United States
Department of
Agriculture

Natural
Resources
Conservation
Service

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

Soil Survey of Vernon 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.

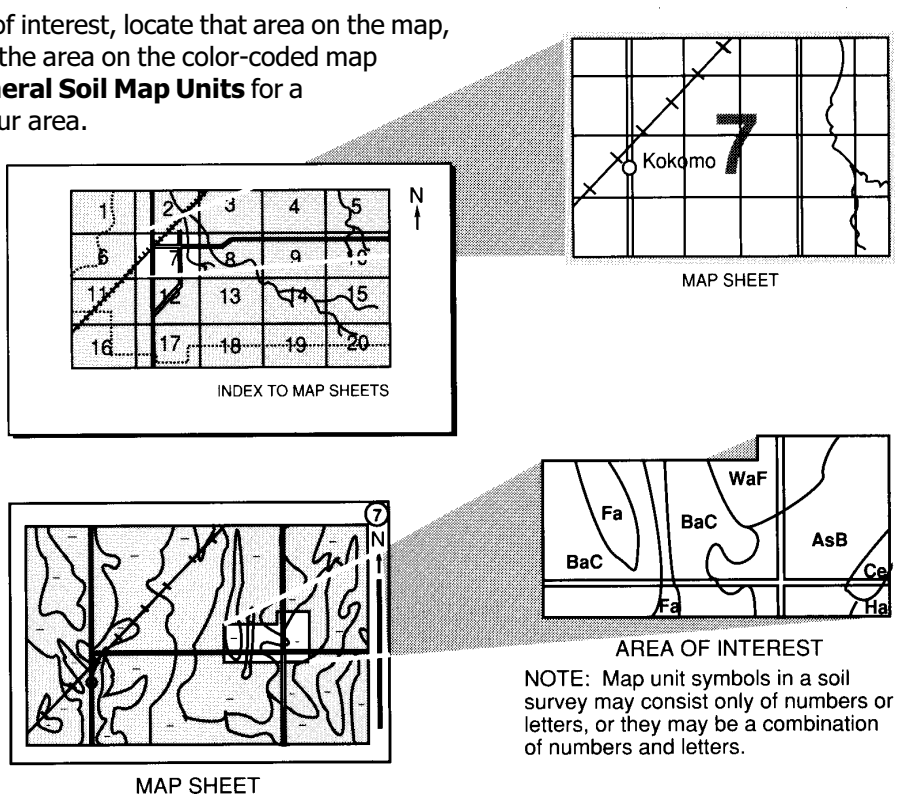
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

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.

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.

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



The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **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 Natural Resources Conservation Service (formerly 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 1991. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1991. This survey was made cooperatively by the Natural Resources Conservation Service, the Louisiana Agricultural Experiment Station, the Louisiana Soil and Water Conservation Committee, and the U. S. Forest Service. The survey is part of the technical assistance furnished to the Calcasieu Soil and Water Conservation District.

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

Cover: Fullerton Lake, in the Kisatchie National Forest, is one of many man-made lakes in Vernon Parish that provides recreation.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

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Contents

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, 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 to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to 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 Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of
Vernon Parish, Louisiana

By Burnell Muse, Natural Resources Conservation Service

Fieldwork by Mike Cooley, Charley Henry, Jr., Cecil Myers, Gerald Trahan, and Edward Scott, Natural Resources Conservation Service; and Emile Williams, Louisiana Soil and Water Conservation Committee

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

VERNON PARISH is in the southwestern part of Louisiana (fig. 1). It has a total area of 858,300 acres. It is bordered on the north by Natchitoches and Sabine Parishes, on the south by Beauregard and Allen Parishes, on the east by Rapides Parish, and on the west by the Sabine River and Newton County, Texas. In 1990, the population of Vernon Parish was 61,961, according to the Bureau of the Census. Leesville is the largest city and the parish seat. Vernon Parish is chiefly rural; the land use is primarily woodland, and there is no significant trend toward a change in land use.

The topography of the parish is characterized by rolling hills in the north and dissected terraces in the south. In addition, alluvial bottomland is along the rivers and bayous. The highest elevation in Vernon Parish is about 471 feet south of Kurthwood, with the plains declining to around 200 feet. The southeastern section of the parish averages 100 feet above sea level.

Figure 1.—Location of Vernon Parish in Louisiana.

General Nature of the County

This section gives general information about Vernon Parish. It discusses the climate, history, and transportation.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Leesville in the period 1931 to 1991. 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 50 degrees F and the average daily minimum temperature is 39 degrees. In summer, the average temperature is 81

degrees and the average daily maximum temperature is 92 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 about 55 inches. Of this, 23 inches, or 42 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 12 inches.

History

Vernon Parish was created by the Louisiana Legislature in 1871. It was taken from portions of Sabine, Rapides, and Natchitoches Parishes. Most of the population was in Sabine Parish; therefore, the history of Vernon Parish is closely linked to the history of Sabine Parish.

The act that created Vernon Parish, the third largest parish in the State, also designated the parish seat as Leesville. Leesville was named after General Robert E. Lee, commanding general of the confederate forces in the Civil War.

Vernon Parish includes a strip of land along the Sabine River that was once claimed by the United States, Spain, and France. For a time, it was part of a no-man's land known as the "Free State of Sabine," a haven for outlaws from all over the United States and the Mexican Republic. Parish families claim decent from Spanish, French, and Indian ancestors. There are 98 churches representing 17 denominations. The Holly Grove Methodist Church was organized in 1826 and is the oldest protestant church in the Louisiana Purchase.

Leesville's major growth came after 1897 when the Kansas City Southern Railroad, pushing south from Shreveport, passed through the town. This started the area's climb to a major lumber and milling center. The turpentine industry also flourished at this time.

In 1941, the construction of Camp Polk, a military base just a few miles south of Leesville, prevented an economic disaster after the first-growth timber had been cut. The population and economy in the parish mushroomed at this time as thousands of workers poured in to seek construction jobs at the base. Today, the most important industry in the parish is again based on timber.

Transportation

Roads in Vernon Parish are mostly hard surfaced state and parish highways. There are also a number of parish gravel roads. U.S. Highway 171 extends north-south through Hornbeck, Anacoco, Leesville, and Rosepine. It is a major route connecting north and south Louisiana on the western side of the state. Louisiana Highway 18 extends easterly across the parish connecting Leesville and Alexandria.

The parish is served by a north-south main line of Kansas City Southern Railroad. A major bus line and several motor freight carriers serve the Leesville-Fort Polk area. The Leesville Airport serves small private and commercial planes.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. 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 in 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 and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area 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-vegetation-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, kind and amount of rock fragments, 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. Soil taxonomy, 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 generally are collected for laboratory analyses. Soil scientists interpret the data from these analyses 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 and 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 predict 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.

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.

The soils in the survey area vary widely in their suitability for major land uses. The general soil map unit description discusses the suitability of each map unit, in relation to that of other map units, for major land uses and shows soil properties that limit use. Soil potential ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

Each map unit is rated for *cultivated crops, pastureland, woodland, urban uses,* and *recreational areas*. Cultivated crops are those grown extensively in the survey area. Pastureland refers to land that is producing native and improved grasses 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.

The boundaries of the general soil map units in Vernon Parish were matched, where possible, with those of the previously completed surveys of Sabine, Natchitoches, Rapides, and Allen Parishes. In a few places, however, the lines do not join and the names of the map units differ. These differences resulted mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near the survey area boundaries.

The general soil map units in this survey have been grouped into four general landscapes. Descriptions of each of the broad groups and the map units in each group follow.

Soils on Flood Plains and Terraces

This group of map units consists of level and nearly level, moderately well drained to poorly drained, loamy and clayey soils. These soils are on flood plains and adjacent terraces of the Sabine River. Slopes range from 0 to 1 percent.

The map units in this group make up about 18 percent of the land area. Most of the acreage is used as woodland. A small acreage is used as pastureland or cropland. Seasonal wetness and the hazard of flooding are the main limitations for most uses.

1. Guyton-Iuka

Setting

Landform: Flood plains and low terraces
Landform position: Guyton—low flats; Iuka—convex natural levees

Distinctive landform features: None
Slope range: 0 to 1 percent

Composition

Percent of the survey area: 15 percent
Guyton soils—60 percent
Iuka soils—30 percent
Minor soils—10 percent (includes Bienville, Cahaba, Hainesville, Osier, and Spurger soils)

Typical Profile

Guyton

Surface layer: Dark grayish brown silt loam

Subsurface layer: Grayish brown and light brownish gray silt loam
Subsoil: Grayish brown and light brownish gray silt loam and silty clay loam

Iuka

Surface layer: Brown fine sandy loam
Substratum: Variegated brown and gray loam and fine sandy loam

Soil Properties and Qualities

Guyton

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1.5 feet
Flooding: Frequently flooded
Permeability class: Moderate
Available water capacity: High to very high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Level to nearly level

Iuka

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 1 foot to 3 feet
Flooding: Frequently flooded
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Level to nearly level

Land Use

Dominant use: Woodland
Other uses: Pastureland or cropland

Cropland

Suitability: Poorly suited to not suited
Management concerns: Flooding and wetness

Pasture and hayland

Suitability: Poorly suited to not suited
Management concerns: Flooding, wetness, and low fertility

Woodland

Suitability: Moderately well suited
Management concerns: Severe to moderate equipment limitations and seedling mortality; severe plant competition

Wildlife habitat

Suitability for wetland wildlife: Guyton—good; Iuka—poor
Suitability for woodland wildlife: Guyton—fair; Iuka—good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Severe
  Limitations: Guyton—flooding, wetness, and slow percolation; Iuka—flooding and wetness
- **Dwellings without basements**
  Limitation rating: Severe
  Limitations: Flooding and wetness
- **Local roads and streets**
  Limitation rating: Severe
  Limitations: Guyton—low strength, wetness, and flooding; Iuka—flooding
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Severe
  Limitations: Guyton—wetness and flooding; Iuka—flooding

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe
  Limitations: Flooding and wetness
- **Playgrounds**
  Limitation rating: Severe
  Limitations: Wetness and flooding

2. Guyton-Urbo

Setting

Landform: Flood plains and terraces on the Sabine River
Landform position: Guyton—depressions; Urbo—low flats
Distinctive landform features: None
Slope range: 0 to 1 percent

Composition

Percent of the survey area: 3 percent
Guyton soils—52 percent
Urbo soils—28 percent
Minor soils—20 percent (includes Bienville, Cahaba, Cypress, Hainesville, and Spurger soils)

Typical Profile

Guyton

Surface layer: Dark grayish brown silt loam

Subsurface layer: Grayish brown silt loam
Subsoil: Variegated gray and brown silt loam and silty clay loam

Urbo

Surface layer: Brown and grayish brown silty clay
Subsoil: Grayish brown silty clay

Soil Properties and Qualities

Guyton

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1.5 feet
Flooding: Occasionally flooded
Permeability class: Very slow
Available water capacity: High to very high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Level to nearly level

Urbo

Depth class: Deep
Drainage class: Somewhat poorly drained
Water table: Apparent at 1 foot to 2 feet
Flooding: Frequently flooded
Permeability class: Very slow
Available water capacity: High
Natural soil fertility: Low
Shrink-swell potential: Moderate
Slope: Level to nearly level

Land Use

Dominant use: Woodland
Other uses: Pastureland or cropland

Cropland

Suitability: Poorly suited to not suited
Management concerns: Flooding, wetness, low fertility, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited to not suited
Management concerns: Flooding, wetness, and low fertility

Woodland

Suitability: Moderately well suited
Management concerns: Severe to moderate equipment limitations, seedling mortality, and plant competition

Wildlife habitat

Suitability for wetland wildlife: Guyton—good; Urbo—poor
Suitability for woodland wildlife: Fair

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Severe
  Limitations: Flooding, wetness, and slow percolation
- **Dwellings without basements**
  Limitation rating: Severe
  Limitations: Flooding and wetness
- **Local roads and streets**
  Limitation rating: Severe
  Limitations: Guyton—low strength, wetness, and flooding; Urbo—low strength and flooding
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Severe
  Limitations: Guyton—wetness and flooding; Urbo—flooding and too clayey

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe
  Limitations: Flooding, wetness, and slow percolation
- **Playgrounds**
  Limitation rating: Severe
  Limitations: Wetness, flooding, and too clayey

Soils on Stream Terraces

This group of map units consists of nearly level and very gently sloping, somewhat excessively drained and well drained, sandy and loamy soils. These soils are on low ridges on stream terraces. Slopes range from 0 to 3 percent.

The map units in this group make up about 3 percent of the land area. Most of the acreage is used as woodland. A small acreage is used as pastureland or cropland. Wetness, droughtiness, low fertility, and the hazard of flooding are the main limitations for most uses.

3. Hainesville-Cahaba

Setting

Landform: Terraces
Landform position: Hainesville—low ridges; Cahaba—low ridges
Distinctive landform features: None
Slope range: 0 to 3 percent

Composition

Percent of the survey area: 3 percent
Hainesville soils—45 percent
Cahaba soils—40 percent
Minor soils—15 percent (Guyton, Spurger, and Urbo soils)

Typical Profile

Hainesville

Surface layer: Grayish brown loamy fine sand
Subsoil: Strong brown loamy fine sand

Cahaba

Surface layer: Brown fine sandy loam and dark grayish brown and yellowish red sandy loam
Subsoil: Red sandy clay loam
Substratum: Strong brown loamy sand

Soil Properties and Qualities

Hainesville

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: Perched at 4 to 6 feet
Flooding: Occasionally flooded
Permeability class: Moderate
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Nearly level to very gently sloping

Cahaba

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland or cropland

Cropland

Suitability: Poorly suited to well suited
Management concerns: Low fertility, droughtiness, erosion hazard, potentially toxic levels of aluminum in the rooting zone, and flooding

Pasture and hayland

Suitability: Moderately well suited to well suited
Management concerns: Droughtiness, low fertility, and flooding; erosion is a hazard when the pasture is being established or renovated

Woodland

Suitability: Moderately well suited to well suited
Management concerns: Slight to severe seedling mortality; slight to moderate equipment limitations and plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Hainesville—severe; Cahaba—slight
  Limitations: Hainesville—flooding and poor filter; Cahaba—no significant limitations
- **Dwellings without basements**
  Limitation rating: Hainesville—severe; Cahaba—slight
  Limitations: Hainesville—flooding; Cahaba—no significant limitations
- **Local roads and streets**
  Limitation rating: Hainesville—severe; Cahaba—slight
  Limitations: Hainesville—flooding; Cahaba—no significant limitations
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Hainesville—severe; Cahaba—slight
  Limitations: Hainesville—droughty; Cahaba—no significant limitations

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Hainesville—severe; Cahaba—slight
  Limitations: Flooding and too sandy
- **Playgrounds**
  Limitation rating: Hainesville—severe; Cahaba—moderate
  Limitations: Too sandy and slope

Soils on Uplands and Terraces

This group of map units consists of nearly level to strongly sloping, somewhat excessively drained to poorly drained, sandy and loamy soils. These soils

are on ridgetops and side slopes on uplands and terraces. Slopes range from 0 to 15 percent.

The map units in this group make up about 74 percent of the land area. Most of the acreage is used as woodland. A small acreage is used as pastureland, cropland, or homesites. Steepness of slope, droughtiness, low fertility, and a hazard of erosion are the main limitations for most uses.

4. Malbis-Kirbyville-Niwana

Setting

Landform: Uplands
Landform position: Malbis—broad ridgetops and side slopes; Kirbyville—broad flats between mounds; Niwana—small convex mounds or smoothed mound areas
Distinctive landform features: None
Slope range: 0 to 5 percent

Composition

Percent of the survey area: 18 percent
Malbis soils—52 percent
Kirbyville soils—24 percent
Niwana soils—9 percent
Minor soils—15 percent (includes Angie, Caddo, Cahaba, Dubach, Guyton, and Ruston soils)

Typical Profile

Malbis

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Yellowish brown fine sandy loam
Subsoil: Upper part—strong brown loam and sandy clay loam; lower part—yellowish brown sandy clay loam

Kirbyville

Surface layer: Dark grayish brown, grayish brown, and light yellowish brown loam
Subsurface layer: Light yellowish brown loam
Subsoil: Brownish loam with red iron accumulations and plinthite nodules

Niwana

Surface layer: Grayish brown fine sandy loam
Subsurface layer: Light yellowish brown very fine sandy loam
Subsoil: Brownish loam, fine sandy loam, and very fine sandy loam

Soil Properties and Qualities

Malbis

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4 feet
Flooding: None
Permeability class: Moderately slow
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping to moderately sloping

Kirbyville

Depth class: Very deep
Drainage class: Somewhat poorly drained
Water table: Perched at 1.5 to 2.5 feet
Flooding: None
Permeability class: Moderate
Available water capacity: High
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Nearly level to gently sloping

Niwana

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 4 to 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland, cropland, or residential areas

Cropland

Suitability: Moderately well suited
Management concerns: Erosion hazard, wetness, low fertility, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited
Management concerns: Erosion hazard, wetness, and low fertility

Woodland

Suitability: Moderately well suited to well suited
Management concerns: Slight to severe plant competition; slight to moderate equipment limitations

Wildlife habitat

Suitability for wetland wildlife: Malbis and Niwana—very poor; Kirbyville—fair
Suitability for woodland wildlife: Good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Malbis and Kirbyville—severe; Niwana—moderate
  Limitations: Malbis and Niwana—wetness and slow percolation; Kirbyville—wetness
- **Dwellings without basements**
  Limitation rating: Malbis and Niwana—slight; Kirbyville—moderate
  Limitations: Malbis and Niwana—no significant limitations; Kirbyville—wetness
- **Local roads and streets**
  Limitation rating: Malbis and Niwana—slight; Kirbyville—moderate
  Limitations: Malbis and Niwana—no significant limitations; Kirbyville—low strength and wetness
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Malbis and Niwana—slight; Kirbyville—moderate
  Limitations: Malbis and Niwana—no significant limitations; Kirbyville—wetness

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Moderate to slight
  Limitations: Wetness
- **Playgrounds**
  Limitation rating: Moderate to slight
  Limitations: Wetness

5. Malbis-Ruston

Setting

Landform: Uplands
Landform position: Malbis—broad ridgetops; Ruston—side slopes
Distinctive landform features: Landscape is dissected by a well defined, branching drainage system
Slope range: 1 to 8 percent

Composition

Percent of the survey area: 13 percent
Malbis soils—62 percent
Ruston soils—28 percent
Minor soils—10 percent (includes Beauregard, Boykin, Gore, Guyton, and Osier soils)

Typical Profile

Malbis

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Dark yellowish brown fine sandy loam
Subsoil: Upper part—strong brown loam and sandy clay loam; lower part—yellowish brown sandy clay loam

Ruston

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Yellowish brown fine sandy loam
Subsoil: Yellowish red and red sandy clay loam, loam, and sandy loam

Soil Properties and Qualities

Malbis

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping to moderately sloping

Ruston

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping to sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland and cropland

Cropland

Suitability: Moderately well suited
Management concerns: Erosion hazard, low fertility, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Well suited
Management concerns: Low fertility and erosion hazard

Woodland

Suitability: Well suited
Management concerns: Slight to moderate plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Malbis—severe; Ruston—moderate
  Limitations: Malbis—wetness and slow percolation; Ruston—slow percolation
- **Dwellings without basements**
  Limitation rating: Slight
  Limitations: No significant limitations
- **Local roads and streets**
  Limitation rating: Slight
  Limitations: No significant limitations
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Slight
  Limitations: No significant limitations

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Slight
  Limitations: No significant limitations
- **Playgrounds**
  Limitation rating: Moderate to severe
  Limitations: Slope

6. Betis-Briley

Setting

Landform: Uplands
Landform position: Convex ridgetops and side slopes
Distinctive landform features: Most areas are dissected by deeply incised drainageways and streams
Slope range: 1 to 12 percent

Composition

Percent of the survey area: 4 percent
Betis soils—51 percent
Briley soils—38 percent
Minor soils—11 percent (includes Eastwood, Malbis, Osier, Ruston, and Trep soils)

Typical Profile

Betis

Surface layer: Dark grayish brown loamy fine sand
Subsurface layer: Brown loamy fine sand
Subsoil: Strong brown, yellowish red, and very pale brown loamy fine sand

Briley

Surface layer: Dark grayish brown loamy fine sand
Subsurface layer: Brown loamy fine sand
Subsoil: Yellowish red and red sandy clay loam

