Bk1	31-41	7.2	0.77	69	43.2	21.4	0.7	3.3	0.0	0.0	4.5	68.6	73.1	93.8	0.0	4.5	2.02
	2Bk2	41-60	7.5	0.54	67	39.1	23.9	0.8	4.7	0.0	0.0	4.0	68.5	72.5	94.5	0.0	6.4	1.64
Portland clay:[1] (S85LA-83-4)	Ap	0-5	5.0	2.36	50	13.4	11.4	0.5	0.2	2.2	0.0	18.5	27.7	44.0	58.0	7.9	0.5	1.17
	Bw1	5-20	5.0	0.90	24	12.0	16.4	0.6	1.1	4.9	0.0	19.3	35.0	49.4	61.0	14.0	2.3	0.73
	Bw2	20-37	6.2	0.77	59	17.1	27.0	0.7	3.8	0.0	0.0	8.5	48.7	57.2	85.1	0.0	6.7	0.63
	Bw3	37-50	7.3	0.63	133	32.9	26.4	0.7	5.4	0.0	0.0	3.5	65.3	68.8	94.9	0.0	7.8	1.24
	Ck	50-60	8.0	0.59	188	31.6	26.0	0.7	6.2	0.0	0.0	3.0	64.5	67.5	95.6	0.0	9.1	1.22
Rilla silt loam:[1, 13] (S85LA-83-5)	Ap	0-4	4.8	4.65	133	7.8	1.6	0.4	0.0	0.0	0.6	17.0	10.5	26.9	36.7	0.0	0.0	4.80
	E	4-10	5.0	1.12	112	3.7	1.5	0.8	0.0	0.0	0.0	5.3	6.0	11.3	53.0	0.0	0.0	2.50
	Bt1	10-18	4.8	0.77	97	6.3	3.9	1.3	0.0	2.6	0.0	11.3	14.1	22.8	50.5	18.4	0.0	1.62
	Bt2	18-32	4.7	0.50	67	7.7	5.5	0.8	0.1	3.0	0.2	11.3	17.2	25.3	55.4	17.4	0.2	1.39
	Bt3	32-50	5.1	0.50	59	5.9	4.8	0.3	0.1	1.8	0.4	8.5	13.2	19.5	56.5	13.6	0.4	1.24
	C	50-60	5.2	0.19	75	3.3	2.5	0.1	0.1	0.2	0.2	3.5	6.4	9.5	63.3	3.1	0.6	1.32
Sharkey clay:[1, 14] (S86LA-83-13)	Ap1	0-3	5.5	1.69	114	27.0	9.7	1.0	0.2	0.0	0.2	15.0	38.1	52.9	71.6	0.0	0.4	2.80
	Ap2	3-9	5.5	1.34	58	27.6	10.9	1.1	0.5	0.2	0.2	16.8	40.5	56.9	70.5	0.5	0.9	2.50
	Bg1	9-22	5.4	1.07	29	28.2	10.9	0.9	0.8	0.2	0.2	16.2	41.2	57.0	71.6	0.5	1.4	2.60
	Bg2	22-31	5.8	0.85	26	28.5	12.3	1.0	1.4	0.0	0.2	13.8	43.4	57.0	75.8	0.0	2.5	2.30
	BCg	31-49	6.5	0.46	67	27.1	12.8	0.9	2.2	0.0	0.0	10.8	43.0	53.8	79.9	0.0	4.1	2.10
	Cg	49-60	6.8	0.24	191	19.6	12.5	0.7	2.5	0.0	0.0	7.8	35.3	43.1	81.9	0.0	5.8	1.60
Sterlington silt loam:[1] (S85LA-83-1)	Ap	0-6	5.3	1.21	78	2.4	0.7	0.4	0.0	0.0	0.0	3.5	3.5	7.0	50.0	0.0	0.0	3.50
	E	6-10	5.2	0.50	71	3.4	1.0	0.1	0.0	0.0	0.0	3.5	4.5	8.0	56.3	0.0	0.0	3.50
	Bt1	10-20	4.8	0.50	87	3.2	1.1	0.2	0.0	5.2	0.0	9.5	9.7	13.9	32.1	54.1	0.0	3.00
	B/E	20-25	4.9	0.37	44	1.7	0.8	0.1	0.0	3.2	0.0	6.0	5.8	8.6	30.2	55.2	0.0	2.00
	Bt2	25-36	4.8	0.37	45	2.7	4.7	0.2	0.1	5.8	0.4	12.0	13.9	19.7	39.1	41.5	0.5	0.60
	C	36-60	5.2	0.37	52	2.3	1.7	0.1	0.0	0.8	0.1	2.5	5.0	6.6	62.1	16.3	0.0	1.40
Tensas silty clay:[1] (S86LA-83-11)	Ap	0-4	5.6	2.31	110	16.6	5.7	0.9	0.1	0.0	0.2	13.5	23.5	36.8	63.3	0.0	0.3	2.90
	Btg1	4-12	5.1	0.77	109	12.0	5.4	0.7	0.1	1.1	0.5	12.6	19.8	30.8	59.1	5.6	0.3	2.20
	Btg2	12-27	5.5	0.68	118	13.0	5.9	0.6	0.1	0.5	0.5	9.6	20.6	29.2	67.1	2.4	0.3	2.20
	2BC1	27-36	5.7	0.46	133	11.1	4.5	0.5	0.1	0.4	0.2	9.9	16.8	26.1	62.1	2.4	0.4	2.50
	2BC2	36-48	5.7	0.19	143	10.5	4.2	0.5	0.1	0.4	0.1	9.0	15.8	24.3	63.0	2.5	0.4	2.50
	2C	48-60	5.8	0.19	151	9.5	3.8	0.4	0.1	0.2	0.0	7.2	14.0	21.0	65.7	1.4	0.5	2.50