Soil Properties and Qualities

Betis

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

Briley

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

Land Use

Dominant use: Planted pine
Other uses: Pastureland

Cropland

Suitability: Moderately well suited to not suited
Management concerns: Slope, low fertility, poor trafficability, erosion hazard, and droughtiness

Pasture and hayland

Suitability: Poorly suited to well suited
Management concerns: Erosion hazard, slope, droughtiness, and low fertility

Woodland

Suitability: Moderately well suited
Management concerns: Slight to severe equipment limitations; moderate seedling mortality and plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair to good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Betis—severe; Briley—slight to moderate
  Limitations: Betis—poor filter; Briley—slope
- **Dwellings without basements**
  Limitation rating: Slight to moderate
  Limitations: Slope
- **Local roads and streets**
  Limitation rating: Slight to moderate
  Limitations: Slope
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Moderate
  Limitations: Droughty and slope

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Moderate
  Limitations: Slope and too sandy
- **Playgrounds**
  Limitation rating: Moderate to severe
  Limitations: Slope and too sandy

7. Eastwood-Vaiden-Hornbeck

Setting

Landform: Uplands
Landform position: Eastwood—ridgetops and side slopes; Vaiden—broad interstream divides; Hornbeck—broad ridgetops and side slopes
Distinctive landform features: Areas are dissected by a well defined, branching drainage system
Slope range: 1 to 15 percent

Composition

Percent of the survey area: 16 percent
Eastwood soils—70 percent
Vaiden soils—11 percent
Hornbeck soils—8 percent
Minor soils—11 percent (includes Briley, Eastwood, Malbis, Ruston, Sacul, Sawyer, and Trep soils)

Typical Profile

Eastwood

Surface layer: Dark grayish brown silt loam
Subsurface layer: Brown silt loam
Subsoil: Upper part—red clay and silty clay; lower part—light brownish gray silty clay

Vaiden

Surface layer: Dark grayish brown loam
Subsoil: Variegated brown to red clay

Hornbeck

Surface layer: Very dark gray and black clay
Subsoil: Variegated brown and gray clay with calcium carbonate concretions

Soil Properties and Qualities

Eastwood

Depth class: Deep
Drainage class: Moderately well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Very gently sloping to strongly sloping

Vaiden

Depth class: Very deep
Drainage class: Somewhat poorly drained
Water table: Perched at 1 to 2 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Gently sloping to moderately sloping

Hornbeck

Depth class: Very deep
Drainage class: Moderately well drained
Water table: More than 6 feet
Flooding: None

Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: High
Shrink-swell potential: Very high
Slope: Gently sloping to sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Suitability: Moderately well suited to not suited
Management concerns: Slope, low fertility, erosion hazard, poor tilth, wetness, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited to poorly suited
Management concerns: Erosion hazard, slope, seasonal wetness, clayey surface, and low fertility

Woodland

Suitability: Moderately well suited to well suited
Management concerns: Slight to moderate erosion hazard and seedling mortality; moderate to severe plant competition and equipment limitations

Wildlife habitat

Suitability for wetland wildlife: Very poor to poor
Suitability for woodland wildlife: Good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Severe
  Limitations: Eastwood and Vaiden—slow percolation; Hornbeck—wetness and slow percolation
- **Dwellings without basements**
  Limitation rating: Severe
  Limitations: Eastwood and Vaiden—shrink-swell; Hornbeck—wetness and shrink-swell
- **Local roads and streets**
  Limitation rating: Severe
  Limitations: Shrink-swell and low strength
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Eastwood—slight to moderate; Vaiden—severe; Hornbeck—moderate
  Limitations: Eastwood—slope; Vaiden—too clayey; Hornbeck—wetness

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe
  Limitations: Slow percolation, too clayey, and wetness
- **Playgrounds**
  Limitation rating: Severe
  Limitations: Slope, slow percolation, too clayey, and wetness

8. Gore

Setting

Landform: Terraces
Landform position: Ridgetops and side slopes
Distinctive landform features: None
Slope range: 1 to 12 percent

Composition

Percent of the survey area: 2 percent
Gore soils and similar components—85 percent
Minor soils—15 percent (includes Guyton, Kolin, and Malbis soils)

Typical Profile

Surface layer: Grayish brown fine sandy loam
Subsurface layer: Brown very fine sandy loam
Subsoil: Upper part—reddish brown clay; lower part—red clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Very gently sloping to strongly sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Suitability: Poorly suited to not suited
Management concerns: Slope, low fertility, droughtiness, erosion hazard, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited to moderately well suited
Management concerns: Slope, droughtiness, erosion hazard, and low fertility

Woodland

Suitability: Moderately well suited
Management concerns: Moderate equipment limitations, seedling mortality, and plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor to poor
Suitability for woodland wildlife: Fair

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Severe
  Limitations: Slow percolation
- **Dwellings without basements**
  Limitation rating: Severe
  Limitations: Shrink-swell
- **Local roads and streets**
  Limitation rating: Severe
  Limitations: Shrink-swell and low strength
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Moderate
  Limitations: Slope and droughty

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe
  Limitations: Slow percolation
- **Playgrounds**
  Limitation rating: Severe
  Limitations: Slope and slow percolation

9. Briley-Ruston-Trep

Setting

Landform: Uplands
Landform position: Ridgetops and side slopes
Distinctive landform features: Areas are dissected by deeply incised drainageways and streams
Slope range: 1 to 12 percent

Composition

Percent of the survey area: 15 percent
Briley soils—30 percent
Ruston soils—24 percent
Trep soils—17 percent
Minor soils—29 percent (includes Kisatchie, Letney, Malbis, Mayhew, and Rayburn soils)

Typical Profile

Briley

Surface layer: Dark grayish brown loamy fine sand
Subsurface layer: Brown loamy fine sand
Subsoil: Yellowish red and red sandy clay loam

Ruston

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Yellowish brown fine sandy loam
Subsoil: Yellowish red and red sandy clay loam, loam, and sandy loam

Trep

Surface layer: Dark grayish brown loamy fine sand
Subsurface layer: Brown loamy fine sand
Subsoil: Upper part—yellowish brown sandy clay loam; lower part—variegated brown, red, and gray sandy clay loam

Soil Properties and Qualities

Briley

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

Ruston

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Gently sloping to sloping

Trep

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 3.5 to 5 feet
Flooding: None
Permeability class: Moderately slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Moderate
Slope: Gently sloping to sloping

Land Use

Dominant use: Woodland and managed pine production
Other uses: Pastureland and cropland

Cropland

Suitability: Moderately well suited to not suited
Management concerns: Slope, low fertility, droughtiness, erosion hazard, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Moderately well suited to well suited
Management concerns: Droughtiness, slope, erosion hazard, and low fertility

Woodland

Suitability: Moderately well suited to well suited
Management concerns: Slight to moderate seedling mortality and plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Briley—slight to moderate; Ruston—moderate; Trep—severe
  Limitations: Briley—slope; Ruston—slow percolation; Trep—wetness and slow percolation
- **Dwellings without basements**
  Limitation rating: Briley—slight to moderate; Ruston and Trep—slight
  Limitations: Briley—slope; Ruston and Trep—no significant limitations
- **Local roads and streets**
  Limitation rating: Briley—slight to moderate; Ruston and Trep—slight
  Limitations: Briley—slope; Ruston and Trep—no significant limitations
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Briley and Trep—moderate; Ruston—slight
  Limitations: Briley—droughty and slope; Ruston—no significant limitations; Trep—droughty

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Moderate to slight
  Limitations: Slope and too sandy
- **Playgrounds**
  Limitation rating: Severe to moderate
  Limitations: Slope, too sandy, and small stones

10. Mayhew-Corrigan-Letney

Setting

Landform: Uplands
Landform position: Mayhew—broad ridgetops; Corrigan—ridgetops; Letney—ridgetops and side slopes
Distinctive landform features: None
Slope range: 1 to 12 percent

Composition

Percent of the survey area: 6 percent
Mayhew soils—42 percent
Corrigan soils—12 percent
Letney soils—10 percent
Minor soils—36 percent (includes Betis, Briley, Kisatchie, Letney, Malbis, Rayburn, and Ruston soils)

Typical Profile

Mayhew

Surface layer: Dark grayish brown silt loam
Subsoil: Variegated brown and gray clay and silty clay

Corrigan

Surface layer: Dark grayish brown loam
Subsurface layer: Grayish brown loam
Subsoil: Upper part—grayish brown clay; lower part—light brownish gray silty clay
Substratum: Pale olive siltstone

Letney

Surface layer: Dark grayish brown loamy sand
Subsurface layer: Pale brown loamy sand
Subsoil: Upper part—variegated yellow and brown sandy clay loam; lower part—variegated yellow and brown sandy loam

Soil Properties and Qualities

Mayhew

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1 foot
Flooding: None
Permeability class: Very slow
Available water capacity: Moderate to high

Natural soil fertility: Low
Shrink-swell potential: High
Slope: Gently sloping to moderately sloping

Corrigan

Depth class: Moderately deep
Drainage class: Moderately well drained
Water table: Perched at 1 foot to 2.5 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Gently sloping to moderately sloping

Letney

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Moderately rapid
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Low
Slope: Very gently sloping to strongly sloping

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Suitability: Moderately well suited to not suited
Management concerns: Low fertility, poor tilth, wetness, droughtiness, poor trafficability, slope, and erosion hazard

Pasture and hayland

Suitability: Moderately well suited to poorly suited
Management concerns: Low fertility, wetness, erosion hazard, and droughtiness

Woodland

Suitability: Moderately well suited
Management concerns: Slight to moderate erosion hazard; moderate equipment limitations and seedling mortality; slight to severe plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair to good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Mayhew and Corrigan—severe; Letney—slight to moderate
  Limitations: Mayhew—wetness and slow percolation; Corrigan—depth to rock, wetness, and slow percolation; Letney—slope
- **Dwellings without basements**
  Limitation rating: Mayhew and Corrigan—severe; Letney—slight to moderate
  Limitations: Mayhew and Corrigan—wetness and shrink-swell; Letney—slope
- **Local roads and streets**
  Limitation rating: Mayhew and Corrigan—severe; Letney—slight to moderate
  Limitations: Mayhew and Corrigan—shrink-swell, low strength, and wetness; Letney—slope
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Mayhew and Corrigan—severe; Letney—moderate
  Limitations: Mayhew and Corrigan—wetness; Letney—droughty

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe to moderate
  Limitations: Wetness, slow percolation, too sandy, and slope
- **Playgrounds**
  Limitation rating: Severe to moderate
  Limitations: Wetness, slow percolation, too sandy, and slope

Soils on Uplands

This group of map units consists of strongly sloping and moderately steep, well drained and moderately well drained, loamy soils on side slopes on uplands. Slopes range from 5 to 20 percent.

The map units in this group make up about 5 percent of the land area. Most of the acreage is used as woodland. A restricted use of equipment, seedling mortality, and a hazard of erosion are the main limitations.

11. Kisatchie-Rayburn

Setting

Landform: Uplands
Landform position: Side slopes

Distinctive landform features: Ledges and boulders of sandstone and siltstone are prominent features; landscape is dissected by a well defined, branching drainage system
Slope range: 5 to 20 percent

Composition

Percent of the survey area: 5 percent
Kisatchie soils—50 percent
Rayburn soils—20 percent
Minor soils—30 percent (includes Betis, Briley, Corrigan, Guyton, Letney, Mayhew, and Osier soils)

Typical Profile

Kisatchie

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Grayish brown fine sandy loam
Subsoil: Upper and lower parts—grayish brown clay loam; middle part—grayish brown silty clay
Substratum: Pale olive weathered sandstone

Rayburn

Surface layer: Dark grayish brown fine sandy loam
Subsurface layer: Brown fine sandy loam
Subsoil: Variegated red and grayish brown clay
Substratum: Light brownish gray siltstone

Soil Properties and Qualities

Kisatchie

Depth class: Moderately deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Sloping to moderately steep

Rayburn

Depth class: Deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4.5 feet
Flooding: None
Permeability class: Very slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: High
Slope: Sloping to moderately steep

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Suitability: Not suited
Management concerns: Slope, erosion hazard, low fertility, droughtiness, and potentially toxic levels of aluminum in the rooting zone

Pasture and hayland

Suitability: Poorly suited
Management concerns: Slope, rock outcrops, large gullies, low fertility, and droughtiness

Woodland

Suitability: Moderately well suited
Management concerns: Moderate erosion hazard, equipment limitations, and plant competition; severe to moderate seedling mortality

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Kisatchie—fair; Rayburn—good

Urban uses

- **Septic tank absorption fields**
  Limitation rating: Severe
  Limitations: Kisatchie—depth to rock; Rayburn—wetness and slow percolation
- **Dwellings without basements**
  Limitation rating: Severe
  Limitations: Shrink-swell
- **Local roads and streets**
  Limitation rating: Severe
  Limitations: Shrink-swell and low strength
- **Lawns, landscaping, and golf fairways**
  Limitation rating: Moderate
  Limitations: Slope

Recreational uses

- **Camp and picnic areas**
  Limitation rating: Severe
  Limitations: Slow percolation
- **Playgrounds**
  Limitation rating: Severe
  Limitations: Slope and slow percolation

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 the heading "Use and Management of the Soils."

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, 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, Guyton silt loam, 0 to 1 percent slopes, is a phase of the Guyton 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. Caddo-Messer complex 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.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps.

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

All of the soils in Vernon Parish were mapped at the same level of detail, except for those soils that are subject to frequent flooding and those soils on uplands that are strongly sloping or moderately steep. Frequent flooding and steepness of slope limit the use and management of the soils, and separating the soils in these areas would be of little importance to the land user. The strongly sloping and moderately steep soils on the uplands are in forest land, and the use and management of these areas are not expected to change.

Soil Descriptions

AnC—Angie very fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: Slopes generally are long and smooth, but some are short and complex
Shape of areas: Irregular
Size of areas: 25 to 100 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 5 inches—very dark gray very fine sandy loam

Subsurface layer:
5 to 10 inches—brown very fine sandy loam

Subsoil:
10 to 20 inches—strong brown silty clay loam
20 to 28 inches—yellowish brown silty clay
28 to 36 inches—yellowish brown silty clay loam
36 to 48 inches—grayish brown silty clay loam
48 to 65 inches—gray silty clay loam

Substratum:
65 to 80 inches—gray silty clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 3 to 5 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Angie and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Beauregard, Malbis, and areas of soils with slopes that are more than 5 percent
- Beauregard and Malbis soils are in positions similar to those of the Angie soil and are loamy throughout the profile

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content; however, excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, and bahiagrass; ryegrass, wheat, or oats are suitable for winter forage
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w8
Site index/ordinating species: 92—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, sweetgum, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Severe plant competition
- Moderate equipment limitations

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping may be needed to remove rain water quickly

BaB—Beauregard fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Uplands
Landform position: Broad, slightly convex ridgetops
Distinctive landform features: Slopes generally are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 100 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown fine sandy loam

Subsoil:
6 to 20 inches—yellowish brown silt loam
20 to 26 inches—yellowish brown silty clay loam
26 to 36 inches—light brownish gray silty clay loam
36 to 54 inches—variegated light gray and yellowish brown silty clay loam
54 to 65 inches—light gray silty clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 1.5 to 3 feet
Flooding: None
Runoff: Slow to medium
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Beauregard and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Caddo, Guyton, Malbis, and areas of Beauregard soils with a silt loam surface
- Caddo soils are in slightly depressional areas, are poorly drained, and are grayish throughout
- Guyton soils are on flood plains of drainageways, are poorly drained, and are grayish throughout
- Malbis soils are on slightly higher and more convex ridgetops and have more sand and less silt in the subsoil than the Beauregard soil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable and easy to keep in good tilth
- Shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, white clover, winter peas, and vetch
Management concerns:
- Wetness
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w8
Site index/ordinating species: 92—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, sweetgum, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good

Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Moderate
Limitations:
- Low strength
- Wetness

Corrective measures:
- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Roadside ditches generally are needed to remove excess water more quickly

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Wetness

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove excess water quickly

BaC—Beauregard fine sandy loam, 3 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes generally are long to short and smooth
Shape of areas: Elongated
Size of areas: 25 to 85 acres
Slope: Moderately sloping

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown fine sandy loam

Subsurface layer:
7 to 10 inches—brown fine sandy loam

Subsoil:
10 to 62 inches—yellowish brown silt loam in the upper part; variegated brownish gray and gray silty clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 1.5 to 3 feet
Flooding: None
Runoff: Medium

Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Beauregard and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Guyton and Malbis soils
- Guyton soils are on flood plains of drainageways, are poorly drained, and are gray throughout
- Malbis soils have slightly more convex slopes and have more sand and less silt in the subsoil than the Beauregard soil

Land Use

Dominant use: Woodland
Other uses: Pastureland or residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable and easy to keep in good tilth
- Shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, and bahiagrass; ryegrass or wheat are suitable for winter forage
Management concerns:
- Wetness
- Erosion hazard
- Low fertility

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w8
Site index/ordinating species: 92—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, sweetgum, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey
- Small clearcuts in irregular shapes provide maximum edge for deer

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Moderate
Limitations:
- Low strength
- Wetness

Corrective measures:
- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Roadside ditches generally are needed to remove excess water more quickly

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Wetness

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove excess water quickly

BeC—Betis loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Ridgetops
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 10 to several hundred acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy fine sand

Subsurface layer:
9 to 29 inches—brown loamy fine sand

Subsoil:
29 to 44 inches—strong brown loamy fine sand
44 to 70 inches—yellowish red loamy fine sand with pockets and streaks of very pale brown clean sand grains

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: None within 6 feet
Flooding: None
Runoff: Very slow
Permeability class: Rapid
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Betis and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Ruston, and areas of soils with slopes that are more than 5 percent
- Briley soils are in positions similar to those of the Betis soil and have a loamy subsoil
- Ruston soils are in lower positions than the Betis soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIs
Suitability: Poorly suited
Adapted crops: Watermelons, peanuts, and other vegetable crops
Management concerns:
- Low fertility
- Droughtiness
- Poor trafficability

Management measures:
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility
- Tillage should be done when the soil is moist to reduce trafficability problems

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Improved bermudagrass, bahiagrass, and weeping lovegrass
Management concerns:
- Droughtiness
- Low fertility

Management measures:
- Pasture planting or renovation should be done during early spring
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during droughty periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3s2
Site index/ordinating species: 83—loblolly pine
Adapted trees: Loblolly pine and shortleaf pine
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Moderate seedling mortality
- Plant competition

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Where the forest borders pastures, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Poor filter

Corrective measures:
- An oversize drain field design can help to prevent ground-water pollution from seepage

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BEE—Betis loamy fine sand, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are short and complex; some areas are dissected by well defined drainageways
Shape of areas: Irregular
Size of areas: 20 to 300 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 4 inches—dark brown loamy fine sand

Subsurface layer:
4 to 44 inches—brown loamy fine sand in the upper part; pale brown loamy fine sand in the lower part

Subsoil:
44 to 60 inches—red loamy fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: None within 6 feet
Flooding: None
Runoff: Very slow
Permeability class: Rapid
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Betis and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Guyton, and areas of soils with slopes that are more than 5 percent
- Briley soils are in positions similar to those of the Betis soil and have a loamy subsoil
- Guyton soils are in drainageways, are poorly drained, and are gray and loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Watermelons, peanuts, and other vegetable crops
Management concerns:
- Slope
- Low fertility
- Poor trafficability
- Droughtiness

Management measures:
- The less sloping areas can be cropped if soil-conserving practices, such as contour farming and minimum tillage, are used
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content

- Liming and fertilizing according to soil tests can help to improve fertility
- Tillage should be done when the soil is moist to reduce trafficability problems

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Erosion hazard
- Slope
- Droughtiness
- Low fertility

Management measures:
- Slope may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3s2
Site index/ordinating species: 83—loblolly pine
Adapted trees: Loblolly pine and shortleaf pine
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Moderate seedling mortality
- Plant competition

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Small clearcuts in irregular shapes provide maximum edge for deer
- Hardwoods should be left along drainageways and streams to provide travel lanes, cover, and food for deer, turkeys, and squirrels

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Poor filter

Corrective measures:
- An oversize drain field design can help to prevent ground-water pollution from seepage