See footnotes at end of table.

TABLE 17.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	pH 1:1 H_2O	Organic carbon	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (effective)	Cation-exchange capacity (sum)	Base saturation (sum)	Saturation: Effective cation-exchange capacity Al	Saturation: Sum of cation-exchange capacity Na	Ca/Mg
		In		Pct	Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Yorktown clay:[1, 15] (S86LA-83-8)	A	0-9	5.0	2.22	209	11.0	5.2	1.1	0.1	1.4	0.4	18.6	19.2	36.0	48.3	7.3	0.3	2.10
	Bg1	9-20	5.2	0.99	212	10.7	5.9	1.0	0.1	1.1	0.2	13.8	19.0	31.5	56.2	5.8	0.3	1.80
	Bg2	20-33	5.1	0.54	93	13.8	9.6	1.4	0.1	1.2	0.2	16.5	26.3	41.4	60.1	4.6	0.2	1.40
	Bg3	33-51	5.3	0.37	75	10.1	7.7	0.9	0.1	0.7	0.3	11.1	19.8	29.9	62.9	3.5	0.3	1.30
	BC	51-60	5.6	0.37	55	12.6	9.3	1.1	0.1	0.2	0.4	10.5	23.7	33.6	68.8	0.8	0.3	1.40
Series not designated:[16] (S86LA-83-6)	Ap	0-4	4.3	2.84	34	3.7	1.5	0.3	0.1	0.6	0.2	8.1	6.4	13.7	40.9	9.4	0.7	2.50
	E	4-9	5.1	0.59	12	3.6	2.4	0.1	0.3	1.3	0.5	5.8	8.2	12.2	52.5	15.9	2.5	1.50
	B/E	9-16	4.7	0.63	8	4.7	5.0	0.3	1.2	2.3	0.1	8.1	13.6	19.3	58.0	16.9	6.2	0.90
	Btg1	16-30	4.9	0.24	23	5.0	8.3	0.4	4.6	0.4	0.2	4.2	18.9	22.5	81.3	2.1	20.4	0.60
	Btg2	30-39	6.4	0.10	57	5.5	9.1	0.4	6.3	---	---	3.3	---	24.6	86.6	---	25.6	0.60
	Btg3	39-56	7.0	0.01	105	5.8	9.3	0.2	6.0	---	---	2.4	---	23.7	89.9	---	25.3	0.60
	Btg4	56-60	7.3	0.00	118	6.0	9.4	0.5	5.3	---	---	3.6	---	24.8	85.5	---	21.4	0.60

[1] Typical pedon for the series in Richland Parish.

[2] Pedon is a taxadjunct to the Calhoun series. The Ap and Btg2 horizons are slightly more acid and the exchangeable sodium percentage is higher in the lower part of the subsoil than is defined as the range for the series.