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness
- Slope

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer surface

Playgrounds

Limitation rating: Severe
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

BhC—Bienville loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Stream terraces
Landform position: Broad, low ridges
Distinctive landform features: Slopes are short and complex
Shape of areas: Irregular
Size of areas: 15 to 500 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 5 inches—brown loamy fine sand

Subsurface layer:
5 to 15 inches—brown loamy fine sand

Subsoil:
15 to 32 inches—dark brown loamy fine sand with streaks of brown uncoated sand grains
32 to 68 inches—strong brown loamy fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: Apparent at 4 to 6 feet
Flooding: Rarely flooded
Runoff: Slow
Permeability class: Moderately rapid
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Bienville and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Cahaba, Guyton, and areas of soils with slopes that are more than 5 percent
- Cahaba soils are in positions similar to those of the Bienville soil and have a loamy surface layer and subsoil
- Guyton soils are on flood plains and in lower positions than the Bienville soil, are poorly drained, and are gray and loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland, cropland, and residential areas

Cropland

Land capability subclass: IIIs
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Poor trafficability
- Droughtiness

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content; however, trafficability is poor when the surface layer is dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility
- Tillage should be done when the soil is moist to reduce trafficability problems

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, ryegrass, and crimson clover

Management concerns:
- Droughtiness
- Low fertility

Management measures:
- Pasture planting or renovation should be done during early spring
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during droughty periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 96—loblolly pine
Adapted trees: Loblolly pine and longleaf pine
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Moderate seedling mortality

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous; in addition, seedlings may be damaged by the Texas leaf-cutting ant, which is particularly well adapted to this soil
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Where the forest borders pastures or cropland, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate
Limitations:
- Flooding
- Wetness

Corrective measures:
- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or sewage lagoon is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Moderate
Limitations:
- Flooding

Corrective measures:
- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding

Corrective measures:
- Campsites cannot be used during episodes of flooding, and campground facilities and structures need to be constructed to withstand brief periods of inundation

Playgrounds

Limitation rating: Moderate

Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BnC—Bowie fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Broad, convex ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 5 to 150 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:
4 to 12 inches—light yellowish brown fine sandy loam

Subsoil:
12 to 25 inches—strong brown sandy clay loam
25 to 63 inches—yellowish brown sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: Perched at 3.5 to 5 feet
Flooding: None
Runoff: Medium
Permeability class: Moderately slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Bowie and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Dubach, Letney, and areas of soils with slopes that are more than 5 percent
- Briley and Letney soils are in higher positions than the Bowie soil and have sandy surface and subsurface layers that, together, are thicker than 20 inches
- Dubach soils are in lower positions than the Bowie soil and have less plinthite in the lower part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, cotton, and grain sorghum
Management concerns:
- Erosion hazard
- Low fertility

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, ball clover, and ryegrass
Management concerns:
- Erosion hazard
- Low fertility

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 86—loblolly pine
Adapted trees: Loblolly pine and shortleaf pine
Suitability: Well suited

Management concerns:
- No significant limitations

Management measures:
- Standard planting and harvesting equipment and techniques generally are adequate
- Trees generally perform well on areas of this soil with normal management practices

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Moderate
Limitations:
- Low strength

Corrective measures:
- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

BoB—Boykin loamy fine sand, 1 to 3 percent slopes

Setting

Landform: Uplands
Landform position: Ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown loamy fine sand

Subsurface layer:
8 to 22 inches—yellowish brown loamy fine sand

Subsoil:
22 to 33 inches—red sandy clay loam
33 to 48 inches—yellowish red sandy clay loam
48 to 79 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow

Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Boykin and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Malbis and Ruston soils
- Malbis and Ruston soils are in lower positions than the Boykin soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIs
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Low fertility
- Droughtiness
- Levels of aluminum in the rooting zone that are potentially toxic to plants
- Erosion is a hazard in more sloping areas of this map unit

Management measures:
- This soil is friable and easy to keep in good tilth
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, and crimson clover
Management concerns:
- Droughtiness
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated

Management measures:
- Seedbed preparation should be on the contour where practical
- Pasture planting or renovation should be done during early spring
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during droughty periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 92—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, hickory, and southern red oak
Suitability: Well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BoD—Boykin loamy fine sand, 3 to 8 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are short and complex
Shape of areas: Irregular
Size of areas: 20 to 100 acres
Slope: Moderately sloping to sloping

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy fine sand

Subsurface layer:
9 to 23 inches—brown loamy fine sand

Subsoil:
23 to 75 inches—yellowish red sandy clay loam in the upper part; red sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Boykin and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Betis, Guyton, Ruston, and areas of soils with slopes that are more than 8 percent
- Betis soils are in positions similar to those of the Boykin soil and are sandy throughout
- Guyton soils are in narrow drainageways, are poorly drained, and are loamy throughout
- Ruston soils are in lower positions than the Boykin soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Locally adapted truck and garden crops
Management concerns:
- Low fertility
- Droughtiness
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable and easy to keep in good tilth
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Irregular slopes may hinder tillage operations
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, and crimson clover
Management concerns:
- Droughtiness
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 92—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, hickory, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Where the forest borders pastures, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BrC—Briley loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 15 to 200 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy fine sand

Subsurface layer:
9 to 23 inches—brown loamy fine sand

Subsoil:
23 to 36 inches—red sandy clay loam
36 to 62 inches—yellowish red sandy clay loam
62 to 77 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow to very slow
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Briley and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Betis and Ruston soils
- Betis soils are in positions similar to those of the Briley soil and are sandy throughout
- Ruston soils are on side slopes and in lower positions than the Briley soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, wheat, cotton, and truck crops, such as peas and watermelons
Management concerns:
- Low fertility
- Droughtiness
- Erosion hazard

Management measures:
- This soil is friable and easy to keep in good tilth
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, and crimson clover
Management concerns:
- Droughtiness
- Erosion hazard
- Low fertility

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 80—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, and longleaf pine
Suitability: Moderately well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible

Urban Uses

Septic tank absorption fields

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

BRE—Briley loamy fine sand, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are short and complex; most areas are dissected by well defined drainageways
Shape of areas: Irregular
Size of areas: 20 to 160 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 6 inches—brown loamy fine sand

Subsurface layer:
6 to 23 inches—brown loamy fine sand

Subsoil:
23 to 67 inches—red sandy clay loam in the upper part; yellowish red and red sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow or very slow
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Briley and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Betis, Guyton, Ruston, and areas of soils with slopes that are more than 12 percent
- Betis soils are in positions similar to those of the Briley soil and are sandy throughout
- Guyton soils are in drainageways, are poorly drained, and are loamy throughout
- Ruston soils are in lower positions than the Briley soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Soybeans, corn, grain sorghum, cotton, watermelons and other vegetable crops
Management concerns:
- Slope
- Low fertility
- Droughtiness
- Erosion hazard

Management measures:
- The less sloping areas can be cropped if soil-conserving practices are used
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Irregular slopes may hinder tillage operations
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, and crimson clover
Management concerns:
- Droughtiness
- Slope
- Erosion hazard
- Low fertility

Management measures:
- Slope may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical

- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 80—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, and longleaf pine
Suitability: Moderately well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- The drain field lines should be installed on the contour

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness
- Slope

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer surface

Playgrounds

Limitation rating: Severe
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

CaA—Caddo silt loam, 0 to 1 percent slopes

Setting

Landform: Terraces
Landform position: Broad flats
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 15 to 100 acres
Slope: Level to nearly level

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown silt loam

Subsurface layer:
5 to 21 inches—light brownish gray silt loam

Subsoil:
21 to 80 inches—grayish brown silt loam in the upper part; light brownish gray silty clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Water table: Apparent at 0 to 2 feet
Flooding: None
Runoff: Slow
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Caddo and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Beauregard, Guyton, and Kirbyville soils
- Beauregard and Kirbyville soils are in higher positions than the Caddo soil and have more than 5 percent plinthite in the subsoil
- Guyton soils are in lower positions than the Caddo soil and do not have coarse red or brown iron accumulations

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIIw
Suitability: Moderately well suited
Adapted crops: Soybeans and locally adapted truck and garden crops
Management concerns:
- Low fertility
- Wetness

Management measures:
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface crusting and soil compaction problems, and maintain tilth and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, bahiagrass, ryegrass, tall fescue, white clover, and winter peas
Management concerns:
- Wetness
- Low fertility

Management measures:
- Restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 98—loblolly pine
Adapted trees: Loblolly pine, slash pine, sweetgum, and water oak
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Severe plant competition
- Moderate seedling mortality

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Bedding and surface drains can help to reduce seedling mortality caused by wetness

- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Good
Suitability for woodland wildlife: Good
Management measures:
- Hardwoods should be left along drainageways and streams to provide travel lanes, cover, and food for deer, turkeys, and squirrels
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey
- Roads and other small openings can be seeded to grasses, clovers, and other plants that provide food and cover for deer, rabbits, and turkeys, and brood openings for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

CbA—Caddo-Messer complex

Setting

Landform: Terraces
Landform position: Caddo—intermound positions; Messer—mound or smoothed mound positions
Distinctive landform features: Areas are broad flats with many small, circular mounds that are 30 to 150 feet across and 1 foot to 4 feet high
Shape of areas: Elongated
Size of areas: 40 to 1,000 acres
Slope: Caddo—nearly level; Messer—undulating

Typical Profile

Caddo

Surface layer:
0 to 6 inches—dark grayish brown silt loam

Subsurface layer:
6 to 13 inches—light brownish gray silt loam

Subsoil:
13 to 38 inches—grayish brown silt loam with tongues of light brownish gray silt loam
38 to 64 inches—light brownish gray silty clay loam

Messer

Surface layer:
0 to 3 inches—grayish brown very fine sandy loam

Subsurface layer:
3 to 7 inches—brown very fine sandy loam
Subsoil:
7 to 28 inches—light yellowish brown very fine sandy loam
28 to 33 inches—yellowish brown loam with tongues of grayish brown silt
33 to 61 inches—yellowish brown silty clay loam

Soil Properties and Qualities

Caddo

Depth class: Very deep
Drainage class: Poorly drained
Water table: Apparent at 0 to 2 feet
Flooding: None
Runoff: Slow
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: Low

Messer

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2 to 4 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Caddo and similar soils: 52 to 68 percent
Messer and similar soils: 22 to 38 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Beauregard, Guyton, Kirbyville, and Niwana soils
- Beauregard and Kirbyville soils are not on mounds; they are in higher landscape positions than the Caddo soil and have plinthite nodules in the subsoil
- Guyton soils are not on mounds; they are poorly drained, are in lower positions, and are similar to the Caddo soil, except they do not have coarse red or brown iron accumulations in the subsoil
- Niwana soils are on mounds and in similar landscape positions as the Messer soil and have more sand and less silt in the upper part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland, cropland, or residential areas

Cropland

Land capability subclass: Caddo—IIIw; Messer—IIw
Suitability: Moderately well suited
Adapted crops: Locally adapted truck and garden crops
Management concerns:
- Low fertility
- Wetness
- Short slopes on mound areas
- Erosion hazard on mound areas

Management measures:
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Land grading and smoothing can help to improve surface drainage and permit more efficient use of farm equipment
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface crusting and soil compaction problems, and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility
- Small mounds interfere with tillage operations, and erosion is a hazard—Messer

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, bahiagrass, white clover, winter peas, and ryegrass
Management concerns:
- Wetness
- Low fertility

Management measures:
- Restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: Caddo—2w9; Messer—2w8
Site index/ordinating species: 98—loblolly pine
Adapted trees: Loblolly pine, slash pine, sweetgum, and water oak
Suitability: Moderately well suited
Management concerns:
- Severe to moderate equipment limitations
- Severe to moderate plant competition
- Slight to moderate seedling mortality

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Logging roads require suitable surfacing for year-round use
- Bedding and surface drains can help to reduce seedling mortality caused by wetness—Caddo

Wildlife habitat

Suitability for wetland wildlife: Caddo—good; Messer—poor
Suitability for woodland wildlife: Good
Management measures:
- Oaks and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable deer browse and seed-producing plants for quail and turkey
- Habitat for openland wildlife can be improved by leaving stubble from grain sorghum and similar crops for food and cover

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Caddo—severe; Messer—moderate
Limitations:
- Wetness

Corrective measures:
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Caddo—severe; Messer—moderate
Limitations:
- Wetness
- Low strength—Messer

Corrective measures:
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Caddo—severe; Messer—slight
Limitations:
- Wetness—Caddo
- No significant limitations—Messer

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

ChB—Cahaba fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Stream terraces

Landform position: Ridges
Distinctive landform features: None
Shape of areas: Elongated
Size of areas: 15 to 85 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown fine sandy loam
7 to 12 inches—dark grayish brown fine sandy loam

Subsoil:
12 to 55 inches—red sandy clay loam
55 to 71 inches—strong brown loamy sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Moderate
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Cahaba and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Bienville, Guyton, Iuka, and areas of soils that are subject to rare or occasional flooding
- Bienville soils are in positions similar to those of the Cahaba soil and are sandy throughout
- Guyton soils are on flood plains of drainageways and streams, are in low positions on terraces, and are poorly drained and gray throughout
- Iuka soils are on flood plains of drainageways and streams and are loamy and brownish or grayish throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIe
Suitability: Well suited
Adapted crops: Soybeans, grain sorghum, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, and ryegrass
Management concerns:
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o7
Site index/ordinating species: 87—loblolly pine
Adapted trees: Loblolly pine, slash pine, shortleaf pine, sweetgum, southern red oak, and water oak
Suitability: Well suited
Management concerns:
- Moderate plant competition

Management measures:
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

CoC—Corrigan fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Ridgetops
Distinctive landform features: Slopes generally are long and smooth, although some are short and complex
Shape of areas: Elongated
Size of areas: 20 to 100 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown fine sandy loam

Subsurface layer:
5 to 8 inches—grayish brown fine sandy loam

Subsoil:
8 to 22 inches—grayish brown clay
22 to 32 inches—light brownish gray silty clay

Substratum:
32 to 60 inches—pale olive siltstone

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Moderately well drained
Water table: Perched at 1 foot to 2.5 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Corrigan and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Kisatchie, Mayhew, Rayburn, and Trep soils
- Kisatchie soils are at a similar elevation as the Corrigan soil, are drained, and have a seasonal high water table that is below a depth of 6 feet or more
- Mayhew soils are at a slightly higher elevation than the Corrigan soil and have a surface layer and subsoil that, together, are thicker than 40 inches
- Rayburn soils are at a similar elevation as the Corrigan soil and are deep to siltstone
- Trep soils are at a higher elevation than the Corrigan soil and have sandy surface and subsurface layers that, together, are thicker than 20 inches

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Low fertility
- Seasonal wetness
- Seasonal droughtiness
- Erosion hazard

Management measures:
- This soil has low available water capacity that somewhat limits crop production and seasonal wetness during winter and early spring that may delay planting operations in some years
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass and bahiagrass
Management concerns:
- Seasonal wetness
- Low fertility
- Erosion hazard
- Seasonal droughtiness

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods and during wet periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 84—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, slash pine, and sweetgum
Suitability: Moderately well suited
Management concerns:
- Moderate erosion hazard
- Equipment limitations
- Seedling mortality

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Site preparation and tree planting should be on the contour where practical
- Skid trails, yarding paths, and firebreaks should be laid out on the contour and should be reseeded or protected by water bars to reduce erosion
- Seedlings planted in the clayey, less fertile subsoil have higher mortality rates and grow poorly

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Depth to rock
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally are needed to dispose of wastewater properly
- Power machinery generally is needed to excavate the soft bedrock

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design can help to reduce the hazard of foundation cracking due to shrink-swell
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Wetness
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary
- Use of areas should be restricted during wet periods

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- None feasible unless areas are drained and filled

CYA—Cypress clay

Setting

Landform: Flood plains
Landform position: Oxbows, lake beds, and narrow flood plains bordering large stream channels
Distinctive landform features: Areas are nearly continuously ponded (fig. 2)
Shape of areas: Elongated
Size of areas: 10 to more than 100 acres
Slope: Level to nearly level

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown clay

Substratum:
8 to 53 inches—gray clay

Buried surface layer:
53 to 60 inches—dark gray fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Very poorly drained
Water table: Apparent at -4 to 1 foot
Flooding: Frequently flooded

Figure 2.—This area of Cypress clay is almost continuously ponded.

Runoff: Slow
Permeability class: Very slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Cypress and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to ponding and flooding limitations)
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Guyton and Urbo soils
- Guyton soils are in higher positions than the Cypress soil, are poorly drained, and are loamy throughout
- Urbo soils are in higher positions than the Cypress soil and have a thick subsoil

Land Use

Dominant use: Woodland and wetland wildlife habitat
Other uses: Recreation areas

Cropland

Land capability subclass: VIIIw
Suitability: Not suited
Adapted crops: None recommended
Management concerns:
- Ponding
- Flooding

Management measures:
- None recommended

Pasture and hayland

Suitability: Not suited
Adapted plants: None recommended
Management concerns:
- Ponding
- Flooding

Management measures:
- It is generally impractical to overcome the limitations for this use

Woodland

Woodland suitability group: 4w6
Site index/ordinating species: 78—bald cypress
Adapted trees: Bald cypress and water tupelo
Suitability: Poorly suited
Management concerns:
- Severe equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Nearly continuous ponding and frequent flooding generally make logging operations impractical
- The native trees generally grow only on stumps or rotted logs
- Regeneration of these trees is slow, and competing wetland vegetation is difficult to control if areas are clearcut

Wildlife habitat

Suitability for wetland wildlife: Good
Suitability for woodland wildlife: Very poor
Management measures:
- Areas of this soil provide roosting areas for migratory ducks and food and nesting sites for wood ducks, squirrels, alligators, and many species of nongame birds
- Areas of this soil provide habitat for crawfish and furbearers, including raccoon, nutria, and otters
- Hunting of waterfowl is a popular sport in areas of this soil

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Ponding
- Percs slowly

Corrective measures:
- None feasible; flood-control structures, drainage, and the addition of large amounts of fill material would be required

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding
- Ponding

Corrective measures:
- None feasible; flood-control and drainage structures and the addition of large amounts of fill material would be required

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Ponding
- Flooding

Corrective measures:
- Roads generally need to be constructed on elevated pilings above the level of flooding and ponding

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Ponding
- Flooding
- Too clayey

Corrective measures:
- None feasible; flood-control and drainage structures and the addition of large amounts of fill material would be required

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Ponding
- Too clayey
- Percs slowly

Corrective measures:
- None feasible

Playgrounds

Limitation rating: Severe
Limitations:
- Too clayey
- Ponding

Corrective measures:
- None feasible

DuC—Dubach fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Low stream terraces
Landform position: Broad flats and ridges
Distinctive landform features: Areas are adjacent to major drainageways
Shape of areas: Irregular
Size of areas: 10 to 200 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown fine sandy loam

Subsurface layer:
6 to 14 inches—brown fine sandy loam
14 to 19 inches—brown loam with pockets of strong brown sandy clay loam

Subsoil:
19 to 44 inches—strong brown sandy clay loam
44 to 70 inches—yellowish brown loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: Perched at 3.5 to 5 feet
Flooding: None
Runoff: Medium
Permeability class: Moderately slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Dubach and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Beauregard, Cahaba, Guyton, and areas of soils similar to the Dubach soil that have a sandy subsoil
- Beauregard soils are in higher positions than the Dubach soil and have gray iron depletions in the upper part of the subsoil and plinthite in the lower part of the subsoil
- Cahaba soils are in positions similar to those of the Dubach soil and have a red subsoil
- Guyton soils are on flats and in depressional areas, are poorly drained, and are grayish throughout

Land Use

Dominant use: Pastureland or woodland
Other uses: Cropland or residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, grain sorghum, and cotton
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, and ryegrass
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 94—loblolly pine
Adapted trees: Loblolly pine, slash pine, shortleaf pine, southern red oak, white oak, and sweetgum
Suitability: Well suited
Management concerns:
- Moderate plant competition

Management measures:
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to treat wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

EaC—Eastwood silt loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Ridgetops
Distinctive landform features: Slopes generally are long and smooth
Shape of areas: Irregular
Size of areas: 15 to 300 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown silt loam

Subsurface layer:
2 to 4 inches—brown silt loam

Subsoil:
4 to 10 inches—red clay
10 to 27 inches—red silty clay
27 to 45 inches—light brownish gray silty clay
45 to 67 inches—light brownish gray silty clay loam

Soil Properties and Qualities

Depth class: Deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Eastwood and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Hornbeck, Sawyer, and Vaiden soils
- Briley soils are in higher positions on the landscape than the Eastwood soil and have a sandy surface layer and a loamy subsoil
- Hornbeck soils are at a lower elevation than the Eastwood soil and have a very dark gray and black surface layer
- Sawyer soils are at a higher elevation than the Eastwood soil and are loamy in the upper part of the subsoil
- Vaiden soils are in positions similar to those of the Eastwood soil and are alkaline in the lower part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content, but crop roots may be restricted somewhat by the clayey subsoil when it is dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, ball clover, and crimson clover
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 93—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, and hickory
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

EAE—Eastwood silt loam, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Convex shoulder slopes and plane to convex side slopes
Distinctive landform features: Slopes are short and complex
Shape of areas: Irregular
Size of areas: 10 to 200 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown silt loam

Subsurface layer:
3 to 6 inches—brown silt loam

Subsoil:
6 to 77 inches—red clay in the upper part; variegated red and light brownish gray clay in the middle part; light brownish gray silty clay loam in the lower part

Soil Properties and Qualities

Depth class: Deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Rapid
Permeability class: Very slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Eastwood and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Hornbeck, Sawyer, and Vaiden soils
- Briley soils are on ridgetops in higher positions than the Eastwood soil and have a sandy surface layer and a loamy subsoil
- Hornbeck soils are at a lower elevation than the Eastwood soil and have a very dark gray and black surface layer

- Sawyer soils are at a higher elevation than the Eastwood soil and are loamy in the upper part of the subsoil
- Vaiden soils are in similar landscape positions as the Eastwood soil and are alkaline in the lower part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Close sown small grains
Management concerns:
- Slope
- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- The less sloping areas can be cropped if soil-conserving practices are used
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Erosion hazard
- Slope
- Low fertility

Management measures:
- Slope may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 86—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, sweetgum, southern red oak, and hickory
Suitability: Moderately well suited
Management concerns:
- Moderate erosion hazard
- Equipment limitations

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Site preparation and tree planting should be on the contour where practical
- Skid trails, yarding paths, and firebreaks should be laid out on the contour and should be reseeded or protected by water bars to reduce erosion

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Slope
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

GeB—Glenmora silt loam, 1 to 3 percent slopes

Setting

Landform: Terraces
Landform position: Slightly convex ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 100 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown silt loam

Subsurface layer:
4 to 8 inches—brown silt loam
8 to 11 inches—brown silt loam with pockets of yellowish brown silt loam

Subsoil:
11 to 38 inches—yellowish brown silty clay loam
38 to 65 inches—strong brown silty clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 2 to 3 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: High or very high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Glenmora and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Caddo, Guyton, Kirbyville, and Niwana soils
- Caddo soils are on slightly concave flats, are poorly drained, and are grayish throughout
- Guyton soils are on flood plains of drainageways and in depressional areas, are poorly drained, and are grayish throughout
- Kirbyville soils are in slightly higher positions than the Glenmora soil and have more sand in the subsoil
- Niwana soils are on pimple mounds and contain more sand and less clay in the subsoil than the Glenmora soils

Land Use

Dominant use: Woodland
Other uses: Pastureland or residential areas

Cropland

Land capability subclass: IIe
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Erosion hazard
- Low fertility

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, and crimson clover
Management concerns:
- Low fertility

Management measures:
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w8
Site index/ordinating species: 93—loblolly pine
Adapted trees: Loblolly pine, slash pine, sweetgum, water oak, and cherrybark oak
Suitability: Well suited
Management concerns:
- Severe plant competition

Management measures:
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength

Corrective measures:
- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate

Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Wetness
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

GoC—Gore very fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Terraces
Landform position: Ridgetops
Distinctive landform features: Slopes are generally long and smooth, but some are short and complex
Shape of areas: Irregular
Size of areas: 10 to 85 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown very fine sandy loam

Subsurface layer:
2 to 4 inches—brown very fine sandy loam

Subsoil:
4 to 16 inches—reddish brown clay
16 to 60 inches—red clay

Substratum:
60 to 87 inches—reddish brown clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Gore and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Beauregard, Kolin, Malbis, and areas of Gore soils with a surface layer that is silt loam
- Beauregard and Malbis soils are at a higher elevation than the Gore soil and are loamy throughout
- Kolin soils are in slightly higher positions than the Gore soil and have a subsoil that is loamy in the upper part and clayey in the lower part

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Locally adapted truck and garden crops
Management concerns:
- Low fertility
- Droughtiness
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content, but crop roots may be restricted somewhat by the clayey subsoil when it is dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, bahiagrass, ball clover, and crimson clover
Management concerns:
- Low fertility
- Droughtiness
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 76—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Seedlings generally will survive and grow well if competing vegetation is controlled

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Fair
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

GOE—Gore very fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Terraces
Landform position: Side slopes
Distinctive landform features: Slopes are short complex
Shape of areas: Irregular
Size of areas: 10 to 110 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 2 inches—dark grayish brown very fine sandy loam

Subsurface layer:
2 to 6 inches—brown very fine sandy loam

Subsoil:
6 to 67 inches—reddish brown clay in the upper part; red clay in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Rapid
Permeability class: Very slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Gore and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Guyton, Kolin, and areas of soils that have slopes less than 5 percent
- Guyton soils are on narrow flood plains of drainageways, are poorly drained, and are loamy throughout
- Kolin soils are in slightly higher positions than the Gore soil and have a subsoil that is loamy in the upper part and clayey in the lower part

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Locally adapted garden crops
Management concerns:
- Slope
- Low fertility
- Droughtiness
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- The less sloping areas can be cropped if soil-conserving practices are used
- Use of equipment may be hindered by irregular slopes, and crop roots may be restricted somewhat by the clayey subsoil when it is dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Common bermudagrass, bahiagrass, ball clover, and crimson clover
Management concerns:
- Slope
- Droughtiness
- Erosion hazard
- Low fertility

Management measures:
- Slope may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 76—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Seedlings generally will survive and grow well if competing vegetation is controlled

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Slope
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Slope
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

GtA—Guyton silt loam, 0 to 1 percent slopes

Setting

Landform: Low stream terraces and narrow flood plains
Landform position: Broad flats and depressions
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 5 to 75 acres
Slope: Level to nearly level

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown silt loam

Subsurface layer:
6 to 29 inches—grayish brown silt loam

Subsoil:
29 to 60 inches—grayish brown silt loam in the upper part; light brownish gray silty clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1.5 feet
Flooding: None
Runoff: Slow
Permeability class: Slow
Available water capacity: High to very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Guyton and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Caddo, Cahaba, and Kirbyville soils
- Caddo soils are in higher positions than the Guyton soil and have coarse brown and red iron accumulations in the subsoil
- Cahaba soils are in higher positions than the Guyton soil, are well drained, and have a red subsoil
- Kirbyville soils are in higher positions than the Guyton soil, are somewhat poorly drained, and have plinthite in the lower part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland and cropland

Cropland

Land capability subclass: IIIw
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Wetness
- Low fertility

Management measures:
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface crusting and soil compaction problems, and maintain tilth and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, bahiagrass, vetch, white clover, southern winter peas, and tall fescue
Management concerns:
- Low fertility
- Wetness

Management measures:
- Restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 85—loblolly pine
Adapted trees: Loblolly pine, slash pine, sweetgum, green ash, cherrybark oak, water oak, and willow oak
Suitability: Moderately well suited

Management concerns:
- Severe equipment limitations
- Severe plant competition
- Moderate seedling mortality

Management measures:
- Machine planting is practical only in dry years
- Limiting harvesting operations to drier periods generally is necessary to prevent rutting, compaction, and puddling of the soil, and to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Good
Suitability for woodland wildlife: Fair
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Small clearcuts in irregular shapes provide maximum edge for deer
- Where the forest borders pastures or cropland, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Wetness

Corrective measures:
- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

GuA—Guyton silt loam, occasionally flooded

Setting

Landform: Low stream terraces and narrow flood plains
Landform position: Small depressions
Distinctive landform features: None
Shape of areas: Oval or round
Size of areas: 5 to 100 acres
Slope: Level to nearly level

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown silt loam

Subsurface layer:
4 to 23 inches—grayish brown silt loam

Subsoil:
23 to 80 inches—grayish brown silty loam with vertical intrusions of light brownish gray silt loam in the upper part; grayish brown silty clay loam in the middle part; light brownish gray silty clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1.5 feet
Flooding: Occasionally flooded
Runoff: Slow
Permeability class: Slow
Available water capacity: High to very high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Guyton and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Beauregard, Caddo, and areas of soils that are subject to only rare flooding
- Beauregard soils are in higher positions than the Guyton soil, are moderately well drained, and have a subsoil that contains plinthite
- Caddo soils are in higher positions than the Guyton soil and are similar to the Guyton soil but have coarse brown and red iron accumulations in the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVw
Suitability: Poorly suited
Adapted crops: Soybeans and grain sorghum in drier years
Management concerns:
- Flooding
- Wetness

Management measures:
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Crops will be damaged by flooding in some years unless areas are protected by levees
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface crusting and soil compaction problems, and maintain tilth and organic matter content

Pasture and hayland

Suitability: Poorly suited
Adapted plants: None recommended
Management concerns:
- Flooding
- Wetness

Management measures:
- Field ditches and subsurface drains are needed to help reduce wetness problems
- Flooding limits the use of the pasture and may damage pasture plants unless areas are protected by levees

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 85—loblolly pine
Adapted trees: Loblolly pine, slash pine, sweetgum, green ash, cherrybark oak, water oak, and willow oak
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Severe plant competition
- Moderate seedling mortality

Management measures:
- Machine planting is practical only in dry years
- Levees or other flood-control structures are needed to prevent young trees from being damaged by flooding
- Limiting harvesting operations to drier periods generally is necessary to prevent rutting, compaction, and puddling of the soil, and to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Good
Suitability for woodland wildlife: Fair

Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Wetness
- Percs slowly

Corrective measures:
- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or sewage lagoon is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Wetness
- Flooding

Corrective measures:
- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled; campsites cannot be used during periods of flooding

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

GYA—Guyton-Iuka complex, frequently flooded

Setting

Landform: Flood plains
Landform position: Guyton—low flats; Iuka—convex natural levees
Distinctive landform features: Areas are inundated by fast flowing floodwater up to 6 feet deep for periods of several hours to several days in winter and spring
Shape of areas: Elongated
Size of areas: 10 to 500 acres
Slope: Level to nearly level

Typical Profile

Guyton

Surface layer:
0 to 7 inches—dark grayish brown silt loam

Subsurface layer:
7 to 13 inches—grayish brown silt loam
13 to 23 inches—light brownish gray silt loam

Subsoil:
23 to 34 inches—grayish brown silty clay loam with tongues of light brownish gray silt loam

34 to 48 inches—grayish brown silty clay loam
48 to 69 inches—light brownish gray silty clay loam

Iuka

Surface layer:
0 to 11 inches—brown fine sandy loam

Substratum:
11 to 40 inches—yellowish brown fine sandy loam
40 to 56 inches—variegated light brownish gray, yellowish brown, strong brown, and pale brown loam
56 to 60 inches—grayish brown fine sandy loam

Soil Properties and Qualities

Guyton

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1.5 feet
Flooding: Frequently flooded
Runoff: Slow
Permeability class: Moderate
Available water capacity: High to very high
Natural soil fertility: Low
Shrink-swell potential: Low

Iuka

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 1 foot to 3 feet
Flooding: Frequently flooded
Runoff: Slow
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Guyton and similar soils: 47 to 63 percent
Iuka and similar soils: 22 to 38 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to wetness and flooding limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Cahaba and Osier soils and areas of Guyton soils with a surface layer that is fine sandy loam
- Cahaba soils are on stream terraces, are well drained, and have a red subsoil
- Osier soils are on stream terraces, are poorly drained, and are sandy throughout

Land Use

Dominant use: Woodland
Other uses: Wildlife habitat and pastureland

Cropland

Land capability subclass: Vw
Suitability: Not suited
Adapted crops: None recommended
Management concerns:
- Flooding
- Wetness

Management measures:
- None recommended

Pasture and hayland

Suitability: Not suited
Adapted plants: None recommended
Management concerns:
- Flooding
- Wetness
- Low fertility

Management measures:
- It is generally impractical to overcome the limitations use as pasture and hayland

Woodland

Woodland suitability group: Guyton—2w9; Iuka—1w8
Site index/ordinating species: 100—green ash
Adapted trees: Green ash, sweetgum, black willow, Nuttall oak, eastern cottonwood, sugarberry, loblolly pine, and water oak
Suitability: Moderately well suited
Management concerns:
- Severe to moderate equipment limitations
- Severe to moderate seedling mortality
- Severe plant competition

Management measures:
- Machine planting is practical only in dry years
- Levees or other flood-control structures are needed to prevent young trees from being damaged by flooding
- Limiting harvesting operations to drier periods generally is necessary to prevent rutting, compaction, and puddling of the soil, and to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Guyton—good; Iuka—poor
Suitability for woodland wildlife: Guyton—fair; Iuka—good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Wetness
- Percs slowly—Guyton

Corrective measures:
- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or a sewage lagoon is needed

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength—Guyton
- Wetness—Guyton
- Flooding

Corrective measures:
- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Low strength—Guyton
- Wetness—Guyton
- Flooding

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness and flooding should be used
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled
- Campsites cannot be used during periods of flooding

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness
- Flooding

Corrective measures:
- None feasible unless areas are drained, filled, and protected from flooding

HaB—Hainesville fine sand, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Terraces
Landform position: Low ridges
Distinctive landform features: Areas are inundated by floodwaters for brief to long periods
Shape of areas: Irregular
Size of areas: 15 to 500 acres
Slope: Nearly level to very gently sloping

Typical Profile

Surface layer:
0 to 5 inches—brown fine sand

Subsurface layer:
5 to 17 inches—pale brown fine sand
17 to 28 inches—very pale brown fine sand
28 to 37 inches—very pale brown fine sand with spots of yellowish brown fine sand

Subsoil:
37 to 48 inches—yellowish brown fine sand with pale brown spots of uncoated sand grains
48 to 65 inches—strong brown fine sand
65 to 83 inches—strong brown loamy fine sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat excessively drained
Water table: Perched at 4 to 6 feet
Flooding: Occasionally flooded
Runoff: Slow
Permeability class: Rapid
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Hainesville and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Cahaba, Guyton, Spurger, and Urbo soils
- Cahaba and Spurger soils are in higher positions than the Hainesville soil and contain more clay in the subsoil
- Guyton and Urbo soils are in lower positions than Hainesville soil, are frequently flooded, and are gray throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland and cropland

Cropland

Land capability subclass: IVw
Suitability: Poorly suited
Adapted crops: Watermelons, corn, and locally adapted truck and garden crops
Management concerns:
- Low fertility
- Droughtiness
- Flooding
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Crops will be damaged by flooding in some years unless areas are protected by levees
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, weeping lovegrass, ryegrass, and crimson clover
Management concerns:
- Droughtiness
- Low fertility
- Flooding

Management measures:
- Pasture planting or renovation should be done during early spring
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during droughty periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility
- Flooding limits the use of the pasture and may damage pasture plants unless areas are protected by levees

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 96—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Severe seedling mortality
- Moderate equipment limitations

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; in addition, flooding may restrict use of equipment in some years; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous; in addition,

seedlings may be damaged by the Texas leaf-cutting ant, which is particularly well adapted to this soil
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Small clearcuts in irregular shapes provide maximum edge for deer

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Poor filter

Corrective measures:
- None feasible unless areas are protected from flooding
- An onsite sewage treatment plant or an oversize septic filter field is needed to prevent ground-water pollution due to seepage

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe
Limitations:
- Flooding

Corrective measures:
- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Too sandy

Corrective measures:
- Campsites cannot be used during episodes of flooding, and campground facilities and structures need to be constructed to withstand brief periods of inundation
- A ground cover that is tolerant of flooding needs to be established to stabilize the sandy surface

Playgrounds

Limitation rating: Severe
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil needs to be added to the loose sandy surface to create a firmer playing surface

HoC—Hornbeck clay, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Broad ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 200 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 7 inches—very dark gray clay
7 to 22 inches—black clay

Subsoil:
22 to 35 inches—yellowish brown clay

35 to 50 inches—light brownish gray clay
50 to 67 inches—variegated light brownish gray, yellowish brown, and strong brown clay

Substratum:
67 to 75 inches—light brownish gray silty clay loam
75 to 86 inches—yellowish brown clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: High
Shrink-swell potential: Very high

Composition

Hornbeck and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Eastwood, Vaiden, and areas of Hornbeck soils that have a thin, eroded surface layer
- Eastwood soils are in higher positions than the Hornbeck soil and are acid throughout the profile
- Vaiden soils are in slightly higher positions than the Hornbeck soil and are acid in the upper part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Poor tilth
- Erosion hazard

Management measures:
- This soil is difficult to keep in good tilth and can be worked only within a narrow range of moisture content
- Large clods that are difficult to break down are formed if the soil is plowed when too wet
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, bahiagrass, tall fescue, alfalfa, white clover, and Johnsongrass
Management concerns:
- Clayey surface
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and puddling of the clayey surface layer and reduce damage to pasture plants

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 75—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, eastern redcedar, and sweetgum
Suitability: Well suited
Management concerns:
- Severe equipment limitations
- Severe plant competition
- Moderate seedling mortality

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding can help to reduce seedling mortality and plant competition caused by wetness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife

- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Too clayey

Corrective measures:
- Loamy topsoil can be added to the surface to improve tilth and water holding capacity in the rooting zone

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly
- Too clayey

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly
- Loamy topsoil can be added to the clayey surface to improve trafficability during wet periods

Playgrounds

Limitation rating: Severe
Limitations:
- Too clayey
- Percs slowly

Corrective measures:
- Loamy topsoil can be added to the clayey surface to improve trafficability during wet periods
- Surface drains and landscaping are needed to remove rain water quickly

HoD—Hornbeck clay, 5 to 8 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 200 acres
Slope: Sloping

Typical Profile

Surface layer:
0 to 7 inches—very dark gray clay
7 to 24 inches—black clay

Subsoil:
24 to 60 inches—light olive brown clay with soft to hard masses of calcium carbonate

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: High
Shrink-swell potential: Very high

Composition

Hornbeck and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Eastwood, Vaiden, and areas of Hornbeck soils that have a thin, eroded surface layer
- Eastwood soils are in higher positions than the Hornbeck soil and are acid throughout
- Vaiden soils are in slightly higher positions than the Hornbeck soil and are acid in the upper part of the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Poor tilth
- Erosion hazard

Management measures:
- This soil is difficult to keep in good tilth and can be worked only within a narrow range of moisture content
- Large clods that are difficult to break down are formed if the soil is plowed when too wet
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Drop structures may be needed in grassed waterways to prevent gullying

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, tall fescue, alfalfa, white clover, and Johnsongrass; ryegrass, wheat, or oats are suitable for winter forage
Management concerns:
- Clayey surface
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and puddling of the clayey surface layer and reduce damage to pasture plants

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 75—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, eastern redcedar, and sweetgum
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Severe plant competition
- Moderate seedling mortality

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding can help to reduce seedling mortality and plant competition caused by wetness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field design or an onsite sewage treatment plant or sewage lagoon generally is needed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Severe

Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Too clayey

Corrective measures:
- Loamy topsoil can be added to the surface to improve tilth and water holding capacity in the rooting zone

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly
- Too clayey

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly
- Loamy topsoil can be added to the clayey surface to improve trafficability during wet periods

Playgrounds

Limitation rating: Severe
Limitations:
- Slope
- Too clayey
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil can be added to the clayey surface to improve trafficability during wet periods
- Surface drains and landscaping are needed to remove rain water quickly

KcB—Kirbyville-Niwana complex

Setting

Landform: Uplands
Landform position: Kirbyville—broad flats on ridgetops; Niwana—small rounded mounds or smoothed mound areas on ridgetops
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 20 to 500 acres
Slope: Kirbyville—nearly level to undulating; Niwana—undulating

Typical Profile

Kirbyville

Surface layer:
0 to 5 inches—dark grayish brown loam
5 to 9 inches—grayish brown and light yellowish brown loam

Subsurface layer:
9 to 15 inches—light yellowish brown loam

Subsoil:
15 to 29 inches—yellowish brown and pale brown loam
29 to 47 inches—yellowish brown loam
47 to 66 inches—light yellowish brown loam
66 to 79 inches—yellowish brown loam