[3] Pedon is closely similar to the Deerford series,. but the reaction of the E horizon is 0.3 pH unit lower than is defined as the range for the series. The reaction of the E/B horizon is 0.2 pH unit lower. These differences are within the normal error of observation.

[4] Typical pedon for the official series description.

[5] Pedon is near the typical pedon for the official series description. The base saturation at a depth of 56 inches is about 2 percent less than is defined as the range for Alfisols.

[6] Pedon is a taxadjunct to the Egypt series because the exchangeable sodium percentage at depths between 17 and 40 inches below the upper boundary of the argillic horizon is less than is defined as the range for the series.

[7] Pedon is a taxadjunct to the Foley series because the exchangeable sodium is less than 15 percent between depths of 7 and 16 inches of the upper boundary of the argillic horizon.

[8] Pedon is a taxadjunct to the Liddieville series because the base saturation at 50 inches below the top of the argillic horizon is more than 60 percent.

[9] Pedon is a taxadjunct to the Loring series because the Ap, Bt1, Bt2, and Btx1 horizons are more acid than is defined as the range for the series.

[10] Pedon is a taxadjunct to the Maurepas series because the reaction is lower throughout the solum than is defined as the range for the series.

[11] Pedon is closely similar to the Mer Rouge series, but the reaction of the Ap horizon is 0.3 pH unit lower than is defined as the range for the series. The reaction of the Bt1 horizon is 0.1 pH unit lower. These difference are within the normal error of observation.

[12] Pedon is closely similar to the Necessity series, but the reaction of the Bt1 horizon is 0.1 pH unit lower than is defined as the range for the series. This difference is within the normal error of observation.

[13] Pedon is closely similar to the Rilla series, but the organic matter content in the Ap horizon is very slightly higher than is defined as the range for the series. This difference is within the normal error of observation.

[14] Pedon is closely similar to the Sharkey series, but the reaction of the Bg1 horizon is 0.2 pH unit lower than is defined as the range for the series. This difference is within the normal error of observation.

[15] Pedon is a taxadjunct to the Yorktown series because the reaction is lower throughout the solum than is defined as the range for the series or for the nonacid family.

[16] Pedon is in the fine-silty, mixed, thermic family of Glossic Natraqualfs. It is mapped as an inclusion with Foley silt loam.

TABLE 18.--PHYSICAL TEST DATA FOR SELECTED SOILS

(Analyses by the Soil Survey Laboratory, Soil Conservation Service, Lincoln, Nebraska. The symbol < means less than. TR means trace. Dashes indicate that analyses were not made)

Soil name and sample number	Horizon	Depth	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Water retention: 1/3 bar	15 bar	1/3 to 15 bar	Bulk density: Air-dry	1/3 bar	Field moisture	COLE
		In	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct	Pct (wt)	Pct (wt)	In/in	g/cm^3	g/cm^3	g/cm^3	
Calloway silt loam:																	
(S63LA-42-2)	Ap	0-5	1.0	1.3	0.6	0.9	1.0	4.8	84.4	10.8	19.3	5.2	0.21	1.47	1.45	1.47	0.003
	Bw1	5-9	0.3	0.7	0.3	0.5	0.8	2.6	78.0	19.4	22.6	7.6	0.22	1.52	1.48	1.52	0.010
	Bw2	9-18	0.2	0.8	0.5	0.5	0.6	2.6	72.6	24.8	24.6	9.6	0.21	1.44	1.37	1.41	0.017
	BC	18-22	0.6	1.3	0.6	0.6	0.7	3.8	76.4	19.8	22.4	9.5	0.18	1.48	1.43	1.46	0.010
	E'	22-25	0.2	0.9	0.5	0.6	0.8	3.0	75.8	21.2	22.1	10.0	0.18	1.48	1.45	1.48	0.007
	B'tx1	25-31	TR	0.3	0.3	0.5	0.7	1.8	71.8	26.4	22.8	12.4	0.16	1.62	1.54	1.60	0.017
	B'tx2	31-38	TR	0.1	0.2	0.4	0.7	1.4	74.6	24.0	25.4	12.1	0.19	1.60	1.43	1.54	0.040
	B'x1	38-56	0.1	0.1	0.2	0.6	1.1	2.1	74.8	23.1	28.9	12.1	0.23	1.51	1.34	1.46	0.040
	B'x2	56-68	0.2	0.5	0.3	0.9	2.4	4.3	73.9	21.8	27.7	11.2	0.24	1.58	1.44	1.56	0.032
Dexter silt loam:																	
(S63LA-42-4)	Bt2	8-32	---	0.1	1.4	8.1	8.1	17.7	52.8	29.5	---	11.8	---	---	---	---	---
	2BC	32-48	---	0.1	3.0	18.3	21.0	42.4	38.5	19.1	---	7.3	---	---	---	---	---
	2C	48-70	---	0.2	4.2	25.6	22.8	52.8	33.2	14.0	---	5.9	---	---	---	---	---
Dexter silt loam:[1]																	
(S63LA-42-5)	Ap	0-6	---	0.1	0.4	21.0	10.9	32.4	61.0	6.6	20.7	2.8	0.28	1.55	1.54	1.55	0.003
	BE	6-10	TR	TR	0.1	14.4	7.8	22.3	59.3	18.4	17.4	6.9	0.17	1.64	1.59	1.65	0.010
	Bt1	10-17	---	TR	0.1	10.4	5.9	16.4	49.5	34.1	21.5	13.2	0.13	1.64	1.52	1.61	0.024
	Bt2	17-25	---	---	0.1	13.7	7.6	21.4	45.9	32.7	21.7	12.9	0.14	1.65	1.55	1.62	0.020
	Bt3	25-32	---	---	0.2	21.6	11.9	33.7	38.4	27.9	20.2	10.0	0.17	1.68	1.62	1.67	0.014
	2BC1	32-44	---	TR	0.1	32.1	18.6	50.8	28.8	20.4	17.2	7.8	0.16	1.70	1.66	1.68	0.007
	2BC2	44-59	---	---	0.1	34.1	26.8	61.0	23.9	15.1	13.8	6.2	0.13	1.69	1.66	1.67	0.007
	3C	59-67	---	---	0.1	64.3	21.6	86.0	6.8	7.2	8.0	3.4	0.07	1.52	1.52	1.52	---
	3C	67-77	---	---	0.1	59.9	18.2	78.2	8.2	13.6	14.9	5.4	0.15	1.59	1.55	1.57	0.010
	3C	77-87	---	---	0.3	64.1	25.3	89.7	4.0	6.3	7.3	3.0	0.07	1.55	1.56	1.55	---
Gigger silt loam:[2]																	
(S63LA-42-6)	Bt	6-18	0.2	0.4	0.3	2.0	2.9	5.8	66.0	28.2	---	11.7	---	---	---	---	---
	B'tx1	28-34	0.1	0.4	0.4	2.9	4.2	8.0	63.2	28.8	---	13.0	---	---	---	---	---
	B'tx2	34-60	0.1	0.3	0.4	6.1	10.5	17.4	59.6	23.0	---	11.1	---	---	---	---	---
	2B'tx3	60-72	---	0.1	0.4	10.0	27.3	37.8	40.7	21.5	---	10.6	---	---	---	---	---
	2C	72-82	---	TR	0.2	46.9	30.8	77.9	12.1	10.0	---	4.2	---	---	---	---	---

See footnotes at end of table.