Niwana

Surface layer:
0 to 4 inches—grayish brown fine sandy loam

Subsurface layer:
4 to 14 inches—light yellowish brown very fine sandy loam

Subsoil:
14 to 23 inches—brownish yellow fine sandy loam with tongues of light yellowish brown very fine sandy loam
23 to 32 inches—yellowish brown loam
32 to 71 inches—yellowish brown loam with tongues of light brownish gray fine sandy loam
71 to 83 inches—strong brown loam

Soil Properties and Qualities

Kirbyville

Depth class: Very deep
Drainage class: Somewhat poorly drained
Water table: Perched at 1.5 to 2.5 feet
Flooding: None
Runoff: Slow

Permeability class: Moderate
Available water capacity: High
Natural soil fertility: Low
Shrink-swell potential: Low

Niwana

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 4 to 6 feet
Flooding: None
Runoff: Slow
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Kirbyville and similar soils: 52 to 68 percent
Niwana and similar soils: 18 to 32 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Caddo and Guyton soils
- Caddo and Guyton soils are in lower positions than the Kirbyville and Niwana, are poorly drained, and are grayish throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIw
Suitability: Moderately well suited
Adapted crops: Soybeans, corn, and locally adapted truck and garden crops
Management concerns:
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- These soils are friable and easy to keep in good tilth
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface crusting and soil compaction problems, and maintain tilth and organic matter content
- Low mounds can interfere with tillage operations unless areas are smoothed
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, bahiagrass, winter peas, and ryegrass
Management concerns:
- Wetness
- Low fertility

Management measures:
- Restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: Kirbyville—2w1; Niwana—2w8
Site index/ordinating species: 105—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, slash pine, and sweetgum
Suitability: Moderately well suited
Management concerns:
- Slight to severe plant competition
- Slight to moderate equipment limitations

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Kirbyville—fair; Niwana—very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable deer browse and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Kirbyville—severe; Niwana—moderate
Limitations:
- Wetness
- Percs slowly—Niwana

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to treat wastewater properly

Dwellings without basements

Limitation rating: Kirbyville—moderate; Niwana—slight
Limitations:
- Wetness—Kirbyville
- No significant limitations—Niwana

Corrective measures:
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Kirbyville—moderate; Niwana—slight
Limitations:
- Low strength—Kirbyville
- Wetness—Kirbyville
- No significant limitations—Niwana

Corrective measures:
- Special road base design and construction techniques that compensate for low strength in the subsoil may be needed
- Roadside ditches generally are needed to remove excess water more quickly

Lawns, landscaping, and golf fairways

Limitation rating: Kirbyville—moderate; Niwana—slight
Limitations:
- Wetness—Kirbyville
- No significant limitations—Niwana

Corrective measures:
- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly

KEF—Kisatchie-Rayburn fine sandy loams, 5 to 20 percent slopes

Setting

Landform: Uplands
Landform position: Kisatchie—convex side slopes; Rayburn—plane or concave side slopes
Distinctive landform features: Gullies and rock outcroppings are scattered throughout these areas; slopes are generally short and complex
Shape of areas: Irregular
Size of areas: 25 to more than 200 acres
Slope: Sloping to moderately steep

Typical Profile

Kisatchie

Surface layer:
0 to 3 inches—dark grayish brown fine sandy loam

Subsurface layer:
3 to 6 inches—grayish brown fine sandy loam
12 to 16 inches—grayish brown silty clay

Subsoil:
6 to 12 inches—grayish brown clay loam
16 to 28 inches—grayish brown clay loam

Substratum:
28 to 55 inches—pale olive sandstone

Rayburn

Surface layer:
0 to 3 inches—dark grayish brown fine sandy loam

Subsurface layer:
3 to 7 inches—brown fine sandy loam

Subsoil:
7 to 43 inches—variegated red and grayish brown clay

Substratum:
43 to 80 inches—light brownish gray siltstone

Soil Properties and Qualities

Kisatchie

Depth class: Moderately deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Runoff: Very rapid
Permeability class: Very slow
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: High

Rayburn

Depth class: Deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4.5 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Kisatchie and similar soils: 52 to 68 percent
Rayburn and similar soils: 18 to 32 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Betis, Corrigan, Guyton, Mayhew, and Trep soils
- Betis soils are at a higher elevation on the landscape than the Rayburn soil and are sandy throughout
- Corrigan soils are on lower footslope positions and are moderately well drained
- Guyton soils are poorly drained and are on narrow flood plains of small streams
- Mayhew soils are at a higher elevation on the landscape than the Rayburn soil and are not underlain by rock
- Trep soils are at a higher elevation on the landscape than the Rayburn soil and have thick sandy surface and subsurface layers

Land Use

Dominant use: Woodland
Other uses: Wildlife habitat

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Close sown small grains
Management concerns:
- Slope
- Erosion hazard
- Low fertility
- Droughtiness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- The less sloping areas can be cropped if soil conserving practices are used; however, use of equipment generally is hindered by irregular slopes
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Poorly suited
Adapted plants: None recommended
Management concerns:
- Slope
- Rock outcrops
- Large gullies
- Low fertility
- Droughtiness

Management measures:
- Slope
- Rock outcrops
- Large gullies limit the use of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: Kisatchie—5d3; Rayburn—2c8

Site index/ordinating species: 70—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, shortleaf pine, post oak, and hickory
Suitability: Moderately well suited
Management concerns:
- Moderate erosion hazard
- Moderate equipment limitations
- Moderate plant competition
- Severe to moderate seedling mortality

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Site preparation and tree planting should be on the contour where practical
- Skid trails, yarding paths, and firebreaks should be laid out on the contour and should be reseeded or protected by water bars to reduce erosion
- Seedlings planted in the clayey, less fertile subsoil have higher mortality rates and grow poorly
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Kisatchie—fair; Rayburn—good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable deer browse and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Depth to rock—Kisatchie
- Wetness—Rayburn
- Percs slowly—Rayburn

Corrective measures:
- Power machinery generally is needed to excavate the soft bedrock
- An onsite sewage treatment plant or an oversize septic filter field is needed to prevent ground-water pollution due to seepage

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Slope
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping are needed to remove rain water quickly

KoC—Kolin silt loam, 1 to 5 percent slopes

Setting

Landform: Stream terraces
Landform position: Ridgetops
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 10 to 100 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 3 inches—brown silt loam

Subsurface layer:
3 to 6 inches—brown silt loam

Subsoil:
6 to 12 inches—yellowish brown silt loam
12 to 17 inches—yellowish brown silty clay loam
17 to 29 inches—yellowish brown silty clay loam with gray coatings of silt surrounding peds
29 to 42 inches—variegated light brownish gray, yellowish brown, and red silty clay
42 to 65 inches—red clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 1.5 to 3 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: High
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Kolin and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Beauregard, Gore, and Malbis soils
- Beauregard and Malbis soils are in higher positions than the Kolin soil and contain plinthite in the subsoil
- Gore soils are on side slopes and have a subsoil that is clayey throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Corn, grain sorghum, soybeans and sweet potatoes
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, ball clover, arrowleaf clover, and crimson clover
Management concerns:
- Low fertility
- Wetness
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3w8
Site index/ordinating species: 85—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, sweetgum, southern red oak, and white oak
Suitability: Moderately well suited
Management concerns:
- Severe plant competition

Management measures:
- Limiting harvesting operations to drier periods causes less soil compaction when heavy equipment is used
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Small clearcuts in irregular shapes provide maximum edge for deer
- Where the forest borders pastures or cropland, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using special road base design and construction techniques generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

LtC—Letney loamy sand, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Ridgetops
Distinctive landform features: Slopes generally are smooth and convex
Shape of areas: Irregular
Size of areas: 10 to 200 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown loamy sand

Subsurface layer:
9 to 27 inches—pale brown loamy sand

Subsoil:
27 to 54 inches—strong brown sandy clay loam

54 to 62 inches—reddish yellow sandy clay loam
62 to 83 inches—variegated reddish yellow and strong brown sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow
Permeability class: Moderately rapid
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Letney and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Briley, Corrigan, Mayhew, and areas of soils similar to the Letney soil with a subsoil that is red throughout
- Briley soils are in similar landscape positions as the Letney soil and have a redder subsoil
- Corrigan and Mayhew soils are at a lower elevation than the Letney soil and have a clayey subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIs
Suitability: Poorly suited
Adapted crops: Soybeans, corn, wheat, cotton, and truck crops, such as peas and watermelons
Management concerns:
- Low fertility
- Droughtiness
- Poor trafficability

Management measures:
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility
- Tillage should be done when the soil is moist to reduce trafficability problems

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Improved bermudagrass, bahiagrass, crimson clover, and vetch
Management concerns:
- Low fertility
- Droughtiness

Management measures:
- Pasture planting or renovation should be done during early spring
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during droughty periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 86—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A standard septic tank and drain field design generally are adequate to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Too sandy
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

LTE—Letney loamy sand, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are short and complex
Shape of areas: Irregular
Size of areas: 10 to 150 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown loamy sand

Subsurface layer:
6 to 26 inches—pale brown loamy sand

Subsoil:
26 to 70 inches—strong brown sandy clay loam in the upper part; reddish yellow sandy loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Slow
Permeability class: Moderately rapid
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Letney and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Corrigan, Mayhew, Kisatchie, and Rayburn soils
- Corrigan, Mayhew, Kisatchie, and Rayburn soils are at a lower elevation than the Letney soil and have a clayey subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Soybeans, corn, grain sorghum, cotton, watermelons, and other vegetable crops
Management concerns:
- Low fertility
- Droughtiness
- Slope
- Erosion hazard

Management measures:
- The less sloping areas can be cropped if soil-conserving practices, such as contour farming and minimum tillage, are used
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain soil moisture, tilth, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Erosion hazard
- Droughtiness

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 86—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- The sandy surface layer restricts use of wheeled equipment, especially when the soil is dry; tracked equipment may be necessary
- The low available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying can help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed
- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Hardwoods should be left along drainageways and streams to provide travel lanes, cover, and food for deer, turkeys, and squirrels

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Drain field lines should be installed on the contour

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Constructing buildings on the less sloping areas, preserving plant cover during construction, and proper landscaping can help to reduce soil erosion and runoff problems

Local roads and streets

Limitation rating: Moderate

Limitations:
- Slope

Corrective measures:
- Cutting and filling may be needed to compensate for slopes

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy
- Slope

Corrective measures:
- Campsites and picnic areas should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Severe
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

MaB—Malbis fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Uplands
Landform position: Broad ridgetops
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 150 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:
4 to 9 inches—yellowish brown fine sandy loam

Subsoil:
9 to 17 inches—strong brown loam
17 to 28 inches—strong brown sandy clay loam
28 to 60 inches—yellowish brown sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4 feet
Flooding: None
Runoff: Medium
Permeability class: Moderately slow
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Malbis and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Beauregard, Guyton, Kirbyville, and Ruston soils
- Beauregard and Kirbyville soils are on slightly less convex ridgetops than the Malbis soil and have grayish iron depletions within 30 inches of the soil surface
- Guyton soils are in drainageways and are poorly drained
- Ruston soils are on higher, more convex ridgetops than the Malbis soil and do not have plinthite in the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIe
Suitability: Moderately well suited
Adapted crops: Corn, soybeans, wheat, grain sorghum, and some garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, ball clover, and ryegrass
Management concerns:
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Well suited
Management concerns:
- Moderate plant competition

Management measures:
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

MaC—Malbis fine sandy loam, 3 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Broad ridgetops and side slopes
Distinctive landform features: Slopes are long and smooth
Shape of areas: Irregular
Size of areas: 20 to 300 acres
Slope: Moderately sloping

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown fine sandy loam

Subsurface layer:
4 to 8 inches—grayish brown fine sandy loam

Subsoil:
8 to 60 inches—strong brown sandy clay loam in the upper part; yellowish brown sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4 feet
Flooding: None
Runoff: Medium
Permeability class: Moderately slow
Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Malbis and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Beauregard, Guyton, Kirbyville, and Ruston soils
- Beauregard and Kirbyville soils have slightly less convex slopes than the Malbis soil and have grayish iron depletions within a depth of 30 inches below the surface
- Guyton soils are in drainageways and are poorly drained
- Ruston soils are on higher, more convex ridgetops than the Malbis soil and do not have plinthite in the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland and residential areas

Cropland

Land capability subclass: IIe
Suitability: Moderately well suited
Adapted crops: Corn, soybeans, wheat, grain sorghum, cotton, and some garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, ball clover, and ryegrass
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition

- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Well suited
Management concerns:
- Moderate plant competition

Management measures:
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be use
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

MhC—Mayhew silt loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Broad ridgetops
Distinctive landform features: Slopes generally are long and smooth, but some are short and complex
Shape of areas: Irregular
Size of areas: 20 to 300 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown silt loam

Subsoil:
5 to 13 inches—grayish brown clay
13 to 62 inches—light brownish gray clay
62 to 77 inches—light brownish gray silty clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Water table: Perched at 0 to 1 foot
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Mayhew and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Corrigan, Letney, and Rayburn soils
- Corrigan soils are in higher positions than the Mayhew soil and are moderately deep to siltstone
- Letney soils are on higher convex ridgetops and have thick sandy surface and subsurface layers
- Rayburn soils are in similar landscape positions as the Mayhew soil and are deep to siltstone

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Low fertility
- Poor tilth
- Wetness

Management measures:
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Poor tilth is a problem where the clayey subsoil has been mixed into the plow layer
- Using minimum tillage and returning all crop residue to the soil can help to improve fertility, reduce surface soil compaction problems, and maintain tilth and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, bahiagrass, ball clover, arrowleaf clover, crimson clover, singletary peas, vetch, and tall fescue
Management concerns:
- Low fertility
- Wetness
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, slash pine, and sweetgum
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Moderate seedling mortality
- Severe plant competition

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding can help to reduce seedling mortality and plant competition caused by wetness

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Fair
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Hardwoods should be left along drainageways and streams to provide travel lanes, cover, and food for deer, turkeys, and squirrels
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design can help to reduce the hazard of foundation cracking due to shrink-swell
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength
- Wetness

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary
- Use of areas should be restricted during wet periods

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- None feasible unless areas are drained and filled

MoB—Merryville-Besner complex

Setting

Landform: Terraces on the Sabine River and tributaries
Landform position: Merryville—flats and depressions; Besner—circular mounds
Distinctive landform features: Circular mounds are 2 to 5 feet high and 40 to 100 feet across
Shape of areas: Irregular
Size of areas: 50 to 800 acres
Slope: Merryville—level to nearly level; Besner—undulating to rolling

Typical Profile

Merryville

Surface layer:
0 to 5 inches—dark grayish brown silt loam

Subsurface layer:
5 to 11 inches—light brownish gray silt loam
11 to 21 inches—variegated light gray and brown silt loam
27 to 45 inches—light gray silt loam in tongues and grayish brown loam in the surrounding areas

Subsoil:
45 to 57 inches—grayish brown loam
57 to 65 inches—light brownish gray loam

Besner

Surface layer:
0 to 5 inches—brown fine sandy loam

Subsurface layer:
5 to 25 inches—brown fine sandy loam

Subsoil:
25 to 43 inches—yellowish brown loam
43 to 60 inches—yellowish brown loam with light brownish gray coatings between peds
60 to 80 inches—yellowish brown loam with grayish brown coatings between peds

Soil Properties and Qualities

Merryville

Depth class: Very deep
Drainage class: Poorly drained
Water table: Apparent at 0 to 1.5 feet
Flooding: Rarely flooded
Runoff: Very slow
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Besner

Depth class: Very deep
Drainage class: Well drained
Water table: Apparent at 4 to 6 feet
Flooding: None
Runoff: Slow
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Merryville and similar soils: 52 to 68 percent
Besner and similar soils: 22 to 38 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Hainesville, Kirbyville, and Spurger soils
- Hainesville soils are in positions similar to those of the Merryville soil and are sandy throughout
- Kirbyville soils are on slightly higher ridges than the Besner soil and have nodules of plinthite in the subsoil
- Spurger soils are in positions similar to those of the Merryville soil and have a clayey and loamy subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: Merryville—IIIw; Besner—IIe
Suitability: Moderately well suited
Adapted crops: Locally adapted truck and garden crops
Management concerns:
- Wetness—Merryville
- High sodium—Merryville
- Erosion hazard—Besner

Management measures:
- Concentration of sodium salts can restrict root development and reduce the amount of water available to plants—Merryville
- Land grading and smoothing can help to improve surface drainage and permit more efficient use of farm equipment
- A drainage system of shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, tall fescue, winter peas, and ryegrass
Management concerns:
- Wetness
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated—Besner

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing, and restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: Merryville—2w9; Besner—2o1
Site index/ordinating species: 109—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, sweetgum, water oak, willow oak, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Slight to severe equipment limitations
- Slight to severe plant competition
- Slight to moderate seedling mortality

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Careful site preparation and spraying after the trees are established can help to reduce plant competition
- Organic matter is conserved on these soils by restricting burning and leaving slash well distributed
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Merryville—good; Besner—very poor
Suitability for woodland wildlife: Merryville—fair; Besner—good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Merryville—severe; Besner—moderate
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Merryville—severe; Besner—slight
Limitations:
- Flooding—Merryville
- Wetness—Merryville
- No significant limitations—Besner

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Merryville—severe; Besner—slight
Limitations:
- Wetness—Merryville
- No significant limitations—Besner

Corrective measures:
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Merryville—severe; Besner—slight
Limitations:
- Wetness—Merryville
- No significant limitations—Besner

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled
- Campsites cannot be used during periods of flooding

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

OsB—Osier loamy fine sand, 0 to 2 percent slopes

Setting

Landform: Low stream terraces
Landform position: Low seeps
Distinctive landform features: Areas run parallel to flood plains of streams
Shape of areas: Elongated and narrow
Size of areas: 10 to 50 acres
Slope: Nearly level to very gently sloping

Typical Profile

Surface layer:
0 to 5 inches—very dark gray loamy fine sand
5 to 19 inches—dark gray loamy sand

Substratum:
19 to 30 inches—gray loamy sand
30 to 46 inches—light brownish gray loamy sand
46 to 60 inches—light brownish gray sand

Soil Properties and Qualities

Depth class: Deep
Drainage class: Poorly drained
Water table: Apparent at 0 to 0.5 foot
Flooding: None
Runoff: Very slow
Permeability class: Rapid
Available water capacity: Very low to low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Osier and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Betis, Briley, Guyton, Iuka, and areas of soils near stream channels that are subject to rare flooding
- Betis soils are on nearby uplands and have a brownish and reddish sandy subsoil
- Briley soils are on nearby uplands and have a red loamy subsoil
- Guyton and Iuka soils are on flood plains and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland; the pitcher plant, a threatened plant species, grows only in areas of this soil (fig. 3)

Cropland

Land capability subclass: Vw
Suitability: Not suited
Adapted crops: Late-planted crops, such as soybeans
Management concerns:
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- Areas of this soil generally are difficult to drain due to lack of suitable outlets

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Common bermudagrass and bahiagrass
Management concerns:
- Wetness
- Low fertility

Management measures:
- Restricting grazing during wet periods can help to reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 85—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, slash pine, and sweetgum
Suitability: Poorly suited
Management concerns:
- Severe equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems

Figure 3.—An area of Osier loamy fine sand, 0 to 2 percent slopes. The pitcher plant in the foreground is a unique plant species that grows mainly in areas of this soil.

- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Careful site preparation and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Fair
Suitability for woodland wildlife: Fair
Management measures:

- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Poor filter

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to treat wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Roadside ditches are needed to remove excess water quickly

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly
- Traffic should be restricted during periods when the topsoil is saturated
- Use of most types of lawn maintenance equipment is restricted when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Pg—Pits

Setting

Landform: Uplands or stream terraces
Landform position: Broad ridgetops and side slopes
Distinctive landform features: Areas are open excavations from which soil and geologic materials have been removed for use mainly in road construction
Shape of areas: Angular
Size of areas: 2 to 40 acres
Slope: Gently sloping to moderately sloping

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: More than 6 feet
Flooding: None
Runoff: Variable
Permeability class: Variable
Available water capacity: Variable
Natural soil fertility: Low
Shrink-swell potential: Variable

Composition

Pits and similar components: 85 percent
Dissimilar soils: 15 percent

Minor Components

Dissimilar soils: Small areas of mixed loamy and clayey spoil material that have been piled or scattered near the edges of pits; spoil areas are 15 to 25 feet high

Land Use

Dominant use: Wildlife or recreation areas

Cropland

Land capability subclass: VIIIs
Suitability: Not suited
Adapted crops: None
Management concerns:
- Low fertility

Management measures:
- None recommended

Pasture and hayland

Suitability: Not suited
Adapted plants: None

Management concerns:
- Low fertility

Management measures:
- None recommended

Woodland

Woodland suitability group: None assigned
Site index/ordinating species: None assigned
Adapted trees: None
Suitability: Not suited
Management concerns:
- Severe seedling mortality

Management measures:
- None recommended

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Very poor
Management measures:
- Abandoned pits can produce habitat for rabbits and other small game animals when left undisturbed

Urban Uses

Septic tank absorption fields

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

Dwellings without basements

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

Local roads and streets

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

Lawns, landscaping, and golf fairways

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

Recreational Uses

Camp and picnic areas

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

Playgrounds

Limitation rating: Variable
Limitations:
- Variable

Corrective measures:
- None recommended

RaC—Rayburn fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: Slopes generally are long and smooth, but some are short and complex
Shape of areas: Irregular
Size of areas: 20 to 300 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown fine sandy loam

Subsurface layer:
3 to 7 inches—brown fine sandy loam

Subsoil:
7 to 15 inches—red clay
15 to 22 inches—grayish brown clay
22 to 32 inches—light brownish gray clay
32 to 43 inches—pale olive and grayish brown clay

Substratum:
43 to 55 inches—light gray siltstone

Soil Properties and Qualities

Depth class: Deep
Drainage class: Moderately well drained
Water table: Perched at 2.5 to 4.5 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow
Available water capacity: Low to moderate

Natural soil fertility: Low
Shrink-swell potential: High

Composition

Rayburn and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Corrigan, Mayhew, Trep, and areas of soils similar to the Rayburn soil that are clay loam in the lower part of the subsoil
- Corrigan soils are in positions similar to those of the Rayburn soil and are moderately deep to siltstone
- Mayhew and Trep soils are at a higher elevation than the Rayburn soil
- Mayhew soils are at a higher elevation than the Rayburn soil, are gray throughout, and are not underlain by siltstone
- Trep soils have thick sandy surface and subsurface layers and a loamy subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Erosion hazard
- Low fertility
- Droughtiness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content, but crop roots may be restricted somewhat by the siltstone substratum
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Improved bermudagrass, bahiagrass, and ryegrass
Management concerns:
- Seasonal wetness
- Low fertility
- Erosion hazard
- Seasonal droughtiness

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods and during wet periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 87—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Seedling mortality
- Plant competition

Management measures:
- When wet or moist, unsurfaced roads or skid trails are sticky and slippery; they may become impassable during rainy periods
- Logging roads require suitable surfacing for year-round use
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Seedlings planted in the clayey, less fertile subsoil have higher mortality rates and grow poorly
- Hand planting and adding phosphate fertilizer to the soil can improve seedling mortality

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good

Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Severe
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Rh—Riverwash

Setting

Landform: Flood plains
Landform position: Sandbars adjacent to the Sabine River
Distinctive landform features: Barren or nearly barren sandbar islands that are covered by floodwaters 5 to 10 feet deep
Shape of areas: Elongated and narrow
Size of areas: 5 to 40 acres
Slope: Nearly level to very gently sloping

Soil Properties and Qualities

Depth class: Very deep
Drainage class: None assigned
Water table: Apparent at 0.5 foot to 6 feet
Flooding: Frequently flooded
Runoff: Slow
Permeability class: Rapid
Available water capacity: Low
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Variable

Land Use

Dominant use: Wildlife and recreation areas

Cropland

Land capability subclass: Vw
Suitability: Not suited
Adapted crops: None

Management concerns:
- Flooding
- Low fertility
- Droughtiness

Management measures:
- None recommended

Pasture and hayland

Suitability: Not suited
Adapted plants: None
Management concerns:
- Flooding
- Low fertility
- Droughtiness

Management measures:
- None recommended

Woodland

Woodland suitability group: None assigned
Site index/ordinating species: None assigned
Adapted trees: None
Suitability: Not suited
Management concerns:
- Severe seedling mortality

Management measures:
- None recommended

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Very poor
Management measures:
None recommended

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Wetness
- Poor filter

Corrective measures:
- None recommended

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None recommended

Local roads and streets

Limitation rating: Severe
Limitations:
- Wetness
- Flooding

Corrective measures:
- None recommended

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Wetness
- Droughtiness
- Flooding

Corrective measures:
- None recommended

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None recommended

Playgrounds

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- None recommended

RuB—Ruston fine sandy loam, 1 to 3 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 5 to 100 acres
Slope: Gently sloping

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown fine sandy loam

Subsurface layer:
5 to 11 inches—yellowish brown fine sandy loam

Subsoil:
11 to 29 inches—yellowish red sandy clay loam
29 to 40 inches—red sandy clay loam

40 to 48 inches—yellowish red loam with streaks and pockets of pale brown sandy loam
48 to 70 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Ruston and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Malbis, and areas of soils with slopes that are more than 3 percent
- Briley soils are in higher positions on ridgetops than the Ruston soil and have thick sandy surface and subsurface layers
- Malbis soils are on less convex slopes and have a brownish subsoil that contains more than 5 percent plinthite in the lower part

Land Use

Dominant use: Woodland
Other uses: Pastureland, cropland, or residential areas

Cropland

Land capability subclass: IIe
Suitability: Moderately well suited
Adapted crops: Cotton, corn, soybeans, wheat, grain sorghum, and some garden crops
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, and ryegrass
Management concerns:
- Low fertility
- Erosion is a hazard when the pasture is being established or renovated

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 91—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, southern red oak, post oak, sweetgum, hickory, and shortleaf pine
Suitability: Well suited
Management concerns:
- No significant limitations

Management measures:
- Standard planting and harvesting equipment and techniques generally are adequate
- Trees generally perform well in areas of this soil with normal management practices

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field should be installed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Small stones

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer

RuD—Ruston fine sandy loam, 3 to 8 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops, shoulders, and upper side slopes
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 30 to 300 acres
Slope: Moderately sloping to sloping

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown fine sandy loam

Subsurface layer:
6 to 14 inches—yellowish brown fine sandy loam

Subsoil:
14 to 73 inches—red and yellowish red sandy clay loam in the upper part; yellowish red sandy clay loam and sandy loam in the middle part; red sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Water table: None within 6 feet
Flooding: None
Runoff: Medium
Permeability class: Moderate
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Low

Composition

Ruston and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Briley, Malbis, and areas of soils with slopes that are less than 3 percent
- Briley soils are in higher positions on ridgetops than the Ruston soil and have thick sandy surface and subsurface layers

- Malbis soils are on less convex slopes and have a brownish subsoil that has more than 5 percent plinthite in the lower part

Land Use

Dominant use: Woodland
Other uses: Pastureland or residential areas

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Corn, cotton, soybeans, wheat, grain sorghum, watermelons, and peas
Management concerns:
- Erosion hazard
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, and ryegrass
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2o1
Site index/ordinating species: 91—loblolly pine
Adapted trees: Loblolly pine, slash pine, longleaf pine, southern red oak, post oak, sweetgum, hickory, and shortleaf pine
Suitability: Well suited
Management concerns:
- No significant limitations

Management measures:
- Standard planting and harvesting equipment and techniques generally are adequate
- Trees generally perform well in areas of this soil with normal management practices

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Moderate
Limitations:
- Percs slowly

Corrective measures:
- An oversize drain field should be installed to prevent the system from malfunctioning during rainy periods

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- These soils are well suited to use as camp and picnic areas with normal maintenance

Playgrounds

Limitation rating: Severe
Limitations:
- Slope
- Small stones

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Topsoil needs to be added to reduce the number of small stones in the surface layer

SaC—Sacul fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: Slopes generally are long and smooth
Shape of areas: Irregular
Size of areas: 10 to 150 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 5 inches—dark grayish brown fine sandy loam

Subsoil:
5 to 16 inches—yellowish red clay
16 to 25 inches—variegated red, light brownish gray, and yellowish brown clay
25 to 35 inches—variegated light brownish gray, red, and yellowish brown sandy clay
35 to 44 inches—variegated light brownish gray, red, and grayish brown clay loam
44 to 60 inches—variegated light brownish gray and yellowish red clay loam

Substratum:
60 to 80 inches—stratified light brownish gray and red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2 to 4 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Sacul and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Briley, Mayhew, and Trep soils
- Briley and Trep soils are in higher positions on ridgetops than the Sacul soil and have a sandy surface layer and a loamy subsoil
- Mayhew soils are in lower positions on broad ridgetops and are clayey throughout the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland or residential areas

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Cotton, soybeans, grain sorghum, wheat, corn, and some garden crops
Management concerns:
- Low fertility
- Erosion hazard
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content

- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 94—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, southern red oak, and hickory
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Plant competition

Management measures:
- When wet or moist, unsurfaced roads or skid trails can become sticky and slippery where the subsoil is exposed
- Logging roads require suitable surfacing for year-round use
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be use
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Small stones
- Wetness

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

SAE—Sacul fine sandy loam, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes generally are short and complex
Shape of areas: Irregular
Size of areas: 10 to 200 acres
Slope: Sloping to strongly sloping

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown fine sandy loam

Subsoil:
5 to 51 inches—yellowish red clay in the upper part; yellowish brown and light brownish gray clay loam in the lower part

Substratum:
51 to 68 inches—stratified light brownish gray sandy clay loam and yellowish brown fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2 to 4 feet
Flooding: None
Runoff: Rapid
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Sacul and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Guyton, Kisatchie, Malbis, and Mayhew soils
- Guyton soils are in narrow drainageways and are poorly drained and grayish throughout
- Kisatchie soils are on some toeslopes and are moderately deep to sandstone
- Malbis soils are on narrow ridgetops and are loamy throughout
- Mayhew soils are at a lower elevation than the Sacul soil and have a subsoil that is clayey throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Small grains
Management concerns:
- Erosion hazard
- Low fertility
- Short, complex slopes

Management measures:
- The less sloping areas can be cropped if soil-conserving practices are used; however, use of equipment may be hindered by short, irregular slopes
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Poorly suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Erosion hazard
- Short, complex slopes

Management measures:
- Short, complex slopes may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 94—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, southern red oak, and hickory
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Plant competition

Management measures:
- When wet or moist, unsurfaced roads or skid trails can become sticky and slippery where the subsoil is exposed
- Logging roads require suitable surfacing for year-round use
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to reduce the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Slope

Corrective measures:
- Mulching to quickly establish a lawn and fertilizing to maintain a thick turf can help to prevent topsoil loss due to erosion

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Slope
- Wetness
- Percs slowly

Corrective measures:
- Campsites and picnic areas should be constructed on the more level areas

- A ground cover that is tolerant of heavy foot traffic needs to be established and maintained to prevent erosion
- Surface drains and landscaping are needed to remove excess water

Playgrounds

Limitation rating: Severe
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

SeC—Sawyer very fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Lower side slopes
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 10 to 40 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 4 inches—dark grayish brown very fine sandy loam

Subsurface layer:
4 to 7 inches—brown silt loam

Subsoil:
7 to 12 inches—yellowish brown silt loam
12 to 21 inches—yellowish brown silty clay loam
21 to 27 inches—variegated yellowish brown, light brownish gray, red, and dark brown silty clay loam
27 to 33 inches—light brownish gray silty clay loam
33 to 56 inches—grayish brown clay
56 to 74 inches—light brownish gray clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 2 to 3 feet
Flooding: None
Runoff: Medium
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Sawyer and similar soils: 79 to 91 percent
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Eastwood and Malbis soils
- Eastwood soils are in higher positions than the Sawyer soil and have a subsoil that is clayey throughout
- Malbis soils are in higher positions than the Sawyer soil and are loamy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Cotton, corn, grain sorghum, soybeans, wheat, and some garden crops
Management concerns:
- Erosion hazard
- Low fertility

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content; however, excessive cultivation can result in the formation of a tillage pan; this pan can be broken by subsoiling when dry
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical

- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion and keep the pasture in good condition
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w8
Site index/ordinating species: 94—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, longleaf pine, and slash pine
Suitability: Well suited
Management concerns:
- Moderate plant competition

Management measures:
- Limiting harvesting operations to drier periods causes less soil compaction when heavy equipment is used
- Careful site preparation and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Wetness
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design can help to minimize the hazard of foundation cracking due to shrink-swell
- Drainage may be needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength

Corrective measures:
- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Wetness
- Percs slowly

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Topsoil may need to be added to reduce the number of small stones in the surface layer
- Surface drains and landscaping are needed to remove excess water quickly

SpC—Spurger very fine sandy loam, 1 to 5 percent slopes

Setting

Landform: Terraces
Landform position: Broad, convex ridges
Distinctive landform features: Slopes generally are smooth
Shape of areas: Irregular
Size of areas: 20 to 250 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown very fine sandy loam

Subsurface layer:
3 to 6 inches—brown very fine sandy loam

Subsoil:
6 to 22 inches—red clay
22 to 39 inches—dark red clay
39 to 57 inches—variegated yellowish red, grayish brown, and dark red clay
57 to 69 inches—yellowish red sandy clay loam

Substratum:
69 to 81 inches—strong brown very fine sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Apparent at 5 to 6 feet
Flooding: None
Runoff: Slow
Permeability class: Slow
Available water capacity: Moderate to high
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Spurger and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Cahaba, Guyton, Hainesville, and areas of soils with slopes that are more than 5 percent
- Cahaba soils are in positions similar to those of the Spurger soil and are loamy throughout the subsoil
- Hainesville soils are in positions similar to those of the Spurger soil and are sandy throughout the profile
- Guyton soils are on flood plains and flats and in depressional areas on terraces, are poorly drained, and are loamy and grayish throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Erosion hazard
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable and easy to keep in good tilth
- Shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, arrowleaf clover, and vetch
Management concerns:
- Erosion hazard
- Wetness
- Low fertility

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c2
Site index/ordinating species: 101—loblolly pine
Adapted trees: Loblolly pine, slash pine, shortleaf pine, sweetgum, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Prescribed burning every three years and rotated among several small tracts of land can improve the amount of palatable browse for deer and seed-producing plants for quail and turkey

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Percs slowly
- Wetness

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Moderate
Limitations:
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design are needed to help minimize the hazard of foundation cracking due to shrink-swell

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength

Corrective measures:
- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- A wide variety of lawn and landscaping plants generally can be used
- Standard techniques for establishing and maintaining lawns generally are adequate

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove rain water quickly

Playgrounds

Limitation rating: Moderate
Limitations:
- Percs slowly
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Surface drains and landscaping may be needed to remove rain water quickly

TrC—Trep loamy fine sand, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Convex ridgetops
Distinctive landform features: Slopes generally are smooth
Shape of areas: Irregular
Size of areas: 10 to 250 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown loamy fine sand

Subsurface layer:
8 to 25 inches—brown loamy fine sand

Subsoil:
25 to 39 inches—yellowish brown sandy clay loam
39 to 58 inches—variegated light brownish gray and yellowish brown sandy clay loam
58 to 73 inches—variegated light brownish gray and red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 3.5 to 5 feet
Flooding: None
Runoff: Slow
Permeability class: Moderately slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Trep and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Bowie, Briley, and small areas of soils similar to the Trep soil that are red or yellowish red in the upper part of the subsoil
- Bowie soils are at a lower elevation than the Trep soil and are loamy throughout the profile
- Briley soils are in positions similar to those of the Trep soil and have a redder subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVe
Suitability: Poorly suited
Adapted crops: Cotton, corn, soybeans, watermelons, and other vegetable crops
Management concerns:
- Erosion hazard
- Droughtiness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is friable, easy to keep in good tilth, and can be cultivated over a wide range of moisture content
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Droughtiness
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, slash pine, and shortleaf pine
Suitability: Moderately well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The low to moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed

- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness
- Natural regeneration may be preferable on the driest sites

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife
- Small clearcuts in irregular shapes provide maximum edge for deer
- Where the forest borders pastures or cropland, field borders should be planted with shrubs or annual game-food mixtures to provide food and cover for wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Moderate
Limitations:
- Slope
- Too sandy

Corrective measures:
- Playgrounds should be constructed on the more level areas
- Loamy topsoil may need to be added to the loose sandy surface to create a firmer playing surface

TRE—Trep loamy fine sand, 5 to 12 percent slopes

Setting

Landform: Uplands
Landform position: Side slopes
Distinctive landform features: Slopes are short and complex
Shape of areas: Irregular
Size of areas: 10 to 150 acres
Slope: Sloping

Typical Profile

Surface layer:
0 to 7 inches—brown loamy fine sand

Subsurface layer:
7 to 22 inches—brown loamy fine sand in the upper part; light yellowish brown loamy fine sand in the lower part

Subsoil:
22 to 81 inches—yellowish brown sandy clay loam in the upper part; brownish yellow sandy clay loam in the middle part; variegated brownish yellow, red, and light brownish gray sandy clay loam in the lower part

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Water table: Perched at 3.5 to 5 feet
Flooding: None
Runoff: Slow
Permeability class: Moderately slow
Available water capacity: Low to moderate
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Trep and similar soils: 85 to 95 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Bowie, Mayhew, and soils with combined surface and subsurface layers that are more than 40 inches thick
- Bowie soils are at a lower elevation than the Trep soil and are loamy throughout
- Mayhew soils are at a lower elevation than the Trep soil and have a clayey subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: VIe
Suitability: Not suited
Adapted crops: Cotton, corn, soybeans, watermelons, and other vegetable crops
Management concerns:
- Slope
- Erosion hazard
- Low fertility
- Droughtiness
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- The less sloping areas can be cropped if soil-conserving practices are used
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth, soil moisture, and organic matter content
- Stubble mulch tillage, farming on the contour, terraces, diversion ditches, grassed waterways, and seeding fall grain or winter pasture crops early can help to reduce topsoil loss due to erosion
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover
Management concerns:
- Low fertility
- Slope
- Droughtiness
- Erosion hazard

Management measures:
- Slope may limit the use of some types of equipment
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing can help to reduce erosion
- Pasture planting or renovation should be done during early spring
- Restricting grazing during droughty periods can help to prevent damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2s2
Site index/ordinating species: 90—loblolly pine
Adapted trees: Loblolly pine, slash pine, and shortleaf pine
Suitability: Moderately well suited
Management concerns:
- Moderate seedling mortality
- Plant competition

Management measures:
- The low to moderate available water capacity generally reduces seedling survival rates in areas where understory plants are numerous
- Careful site preparation and spraying help to reduce plant competition
- Organic matter is conserved by restricting burning and leaving slash well distributed

- Planting in early spring, using larger seedlings, and mulching around seedlings can help to reduce seedling mortality caused by droughtiness
- Natural regeneration may be preferable on the driest sites

Wildlife habitat

Suitability for wetland wildlife: Very poor
Suitability for woodland wildlife: Good
Management measures:
- Planting appropriate vegetation, maintaining existing plant cover, or promoting the natural regeneration of desirable plants can help to improve food and cover for upland wildlife

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard construction and landscaping techniques generally are adequate

Local roads and streets

Limitation rating: Slight
Limitations:
- No significant limitations

Corrective measures:
- Standard road building techniques generally are adequate

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Droughtiness

Corrective measures:
- Lawn and landscaping plants that are tolerant of droughtiness should be used
- A sprinkler system can be installed to help reduce stress to lawn grasses during droughty periods

Recreational Uses

Camp and picnic areas

Limitation rating: Moderate
Limitations:
- Too sandy

Corrective measures:
- Loamy topsoil may need to be added to the loose sandy surface, and a ground cover that is tolerant of heavy foot traffic needs to be established to create a firmer surface

Playgrounds

Limitation rating: Severe
Limitations:
- Slope

Corrective measures:
- Playgrounds should be constructed on the more level areas

UBA—Urbo silty clay, frequently flooded

Setting

Landform: Flood plains
Landform position: Low flats
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 20 to 200 acres
Slope: Level to nearly level

Typical Profile

Surface layer:
0 to 4 inches—brown silty clay
4 to 13 inches—grayish brown silty clay