TABLE 18.--PHYSICAL TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Particle-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Water retention: 1/3 bar	15 bar	1/3 to 15 bar	Bulk density: Air-dry	1/3 bar	Field moisture	COLE
		In	Pct								Pct (wt)		In/in	g/cm3	g/cm3	g/cm3	
Grenada silt loam: (S63LA-42-1)	Ap	0-5	1.1	1.1	0.6	1.4	1.9	6.1	82.4	11.5	23.5	4.8	0.28	1.51	1.49	1.52	---
	Bt1	5-8	0.2	0.3	0.3	0.5	0.8	2.1	74.8	23.1	22.0	8.9	0.20	1.56	1.50	1.56	---
	Bt2	8-16	0.1	0.4	0.4	0.6	0.9	2.4	70.0	27.6	24.4	11.3	0.19	1.50	1.42	1.48	---
	Bt3	16-23	TR	0.3	0.4	0.7	1.0	2.4	73.6	24.0	25.5	10.5	0.21	1.44	1.38	1.42	---
	Btx	23-28	0.1	0.2	0.4	0.7	0.9	2.3	78.1	19.6	23.8	9.9	0.19	1.43	1.39	1.42	---
	E'	28-33	TR	0.2	0.3	0.5	0.8	1.8	82.1	16.1	22.3	8.0	0.21	1.54	1.50	1.53	---
	B'tx1	33-44	TR	0.1	0.2	0.5	0.7	1.5	75.6	22.9	24.7	10.9	0.20	1.58	1.48	1.54	---
	B'tx2	44-58	TR	0.1	0.2	0.5	0.7	1.5	76.3	22.2	27.7	11.8	0.22	1.54	1.41	1.50	---
	B'tx3	58-71	TR	0.1	0.1	0.4	1.0	1.6	75.6	22.8	29.3	12.1	0.24	1.53	1.40	1.50	---
	B'tx4	71-90	TR	0.2	0.2	0.5	0.9	1.8	76.5	21.7	27.9	11.6	0.23	1.55	1.42	1.52	---
Grenada silt loam:[3] (S63LA-42-3)	Ap	0-3	0.2	0.5	0.3	2.0	2.5	5.5	82.3	12.2	23.5	6.2	0.24	1.42	1.41	1.45	0.003
	Bt1	3-6	0.2	0.3	0.2	1.1	1.3	3.1	76.3	20.6	22.4	7.3	0.21	1.44	1.40	1.45	0.010
	Bt2	6-14	0.1	0.6	0.3	0.7	0.9	2.6	71.7	25.7	24.1	9.8	0.19	1.36	1.32	1.38	0.010
	Bt3	14-19	0.5	1.5	0.6	0.8	0.8	4.2	73.8	22.0	25.2	9.9	0.20	1.37	1.32	1.36	0.014
	E'	19-22	1.3	2.1	0.7	1.0	1.0	6.1	77.0	16.9	22.3	8.5	0.20	1.50	1.47	1.50	0.007
	B'tx1	22-27	0.1	0.7	0.5	0.9	1.1	3.3	72.1	24.6	22,2	11.7	0.17	1.66	1.58	1.62	0.017
	B'tx2	27-34	TR	0.1	0.2	1.1	1.4	2.8	71.5	25.7	23.9	12.4	0.17	1.60	1.48	1.54	0.024
	B'tx3	34-45	---	0.1	0.2	1.9	2.4	4.6	71.5	23.9	23.5	12.2	0.17	1.58	1.45	1.53	0.028
	B'x1	45-57	---	TR	0.2	3.5	4.8	8.5	68.9	22.6	25.9	10.8	0.22	1.61	1.44	1.58	0.040
	B'x2	57-82	---	TR	0.1	6.8	9.3	16.2	61.7	22.1	20.8	10.0	0.17	1.66	1.56	1.64	0.020
	2C	82-92	---	TR	0.1	22.0	31.5	53.6	29.5	16.9	---	8.5	---	---	---	---	---

[1] Pedon is the typical pedon for the Dexter series official description.

[2] Pedon is a taxadjunct to the Gigger series because it has an albic horizon above and in the fragipan. It classifies as fine-silty, mixed, thermic Glossic Fragiudalfs.

[3] Pedon is located in an area that is transitional between the Grenada and Gigger series. It is included in mapping with Gigger-Gilbert silt loams, gently undulating.

TABLE 19.--CHEMICAL TEST DATA FOR SELECTED SOILS

(Analyses by the Soil Survey Laboratory, Soil Conservation Service, Lincoln, Nebraska. TR means trace. Dashes indicate that analyses were not made)

Soil name and sample number	Horizon	Depth	Extractable bases Ca	Mg	K	Na	Extractable acidity	Cation-exchange capacity	Base saturation	Organic carbon	pH 1:1 H_2O	Extractable iron	Extractable aluminum
								NH$_4$OAc					
		In	Meq/100g				Pct	Pct		Pct		Pct	Meq/100g
Calloway silt loam: (S63LA-42-2)	Ap	0-5	2.1	0.8	0.1	0.1	6.3	6.7	46	0.72	5.5	1.10	0.3
	Bw1	5-9	2.2	1.0	0.1	0.4	7.6	7.9	47	0.24	5.2	1.10	1.0
	Bw2	9-18	1.7	1.6	0.2	0.7	11.0	10.9	39	0.16	5.1	1.40	3.7
	BC	18-22	1.3	1.6	0.2	0.6	11.7	11.4	32	0.07	5.1	1.60	4.8
	E'	22-25	1.2	2.5	0.3	0.7	11.8	12.0	39	0.09	4.9	1.80	4.9
	B'tx1	25-31	2.2	3.7	0.3	1.0	13.3	15.4	47	0.11	4.7	1.60	5.9
	B'tx2	31-38	3.1	4.7	0.3	1.2	10.7	15.9	58	0.05	4.7	1.40	4.2
	B'x1	38-56	4.7	5.9	0.4	1.6	9.0	17.4	72	0.07	4.8	1.40	1.7
	B'x2	56-68	5.9	6.1	0.3	1.9	5.2	16.1	88	0.05	5.2	1.30	0.4
Dexter silt loam: (S63LA-42-4)	Bt2	8-32	2.4	3.8	0.3	0.2	9.0	11.7	57	0.17	4.7	1.70	2.0
	2BC	32-48	1.7	2.9	0.3	0.3	6.3	7.6	68	0.09	5.0	1.10	1.5
	2C	48-70	1.0	2.3	0.2	0.2	5.4	6.5	57	0.07	4.9	0.90	1.4
Dexter silt loam:[1] (S63LA-42-5)	Ap	0-6	2.5	1.5	TR	TR	1.9	4.7	85	0.65	6.8	0.08	---
	BE	6-10	3.2	1.0	0.2	0.1	4.0	6.9	65	0.29	5.5	0.05	---
	Bt1	10-17	6.8	3.2	0.4	0.2	5.9	13.3	80	0.22	5.5	0.05	0.2
	Bt2	17-25	5.7	3.7	0.4	0.2	6.5	12.9	78	0.20	5.2	0.05	0.5
	Bt3	25-32	3.7	3.1	0.3	0.2	6.3	10.5	70	0.12	5.1	0.05	0.8
	2BC1	32-44	2.6	2.5	0.2	0.2	4.3	8.3	66	0.08	5.1	0.04	0.9
	2BC2	44-59	2.2	2.2	0.2	0.1	3.5	7.0	67	0.08	5.2	0.05	0.6
	3C	59-67	1.1	1.3	0.1	0.1	2.3	4.0	65	0.07	5.5	0.07	0.3
	3C	67-77	2.4	2.5	0.2	0.1	3.0	7.0	74	0.02	5.4	0.05	0.4
	3C	77-87	1.4	1.4	0.1	0.1	1.6	4.0	75	0.04	5.4	0.10	0.6
Foley silt loam: (S67LA-42-1)	B/E	15-22	3.8	5.0	0.2	2.0	8.9	15.8	70	---	4.9	---	---
	Bt	22-27	4.5	6.9	0.3	3.1	7.5	17.2	86	---	5.2	---	---
	Btg	27-36	5.3	8.4	0.2	5.3	2.5	19.3	99	---	6.7	---	---
	BC	36-44	5.5	8.5	0.2	6.1	2.1	18.9	107	---	7.7	---	---
Gigger silt loam:[2] (S63LA-42-6)	Bt	6-18	1.4	2.4	0.3	0.2	11.5	11.0	39	0.25	4.7	0.06	4.0
	B'tx1	28-34	1.4	6.9	0.3	1.6	9.0	14.4	71	0.12	4.7	0.06	2.2
	B'tx2	34-60	2.3	7.4	0.2	2.6	3.8	12.9	97	0.09	6.0	0.05	---
	B'tx3	60-72	3.1	7.7	0.2	2.9	1.9	13.0	107	0.08	7.5	0.05	---
	2C	72-82	1.7	3.6	0.1	1.2	1.2	5.9	112	0.05	7.7	0.07	---
Grenada silt loam: (S63LA-42-1)	Ap	0-5	1.3	1.2	0.2	0.1	6.3	6.4	44	0.60	5.2	0.11	0.3
	Bt1	5-8	1.4	1.8	0.2	0.4	10.5	9.5	40	0.15	4.9	0.06	3.2
	Bt2	8-16	1.2	2.4	0.3	0.7	14.2	13.5	34	0.08	5.1	0.07	5.5
	Bt3	16-23	1.1	2.3	0.3	0.6	13.7	12.6	34	0.09	5.1	0.07	5.1
	Btx	23-28	1.0	2.1	0.3	0.5	12.9	11.6	34	0.08	5.0	0.09	4.9
	E'	28-33	1.2	2.3	0.3	0.4	10.6	10.2	41	0.03	4.9	0.08	3.9
	B'tx1	33-44	2.9	4.2	0.3	0.8	10.9	13.9	59	0.07	4.7	0.07	3.4
	B'tx2	44-58	3.6	5.6	0.3	1.0	9.6	14.8	71	0.04	4.6	0.06	1.9
	B'tx3	58-71	4.8	5.9	0.3	1.3	7.8	15.2	81	0.08	4.8	0.06	0.8
	B'tx4	71-90	5.5	5.6	0.3	1.4	5.7	14.2	90	0.07	5.2	0.06	0.4

See footnotes at end of table.