Subsoil:
13 to 81 inches—grayish brown silty clay

Soil Properties and Qualities

Depth class: Deep
Drainage class: Somewhat poorly drained
Water table: Apparent at 1 foot to 2 feet
Flooding: Frequently flooded
Runoff: Slow
Permeability class: Very slow
Available water capacity: High
Natural soil fertility: Low
Shrink-swell potential: Moderate

Composition

Urbo and similar soils: 79 to 91 percent (areas of included soils generally are larger in this unit than in most other map units, but they were considered similar due to slope limitations)
Dissimilar soils: 9 to 21 percent

Minor Components

Dissimilar soils: Cypress, Guyton, and Hainesville soils
- Cypress soils are in swales and old oxbows and are ponded most of the year
- Guyton soils are in positions similar to those of the Urbo soil, are poorly drained, and are loamy throughout
- Hainesville soils are in higher positions than the Urbo soil and are sandy throughout

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IVw
Suitability: Poorly suited
Adapted crops: Late-planted crops, such as soybeans or grain sorghum
Management concerns:
- Flooding
- Wetness
- Low fertility
- Levels of aluminum in the rooting zone that are potentially toxic to plants

Management measures:
- This soil is difficult to keep in good tilth and can be cultivated only within a narrow range of moisture content
- Large clods that are difficult to break down are formed if the soil is plowed when too wet
- Areas of this soil generally are difficult to drain due to lack of suitable outlets
- Crops will be damaged by flooding in some years unless areas are protected by levees
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility and lower the level of exchangeable aluminum

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Common bermudagrass and bahiagrass
Management concerns:
- Wetness
- Flooding
- Low fertility

Management measures:
- Field ditches are needed to help reduce wetness problems
- Flooding limits the use of the pasture and may damage pasture plants unless areas are protected by levees
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 2w9
Site index/ordinating species: 99—cherrybark oak
Adapted trees: Cherrybark oak, green ash, and sweetgum
Suitability: Moderately well suited
Management concerns:
- Severe equipment limitations
- Severe seedling mortality
- Moderate plant competition

Management measures:
- Machine planting is practical only in dry years
- Levees or other flood-control structures are needed to prevent young trees from being damaged by flooding
- Limiting harvesting operations to drier periods generally is necessary to prevent rutting, compaction, and puddling of the soil, and to reduce equipment use problems
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Fair
Suitability for woodland wildlife: Fair
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Wetland wildlife habitat can be improved by constructing shallow ponds to provide open water areas for waterfowl and furbearers

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Flooding
- Wetness
- Percs slowly

Corrective measures:
- None feasible unless areas are drained and protected from flooding
- An onsite sewage treatment plant or sewage lagoon is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Flooding
- Wetness

Corrective measures:
- Flood-control structures are needed; otherwise, buildings should be constructed on elevated pilings or mounds to elevate the foundation above the level of flooding

Local roads and streets

Limitation rating: Severe
Limitations:
- Low strength
- Flooding

Corrective measures:
- Special road base design and construction techniques generally are needed to compensate for low strength in the subsoil
- Filling with suitable soil materials to build an elevated road base above the level of flooding and installing culverts of adequate size and spacing are needed to keep roads from being inundated and damaged during flood episodes

Lawns, landscaping, and golf fairways

Limitation rating: Severe
Limitations:
- Flooding
- Too clayey

Corrective measures:
- Lawn and landscaping plants that are tolerant of flooding should be used
- Loamy topsoil can be added to the surface to improve tilth and water holding capacity in the rooting zone
- Traffic should be restricted during periods when the topsoil is saturated

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Flooding
- Wetness
- Percs slowly

Corrective measures:
- None feasible

Playgrounds

Limitation rating: Severe
Limitations:
- Too clayey
- Wetness
- Flooding

Corrective measures:
- None feasible unless areas are drained, filled, and protected from flooding

VaC—Vaiden loam, 1 to 5 percent slopes

Setting

Landform: Uplands
Landform position: Broad interstream divides
Distinctive landform features: None
Shape of areas: Irregular
Size of areas: 20 to 100 acres
Slope: Gently sloping to moderately sloping

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown loam

Subsoil:
3 to 8 inches—variegated light olive brown, yellowish brown, yellowish red, and dark grayish brown clay
8 to 20 inches—yellowish brown clay
20 to 34 inches—light olive brown clay

Substratum:
34 to 73 inches—light brownish gray clay

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Water table: Perched at 1 foot to 2 feet
Flooding: None
Runoff: Medium
Permeability class: Very slow

Available water capacity: Moderate
Natural soil fertility: Low
Shrink-swell potential: High

Composition

Vaiden and similar soils: 85 to 95 percent
Dissimilar soils: 5 to 15 percent

Minor Components

Dissimilar soils: Eastwood and Hornbeck soils
- Eastwood soils are in positions similar to those of the Vaiden soil, are acid throughout, and have a subsoil that is reddish in the upper part
- Hornbeck soils are in slightly lower positions than the Vaiden soil and are alkaline and calcareous throughout the subsoil

Land Use

Dominant use: Woodland
Other uses: Pastureland

Cropland

Land capability subclass: IIIe
Suitability: Moderately well suited
Adapted crops: Soybeans, grain sorghum, and corn
Management concerns:
- Low fertility
- Poor tilth
- Wetness
- Erosion hazard

Management measures:
- This soil is difficult to keep in good tilth and can be cultivated only within a narrow range of moisture content
- Large clods that are difficult to break down are formed if the soil is plowed when too wet
- Shallow ditches can help to remove excess surface water more quickly
- Using minimum tillage and returning all crop residue to the soil or regularly adding organic matter can help to improve fertility and maintain tilth and organic matter content
- Liming and fertilizing according to soil tests can help to improve fertility

Pasture and hayland

Suitability: Moderately well suited
Adapted plants: Improved bermudagrass, bahiagrass, and vetch
Management concerns:
- Low fertility
- Seasonal wetness
- Erosion hazard

Management measures:
- Seedbed preparation should be on the contour where practical
- Cross fencing and rotating stock to avoid overgrazing and restricting grazing during wet periods can help to reduce erosion and reduce damage to pasture plants
- Liming and fertilizing according to soil tests can help to improve soil fertility

Woodland

Woodland suitability group: 3c8
Site index/ordinating species: 79—loblolly pine
Adapted trees: Loblolly pine, shortleaf pine, eastern redcedar, and southern red oak
Suitability: Moderately well suited
Management concerns:
- Moderate equipment limitations
- Moderate seedling mortality
- Severe plant competition

Management measures:
- Using standard wheeled or tracked equipment when the soil is wet causes soil rutting and compaction
- Limiting harvesting operations to drier periods causes less damage to the soil and can help to reduce equipment use problems
- Bedding and surface drains can help to reduce seedling mortality caused by wetness
- Careful site preparation, spraying, and controlled burning after the trees are established can help to reduce plant competition
- Logging roads require suitable surfacing for year-round use

Wildlife habitat

Suitability for wetland wildlife: Poor
Suitability for woodland wildlife: Good
Management measures:
- Oak and other mast-producing trees are favored by deer, turkeys, and squirrels and should be preserved where possible
- Small clearcuts in irregular shapes provide maximum edge for deer

Urban Uses

Septic tank absorption fields

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- An onsite sewage treatment plant or sewage lagoon generally is needed to dispose of wastewater properly

Dwellings without basements

Limitation rating: Severe
Limitations:
- Wetness
- Shrink-swell

Corrective measures:
- Backfilling with suitable soil materials and using a reinforced foundation design can help to reduce the hazard of foundation cracking due to shrink-swell
- Surface and subsurface drainage is needed around the foundations of buildings

Local roads and streets

Limitation rating: Severe
Limitations:
- Shrink-swell
- Low strength

Corrective measures:
- Backfilling with suitable soil materials and using special road base design generally are needed to prevent damage to roads and streets due to low strength and shrink-swell in the subsoil

Lawns, landscaping, and golf fairways

Limitation rating: Moderate
Limitations:
- Wetness

Corrective measures:
- Lawn and landscaping plants that are tolerant of occasional wetness should be used
- Surface and subsurface drains can be installed to remove excess water more quickly

Recreational Uses

Camp and picnic areas

Limitation rating: Severe
Limitations:
- Wetness
- Percs slowly

Corrective measures:
- Surface drains and landscaping are needed to remove excess water quickly
- Addition of some fill material may be necessary
- Use of areas should be restricted during wet periods

Playgrounds

Limitation rating: Severe
Limitations:
- Wetness

Corrective measures:
- None feasible unless areas are drained and filled

Prime Farmland

In this section, prime farmland is defined, and the soils in Vernon Parish that are considered prime farmland are listed.

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

Some soils that have a high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. Only those soils are listed, however, that have few limitations and need no additional improvements to qualify as prime farmland.

The soils identified as prime farmland in Vernon Parish are:

AnC—Angie very fine sandy loam, 1 to 5 percent slopes
BaB—Beauregard fine sandy loam, 1 to 3 percent slopes
BnC—Bowie fine sandy loam, 1 to 5 percent slopes
CaA—Caddo silt loam, 0 to 1 percent slopes
CbA—Caddo-Messer complex
ChB—Cahaba fine sandy loam, 1 to 3 percent slopes
DuC—Dubach fine sandy loam, 1 to 5 percent slopes
GeB—Glenmora silt loam, 1 to 3 percent slopes
GtA—Guyton silt loam, 0 to 1 percent slopes
HoC—Hornbeck clay, 1 to 5 percent slopes
KcB—Kirbyville-Niwana complex
KoC—Kolin silt loam, 1 to 5 percent slopes
MaB—Malbis fine sandy loam, 1 to 3 percent slopes
MaC—Malbis fine sandy loam, 3 to 5 percent slopes
RaC—Rayburn fine sandy loam, 1 to 5 percent slopes
RuB—Ruston fine sandy loam, 1 to 3 percent slopes
RuD—Ruston fine sandy loam, 3 to 8 percent slopes
SaC—Sacul fine sandy loam, 1 to 5 percent slopes
SeC—Sawyer very fine sandy loam, 1 to 5 percent slopes
VaC—Vaiden loam, 1 to 5 percent slopes

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 to 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

Charles M. Guillory, conservation agronomist, Natural Resources 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 Natural Resources 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 the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

About 63,198 acres in Vernon Parish was in farms in 1987, according to the United States Census of Agriculture. Of this, about 25,886 acres was used for crops, mainly annual forage and hay crops.

Differences in crop suitability and management needs result from differences in soil characteristics, such as fertility levels, erodibility, organic matter content, availability of water for plant growth, drainage, and the hazard of flooding. Cropping systems and soil tillage are also important parts of management. Each farm has a unique soil pattern; therefore, each has unique management problems. Some principles of farm management, however, apply only to specific soils and certain crops. This section presents the general principles of management that can be widely applied to the soils of Vernon Parish.

Perennial grasses or legumes. Grasses, legumes, or mixtures of these are grown for pasture and hay. In 1987, about 14,028 acres was used for pasture and hay. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume. In addition, many farmers seed small grains or ryegrass in the fall for winter and spring forage. Excess grass in summer is harvested as hay for the winter.

Common and improved bermudagrass and Pensacola bahiagrass are the summer perennials most commonly grown. Improved bermudagrass and Pensacola bahiagrass produce good quality forage. Tall fescue, the main winter perennial grass, grows

well on soils that have a favorable moisture content. All of these grasses respond well to fertilizers, particularly nitrogen.

White clover, crimson clover, vetch, and winter peas are the most commonly grown legumes. These legumes respond well to lime, particularly on acid soils.

The main objectives in the management of tame or improved pasture are to maintain a vigorous stand of palatable forage for livestock feed, to improve the soil, and to control erosion. Management that provides proper grazing, adequate soil fertility, clipping, and weed control helps to meet these objectives.

Proper grazing includes withholding livestock until the plants have a good start in spring, controlling grazing height, rotation grazing, grazing at the best time, and periodic resting. The addition of fertilizer as needed helps to maintain an adequate supply of plant nutrients. Clipping helps to distribute grazing and stimulate even regrowth. Where the stand is thin, controlling weeds by mowing or spraying leaves more moisture and plant nutrients for desirable pasture plants.

Some farmers obtain additional forage by grazing the understory native plants in woodland. About 12,491 acres of woodland is grazed in Vernon Parish. Forage volume varies with the woodland site, the condition of the native forage, and the density of the timber stand. Although most woodland is managed mainly for timber, substantial volumes of forage can be obtained from these areas if properly managed. Stocking rates and grazing periods need to be carefully managed for optimum forage production and to maintain an adequate cover of understory plants to control erosion.

Fertilizing and liming. The soils of the nearly level to hilly uplands and terraces in Vernon Parish are highly leached and weathered. Calcium content is very low to low. The only exceptions are the Hollywood and Vaiden soils, which contain a high level of calcium in the subsoil. Most of the soils contain large quantities of exchangeable aluminum and manganese that are toxic to some plants. The low pH status combined with a low calcium level requires that lime be added to the soils to counteract the excessive levels of aluminum and manganese. The soils of Vernon Parish also need a complete fertilizer for crops to be grown. The amount of fertilizer needed depends on the kind of crop to be grown, on past cropping history, on the level of yield desired, and on the kind of soil. It should be determined on the basis of soil test results. Information and instructions on collecting and testing soil samples can be obtained from the Cooperative Extension Service.

Organic matter content. Organic matter is an important source of nitrogen for crop growth. It also increases the rate of water intake, reduces surface crusting, and helps to maintain tilth. In Vernon Parish, most soils used for crops are low in organic matter content. The level of organic matter can be maintained by leaving plant residue on the surface, by growing crops that produce an extensive root system and an abundance of foliage, by adding barnyard manure, and by growing perennial grasses and legumes in rotation with other crops.

Soil tillage. Because excessive tillage destroys soil structure, soils should be tilled only enough to prepare a seedbed and to control weeds. Conservation tillage and no-till practices help to maintain soil tilth. A compacted layer, generally known as a traffic pan or plow pan, sometimes develops just below the plow layer in loamy soils. This condition can be avoided by not plowing when the soil is wet, by varying the depth of plowing, or by breaking the compacted layer by subsoiling or chiseling. Tillage implements that stir the surface and leave crop residue in place protect the soil from beating rains, thereby helping to control erosion, reduce runoff and surface crusting, and increase infiltration.

Drainage. Some of the soils in Vernon Parish need surface drainage to make them more suitable for crops. A properly designed system of field ditches can remove excess water from seasonally wet soils, such as the Caddo, Guyton, Hainesville, and Merryville soils.

Water for plant growth. The available water capacity of the soils in the parish range from low to high. In many years, sufficient water is not available at the critical time for optimum plant growth unless supplemental water is provided by irrigation. Rainfall is plentiful in winter and spring, and sufficient rain generally falls in summer and autumn of most years to sustain crop growth. During dry periods in summer and autumn, however, most of the soils do not supply sufficient water for optimum plant growth. This rainfall pattern favors the growth of early maturing crops.

Cropping system. A good cropping system includes a legume for nitrogen, a cultivated crop to aid in weed control, a deep-rooted crop to utilize subsoil fertility and maintain subsoil permeability, and a close-growing crop to help maintain organic matter content. The sequence of crops should keep the soil covered as much of the year as possible. A suitable cropping system varies with the needs of the farmer and the characteristics of the soil. Livestock

producers, for example, generally use cropping systems that have higher percentages of pasture and annual forage than the cropping systems used on cash-crop farms. There is very little cash-crop farming in Vernon Parish. Grass and legume cover crops can be grown during fall and winter.

Control of erosion. Soil erosion is a major hazard on soils on the uplands and terraces in Vernon Parish. It is generally not a serious problem on soils of the alluvial plains, mainly because the topography is level or nearly level. Sloping soils, such as Angie, Eastwood, Gore, Kisatchie, and Rayburn soils, are highly susceptible to erosion if left without plant cover for extended periods. If the surface layer is lost through erosion, most of the available plant nutrients and most of the organic matter are also lost. Sheet erosion is common in all fallow-plowed fields. Gullies form easily in areas of the strongly sloping and moderately steep soils. Cropping systems that maintain a plant cover on the soil for extended periods reduce erosion. Conservation tillage, contour farming, stripcropping, terraces, diversions, and grassed waterways help to control erosion on cropland and pastureland. New drainage ditches should be seeded immediately after construction. Installing control structures to drop water to different levels can prevent gullying.

Additional information on erosion control, cropping systems, and drainage practices can be obtained from the local office of the Natural Resources Conservation Service, the Cooperative Extension Service, or the Louisiana Agricultural Experiment Station.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby parishes 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 the table 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 Natural Resources 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 and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

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,* or *s,* 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); and *s* shows that the soil is limited mainly because it is droughty.

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 subclass indicated by *w*.

Woodland Management and Productivity

J. Donald Lawrence, forester, Natural Resources Conservation Service, helped prepare this section.

This section provides information on the relation between trees and their environment, in particular, trees and the soils in which they grow. It includes information on the kind, amount, and condition of woodland resources in Vernon Parish. This section also includes soils interpretations that can be used by owners of woodland, foresters, forest managers, and agricultural workers in planning the use of soils for wood crops.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Climate determines the kinds of trees that can grow on a site. Available water capacity and thickness of the root zone are major influences of tree growth.

Woodland Resources

Vernon Parish has about 762,000 acres of commercial woodland (Thomas and Bylin, 1980). This acreage represents 89 percent of the total land area in the parish. Commercial forest land is defined as land capable of producing crops of industrial wood and not withdrawn from timber use. The ownership of forest land in Vernon Parish is 54 percent forest industry, 19 percent miscellaneous private land, 11 percent national forest, 8 percent miscellaneous public land, 6 percent corporate, and 2 percent private farms.

The Peason Ridge Wildlife Management Area, a 33,488-acre tract of rolling pine hills, is in north-central Vernon Parish, the southeast corner of Sabine Parish, and the southwest corner of Natchitoches Parish. About 18,000 acres is in Vernon Parish. Forest cover of this tract is primarily pine with hardwoods along the stream bottoms. The Lutcher-Moore Wildlife Management Area, which contains about 49,661 acres, is also in Vernon Parish.

Fort Polk, a 198,214-acre U.S. Army military reserve facility, is in central Vernon Parish. The economy of the parish is heavily dependent upon Fort Polk, the forest industry, and the forests in the parish. The Natural Resources Conservation Service and the Calcasieu Soil and Water Conservation District work closely with authorities of Fort Polk to develop and maintain their forest resources.

About 85,300 acres of the Kisatchie National Forest is in Vernon Parish.

The parish is entirely within the Western Coastal Plain Major Land Resource Area (MLRA). Dominant trees in this MLRA are loblolly pine and shortleaf pine with significant acreages in longleaf and slash pine. Associated hardwood trees are sweetgum, red oak, and white oak.

Commercial woodland may be further divided into forest types. Types can be based on tree species, site quality, or age. As used 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 *loblolly-shortleaf pine* forest type makes up about 301,300 acres of the forest land in Vernon Parish. Loblolly pine is usually dominant except on drier sites. Scattered hardwoods, such as sweetgum, blackgum, southern red oak, post oak, white oak, mockernut hickory, and pignut hickory, can be mixed with the pines in the overstory. American beech and ash are associated with this forest type along the streams.

The *longleaf-slash pine* forest type makes up about 187,600 acres of the forest land in the parish. This forest type is one in which 50 percent or more of the stand is longleaf pine or slash pine, either singly or in combination. Common associates are other southern pine, upland oaks, and hickories.

The *oak-pine* forest type makes up about 119,400 acres of the forest land in the parish. The trees that make up this forest type are primarily the result of soil, slope, and aspect. In the higher, drier areas, the hardwood components tend to be the upland oaks, such as blackjack oak, southern red oak, and post oak. In the moist, fertile areas, the hardwood components are white oak, southern red oak, and black oak. Blackgum, winged elm, red maple, and various hickories are associated with this forest type on both of these broad site classifications.

The *oak-hickory* forest type makes up about 85,300 acres of the forest land in the parish. In this forest type, upland oaks or hickory, either singly or in combination, make up a plurality of the stocking. Common associates are elm and maple.

The *oak-gum-cypress* forest type makes up about 68,200 acres of the forest land in Vernon Parish. This forest type is on the bottomlands of major streams. Dominant trees are blackgum, sweetgum, bottomland oak, and baldcypress. Associated trees are black willow, ash, hackberry, maple, and elm.