TABLE 19.--CHEMICAL TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Extractable bases				Ex- tract- able acidity	Cation- exchange capacity	Base saturation	Organic carbon	pH 1:1 H_2O	Ex- tract- able iron	Ex- tract- able aluminum
			Ca	Mg	K	Na		NH_4OAc					
		In	Meq/100g				Pct	Pct		Pct		Pct	Meq/100g
Grenada silt loam:[3] (S63LA-42-3)	Ap	0-3	2.2	1.5	0.4	0.2	8.5	8.5	51	1.91	5.3	0.90	0.2
	Bt1	3-6	1.6	1.4	0.2	0.1	8.7	8.3	40	0.52	5.0	1.20	0.9
	Bt2	6-14	0.9	1.9	0.2	0.2	10.8	9.6	33	0.28	4.7	1.60	3.8
	Bt3	14-19	0.7	2.0	0.2	0.4	11.8	10.4	32	0.16	5.0	2.30	4.6
	E'	19-22	0.5	1.8	0.2	0.5	9.9	8.9	34	0.12	5.0	2.50	4.1
	B'tx1	22-27	1.3	3.9	0.4	1.2	11.2	13.6	49	0.11	4.8	1.60	4.7
	B'tx2	27-34	1.9	5.2	0.3	1.7	10.2	14.8	62	0.10	4.6	1.50	3.1
	B'tx3	34-45	3.0	6.5	0.3	2.2	6.3	14.6	82	0.09	5.1	1.40	0.7
	B'x1	45-57	3.8	6.3	0.3	2.6	3.0	13.2	98	0.11	6.9	1.10	---
	B'x2	57-82	4.6	5.3	0.2	2.8	1.9	12.3	106	0.11	7.8	0.90	---
	2C	82-92	4.6	4.7	0.2	2.5	1.5	11.0	109	0.05	8.1	0.70	---

[1] Pedon is the typical pedon for the Dexter series official description.

[2] Pedon is a taxadjunct to the Gigger series because it has an albic horizon above and in the fragipan. It classifies as fine-silty, mixed, thermic Glossic Fragiudalfs.

[3] Pedon is located in an area that is transitional between the Grenada and Gigger series. It is included in mapping with Gigger-Gilbert silt loams, gently undulating.

TABLE 20.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Arents	Arents
Calhoun	Fine-silty, mixed, thermic Typic Glossaqualfs
Calloway	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Deerford	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Dexter	Fine-silty, mixed, thermic Ultic Hapludalfs
Dundee	Fine-silty, mixed, thermic Aeric Ochraqualfs
*Egypt	Fine-silty, mixed, thermic Aquic Glossudalfs
Foley	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
*Forestdale	Fine, montmorillonitic, thermic Typic Ochraqualfs
Gallion	Fine-silty, mixed, thermic Typic Hapludalfs
Gigger	Fine-silty, mixed, thermic Typic Fragiudalfs
Gilbert	Fine-silty, mixed, thermic Typic Glossaqualfs
Grenada	Fine-silty, mixed, thermic Glossic Fragiudalfs
Hebert	Fine-silty, mixed, thermic Aeric Ochraqualfs
Liddieville	Fine-loamy, mixed, thermic Ultic Hapludalfs
Loring	Fine-silty, mixed, thermic Typic Fragiudalfs
*Maurepas	Euic, thermic Typic Medisaprists
Mer Rouge	Fine-silty, mixed, thermic Typic Argiudolls
Necessity	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Perry	Very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Portland	Very fine, mixed, nonacid, thermic Vertic Haplaquepts
Rilla	Fine-silty, mixed, thermic Typic Hapludalfs
Sharkey	Very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Sterlington	Coarse-silty, mixed, thermic Typic Hapludalfs
Tensas	Fine, montmorillonitic, nonacid, thermic, Vertic Haplaquepts
*Yorktown	Very fine, montmorillonitic, nonacid, thermic Typic Fluvaquents

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