The marketable timber volume is about 84 percent pine and 16 percent hardwood. About 49 percent of the forest acreage is sawtimber, 20 percent is pole timber, and 23 percent is saplings and seedlings. The remaining 8 percent is classified as "non-stocked areas."

The productivity of forest land is the amount of wood produced per acre per year in cubic feet. In Vernon Parish, about 62,500 acres produces 165 cubic feet or more of wood, about 221,800 acres produces 120 cubic feet, and 11,400 acres produces less than 50 cubic feet.

Most of the upland pine forests are owned by forest industries and the Federal government. These forests are generally well managed. However, small, privately-owned tracts produce well below their potential. Most of these tracts would benefit if stands were improved by thinning out mature trees and undesirable species. Protection from overgrazing, fire, insects, and diseases; tree planting; and timber stand improvement are needed to improve stands.

The Natural Resources Conservation Service, Louisiana Office of Forestry, or the Louisiana Cooperative Extension Service can help determine specific woodland management needs.

Environmental Impact

Woodland is valuable for wildlife habitat, recreation, natural beauty, and conservation of soil and water. The commercial forest land of Vernon Parish provides food and shelter for wildlife and offers opportunity for sport and recreation to many users annually. Forest land provides watershed protection, helps to arrest soil erosion and reduce 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 velocity of winds, and lend beauty to the landscape. Trees and forests help filter out airborne dust and other impurities, convert carbon dioxide into oxygen, release moisture to the atmosphere, and provide shade from the sun's hot rays.

Production of Forage in Woodland

The kind and amount of understory vegetation that can be produced in an area is related to the soils, climate, and amount of tree overstory. In many pine stands, cattle grazing can be a compatible secondary use. Grazing is not recommended on hardwood stands. Grasses, legumes, forbs, and many woody browse species in the understory are grazeable and, if properly managed, can supplement a woodland enterprise without damage to the wood crop. In fact, on most pine forest land, grazing is beneficial to the forest land program because it reduces the accumulation of heavy "rough", thus reducing the hazard of wildfires. Grazing also helps to suppress undesirable woody plants.

The success of a combined forest land and livestock program depends primarily on the degree and time of grazing of the forage plants. Intensity of grazing should be gauged toward maintaining adequate cover for soil protection and maintaining or improving the quantity and quality of trees and forage vegetation.

Forage production varies according to the type of forest and the amount of sunlight that reaches the understory vegetation during the growing season. Soils that have about the same potential to produce trees also have similar potential for producing about the same kind and amount of understory vegetation. The plant community on these soils will reproduce itself as long as the environment does not change.

One of the main objectives in good forest grazing management is to keep the forage in excellent or good condition. If this is done, water is conserved, yields are improved, and the soils are protected.

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 6 summarizes this forestry 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.

The table lists the *woodland suitability group* for each soil. The first part of the woodland suitability symbol, a number, indicates the potential productivity of the soils for important trees. The number *1* indicates very high productivity; *2*, high; *3*, moderately high; *4*, moderate; and *5*, low.

The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: *x, w, t, d, c, s, f*, and *r*.

The third part of the symbol, a numeral, indicates the kind of trees for which the soils are best suited and the severity of the hazard or limitation. The numerals *1, 2*, and *3* indicate slight, moderate, and severe limitations, respectively, and suitability for needleleaf trees. The numerals *4, 5*, and *6* indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals *7, 8*, and *9* indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

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, and 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, and 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 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 from 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 best suited 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 periods 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. A moderate or severe rating indicates 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 *volume* 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 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 the site index that was determined at age 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species.

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 7, 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 the table, 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 the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

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 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 that increase the cost of shaping sites or of building access roads and parking areas.

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

Paths and trails for hiking 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.

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. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Rick W. Simmering, biologist, Natural Resources Conservation Service, helped prepare this section.

Vernon Parish is a rural environment rich in wildlife resources. The parish consists of nearly level to moderately steeply sloping uplands dissected by numerous stream bottoms. Uplands are dominated by pine and mixed pine/hardwood forest land with small inclusions of cropland and pastureland. The flood plains of Anacoco Creek, the Calcasieu River, the Sabine River, and other stream bottoms support bottomland hardwood forests.

The major game animals in Vernon Parish are white-tailed deer and eastern wild turkey. Other important game species include bobwhite quail, American woodcock, fox and gray squirrels, and mourning doves. Cottontail and swamp rabbits are also plentiful and provide sport hunting. Wood ducks use the streams and wooded swamps for nesting and wintering habitat. Furbearers in the area include raccoon, gray and red fox, mink, nutria, and beaver. Coyotes are also numerous in the parish.

The American alligator, classified as a threatened species, resides in Vernon Lake, Anacoco Lake, and in perennial streams. The red cockaded woodpecker, an endangered species, colonizes mature stands of longleaf and loblolly pines in the area. This species needs mature pine woodland with an open understory to survive.

There are moderate numbers of turkeys and white-tailed deer in the parish. Deer are at or above the carrying capacity of the available habitat. The turkey population is static, but it could increase if proper habitat management is applied. Much of the land is owned by timber companies and is leased for hunting. Leasing of hunting rights constitutes a substantial source of income for many landowners. About 120,000 acres in the parish is in the Peason Ridge, Fort Polk, and Lutcher-Moore Wildlife Management Areas. These tracts of land are currently being managed for wildlife by the Louisiana Department of Wildlife and Fisheries.

The availability of food or cover is limited on some land because of current management practices. Critical stress periods for deer are late summer and winter. Deer habitat can be improved by implementing sound forestry management practices, such as selective thinning, prescribed burning, retention of mast-bearing shrubs and hardwoods, and planting food plots. Cooperative efforts of landowners to improve habitat and properly harvest deer can improve the quality and increase the number of animals in the herd.

Turkeys require open mature stands of woods, a daily supply of water, and access to open fields for optimum habitat. Forestry management designed to create these conditions will help to maintain a high sustainable turkey population.

The bobwhite quail population has declined since the 1950's. The conversion of large acreages of openland to woodland has reduced the quality of habitat for quail. The quail population can be increased by land management practices, such as disking and prescribed burning, to promote the growth of weeds and annual seed-producing crops. Food plots can also be planted to improve quail habitat.

Squirrels are concentrated along stream bottoms where there are oaks and other mast-producing species. Landowners who wish to manage for squirrels can preserve existing hickory, beech, and other hardwoods.

Conservation practices applied by landowners can be adapted to maintain or enhance wildlife habitat on most farms. Pasture and hayland management programs that use plants valuable to both livestock and wildlife can be implemented. Properly managed timberland, pastureland, and cropland can increase land values and income derived from hunting leases.

The Sabine River, Anacoco Creek, and the Calcasieu River support viable fisheries populations. Anacoco Lake, a 2,600-acre impoundment, and Vernon Lake, a 4,600-acre impoundment, are stocked and managed by the Louisiana Department of Wildlife and Fisheries. Hundreds of farm ponds scattered throughout the parish are stocked and managed by private landowners for recreational fishing. Common species include largemouth bass; bluegill; red sunfish; white and black crappie; channel, blue, and flathead catfish; freshwater drum; and buffalo.

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 8, 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, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and soybeans.

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, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bermudagrass, bahiagrass, 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 flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goatweed (woolly croton), 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, sweetgum, hawthorn, dogwood, hickory, blackberry, and sycamore. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are persimmon, sumac, 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, yaupon, American beautyberry, and American elder.

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, and slope. Examples of wetland plants are smartweed, saltgrass, cordgrass, 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, slope, and permeability. Examples of shallow water areas are swamps, 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, mourning dove, 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. Ratings are given for 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 kinds 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 9 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 graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm, dense layer; 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, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, 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, depth to a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell 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, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 10 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.

The table also shows the suitability of the soils for use as daily cover for landfill. 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, and flooding affect absorption of the effluent.

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.

The table 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, flooding, 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 and bedrock can cause construction problems.

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 the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, depth to a water table, slope, and flooding affect both types of landfill. Texture and soil reaction affect trench 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 sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the 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 11 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 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, 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 or slopes of 15 to 25 percent. 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, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, 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 slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, 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 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 12 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. 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, terraces and diversions, and grassed waterways.

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

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

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth 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 organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to

bedrock or to 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; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, 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 exchangeable aluminum. 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 depth to bedrock. The performance of a system is affected by the depth of the root zone.

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

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness, slope, and depth to bedrock affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, 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 to 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 13 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 the heading "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 (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

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

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

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

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 are generally 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 14 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 $^1/_3$-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 and septic tank absorption fields.

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 classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6

percent. *Very high*, more 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 the table, 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 15 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 a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary 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.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency 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 a 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. 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 floods are most likely to occur 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 little or no horizon development.

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 estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in the table 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 the table.

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.

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

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. 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

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This section contains information on both the environmental factors and the physical and chemical properties of the soils that affect their potential for crop production. It also lists the analytical methods that were used to determine the chemical properties of the sampled soils.

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:
- Intensity factor. This describes the concentration of a nutrient ion in soil solution. Since plant roots absorb nutrients directly from soil solution, this factor quantifies the amount of a nutrient element immediately available for uptake.
- Quantity factor. This describes the concentration of a nutrient ion absorbed or held in exchangeable form on the solid phase of the soil. This form of nutrient ion also is available for plant intake.
- Quantity/Intensity Relationship Factor. This describes the relationship between the quantity and

intensity factors and is sometimes called the buffer power. As the plant root absorbs nutrients from soil solution, the concentration in solution is replenished by ions from the solid phase. If two soils have identical intensity factors, the soil with the greater quantity factor will provide more nutrients during the growing season, since it will be able to maintain the intensity factor level for a longer period.
• Replenishment factor. This describes the rate of replenishment of the available supply of nutrients in the solid and solution phases 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 attempt to measure the available supply of one or more nutrients in the plow layer. The available supply consists of nutrients characterized by both the intensity and quantity factors. Where crop production is clearly limited by 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 Analysis 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 16. More detailed information on chemical analysis of soils is available (Adams, 1984; Black, 1968; Bray and Kuntz, 1945; Brupbacker and others, 1970; Khasawneh, Sample, and Kamprath, 1980; Kilmer, Younts, and Brady, 1968; Mehlich, 1953; Munson, 1985; Olsen, Cole, Watanake, and Dean, 1954; Stevenson, 1982a and 1982b; USDA, 1984; Walsh and Beaton, 1973). The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1984).

Reaction (pH)—1:1 soil/water solution (8Cla).
Organic matter—acid-dichromate oxidation (6A1a).
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 (602), potassium (6Q2), sodium (6P2).
Exchangeable aluminum and hydrogen—1 molar potassium chloride (6G2).
Total acidity—pH 8.2, barium chloride-triethanolamine (6H1a).
Effective cation-exchange capacity—sum of bases plus exchangeable aluminum and hydrogen (5A3b).
Sum cation-exchange capacity—sum of bases plus total acidity (5A3a).
Base saturation—sum of cations/sum cation-exchange capacity (5C3).
Exchangeable sodium percentage—exchangeable sodium/sum cation-exchange capacity.
Aluminum saturation—exchangeable aluminum/ effective cation-exchange capacity.

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. None of the soils in Vernon Parish are in this group.

The second type includes soils that have relatively low levels of available nutrients in the surface layer, but generally have increasing levels with depth through the soil profile. These soils have relatively fertile parent material but are older soils that have been subjected either 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 crop roots are able to penetrate to the more fertile subsoil as the growing season progresses. The majority of the soils in Vernon Parish are in this group.

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 a result of fertilization in agricultural soils or biocycling in undisturbed soils. Soils such as the Dubach soils are in this group.

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. Neither fertilization nor biocycling has contributed to nutrient levels in the surface layer of these soils. The Betis, Boykin, and Trep soils are in this group.

Soil reaction and acidity, organic matter content, sodium content, and cation-exchange capacity also can provide evidence of the general nutrient distribution patterns in soils. Distribution patterns 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 of high plant demand. In most cases, nitrogen fertilizer recommendations are based on the nitrogen requirement of the crop, rather than nitrogen soil test levels, because no reliable nitrogen soil tests have been developed for Louisiana soils.

Information on the nitrogen fertility status of a soil can be obtained by measuring several soil nitrogen parameters. These include the amount of readily available ammonium and nitrate nitrogen in the soil, the amount of organic nitrogen, the rate of mineralization of organic nitrogen to available forms of inorganic nitrogen, and the rate of conversion of fixed ammonium nitrogen to available forms of nitrogen. Unfortunately, since the amounts and rates of transformation of the various forms of nitrogen in the soils of Vernon Parish have not been determined, no assessment of the nitrogen fertility status for these soils can be given. However, fertilizer nitrogen recommendations obtained from the Louisiana Cooperative Extension Service may be used to determine application rates.

Phosphorus. Phosphorus exists in soils as inorganic phosphorus in soil solution; 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. Soil solution concentrations of phosphorus are generally low. Since plant roots obtain almost all phosphorus from the soil solution, phosphorus uptake depends on the ability of the soil solid phase phosphorus to maintain phosphorus concentration in soil solution. Soil test procedures generally attempt to measure soil solution phosphorus, plus the readily available solid phase phosphorus that buffers the solution phase concentration.

The Bray 2 (Bray and Kuntz, 1945) extractant tends to extract more phosphorus than the commonly used Bray 1 (Bray and Kuntz, 1945), Mehlich 1 (Mehlich, 1953), and Olsen (Olsen, Cole, Watanake, and Dean, 1954) extractants. The Bray 2 extractant provides an estimate of both the readily available and slowly available supply of phosphorus in soils. The Bray 2 extractable phosphorus content of most of the soils in Vernon Parish is uniformly low throughout the soil profile except where addition of fertilizer phosphorus has raised the level of extractable phosphorus in the surface layer. These low levels of available phosphorus are a limiting factor in crop production. Continual addition of fertilizer phosphorus to such soils is needed to build up and maintain adequate levels of available phosphorus for sustained crop production.

Potassium. Potassium exists in four major forms in soils. These are soil solution potassium,

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 must be converted to exchangeable potassium through weathering reactions.

The content of exchangeable potassium in soils is an estimate of the supply available to plants. The available supply of potassium in the soils in Vernon Parish is very low or low throughout the soil profile, but it can increase slightly with depth as the clay content increases as it does, for example, in the Beauregard, Dubach, Ruston, and Sawyer soils. Low exchangeable potassium levels indicate a general lack of micaceous minerals, which are a source of exchangeable potassium during weathering. A few of the soils, such as Corrigan, Gore, and Rayburn, have a low available supply in the surface layer and a medium or high supply in the subsoil.

Crops respond to fertilizer potassium if exchangeable potassium levels are very low or low. Low levels gradually can be built up 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. The soils in Vernon Parish that have a sandier texture, such as Briley, Boykin, and Trep soils, do not have a sufficient amount of clay to hold the potassium; therefore, they do not have a sufficiently high cation-exchange capacity to maintain adequate quantities of available potassium for sustained crop production. More frequent additions of potassium are needed to balance losses of potassium by leaching in these soils.

Magnesium. Magnesium exists in soil solution, as exchangeable magnesium associated with negatively charged sites on clay mineral surfaces, and as structural magnesium in mineral crystal lattices. Solution and exchangeable magnesium generally are readily available for plant uptake, whereas structural magnesium must be converted to exchangeable magnesium during mineral weathering reactions.

According to soil test interpretation guidelines, the exchangeable magnesium content of the soils in Vernon Parish is low, medium, or high, depending upon soil texture. Low exchangeable magnesium levels are found throughout most of the soil profile in such soils as Betis, Iuka, and Osier soils. The Sacul soils have low levels in the upper part of the profile and medium or high levels in the lower part. Variable levels throughout the profile are evident in the Briley soils, and medium to high levels are found throughout the soil profile in the Gore and Mayhew soils. Higher levels of exchangeable magnesium in certain soil horizons are generally associated with higher clay content in those horizons.

The levels of exchangeable magnesium in most of the soils in Vernon Parish are more than adequate for crop production, especially where the plant roots can exploit the high levels found 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 solution, 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 intake while structural calcium is not.

Calcium deficiencies in plants are extremely rare. Calcium is normally added to soils from liming materials used to correct problems associated with soil acidity.

Some soils in Vernon Parish, such as Corrigan, Hornbeck, and Mayhew soils, have low levels in the upper part of the profile and medium or high levels in the lower part. Still other soils, such as Boykin, Briley, Dubach, and Kolin soils, have variable levels throughout the soil profile. The higher levels of exchangeable calcium in the surface layer are normally associated with a higher soil reaction than in the subsoil and are probably the result of applications of lime to control soil acidity. Higher exchangeable calcium levels in the subsoil than in the surface layer generally are associated with a higher clay content in the subsoil. A few soils, such as Hornbeck soils, have free calcium carbonate. It originates either from translocation within the profile or as a secondary deposit directly above the water table.

Calcium is normally the most abundant exchangeable cation in soils; however, the exchangeable magnesium levels in the subsoil of the Beauregard, Gore, kolin, Rayburn, Sacul, and Sawyer soils are greater than the exchangeable calcium levels. In the other soils in the parish, exchangeable calcium levels are greater than, or about the same as, the exchangeable magnesium levels.

Organic matter. The organic matter content of a soil greatly influences other soil properties. High

organic matter content in mineral soils is desirable, while low organic matter content can lead to many problems. Increasing the organic matter content can greatly improve the soil's structure, drainage, and other physical properties. It can also increase the moisture-holding capacity, cation-exchange capacity, and nitrogen content.

Increasing the organic matter content is very difficult, because organic matter is continually subject to microbial degradation. This is especially true in Louisiana where higher soil temperatures and water content increase microbial activity. The rate of organic matter degradation in native plant communities is balanced by the rate of input of fresh material. Disruption of this natural process can lead to a decline in the organic matter content of the soil. Unsound management practices lead to a further decrease in organic matter content.

If no degradation of organic matter occurs, 10 tons of organic matter addition will raise the organic matter content in the upper 6 inches of soil by just 1 percent. Since breakdown of organic matter does occur in the soil, addition of large amounts of organic matter to the soil are needed over a period of several decades to produce a small increase in the organic matter content. Conservation tillage and use of cover crops slowly increase the organic matter content over time, or at least prevent further declines.

The organic matter content of most of the soils of Vernon Parish is low. It decreases sharply with depth because fresh inputs of organic matter are confined to the surface layer. These low levels reflect the high rate of organic matter degradation, erosion, and use of cultural practices that make maintenance of organic matter at higher levels difficult.

Sodium. Sodium exists in soil solution, as exchangeable sodium associated with negatively charged sites on clay mineral surfaces, and as structural sodium in mineral crystal lattices. Because sodium is readily soluble and is generally not strongly retained by soils, well drained soils subjected to moderate or high rainfall do not normally have significant amounts of sodium. Soils in low rainfall environments, soils that have restricted drainage in the subsoil, and soils of the coastal marsh may have significant amounts of sodium. High levels of exchangeable sodium in soils are associated with undesirable physical properties, such as poor structure, slow permeability, and restricted drainage.

Although some soils in Vernon Parish have more exchangeable sodium than exchangeable potassium, none of the soils has excessive levels of exchangeable sodium. Elevated exchangeable sodium levels are at depth in some soils, such as the Gore and Guyton soils. Higher than normal levels of exchangeable sodium in the soils are probably associated with restricted drainage in the subsoil. Levels of exchangeable sodium that make up more than 6 percent of the sum of the effective cation-exchange capacity in the rooting depth of summer annuals can create undesirable physical properties in soils, such as crusting of the surface, dispersion of soil particles, low water infiltration rates, and low hydraulic conductivity.

Exchangeable aluminum and hydrogen, pH, and exchangeable and total acidity. The pH of the soil solution in contact with the soil affects other soil properties. Soil pH is an intensity factor rather than a quantity factor. The lower the pH, the more acidic the soil. Soil pH controls the availability of essential and nonessential elements by controlling mineral solubility, ion exchange, and absorption-desorption reactions at the surfaces of the soil minerals and organic matter. The pH also affects microbial activity.

Aluminum exists in soils as exchangeable monomeric hydrolysis species, nonexchangeable polymeric hydrolysis species, aluminum oxides, and aluminosilicate minerals. Exchangeable aluminum in soils is determined by extraction with neutral salts, such as potassium chloride or barium chloride. The exchangeable aluminum in soils is directly related to pH. If the pH is less than 5.5, the soils have significant amounts of exchangeable aluminum that has a charge of plus 3. The species of aluminum is toxic to plants. The toxic effects of aluminum on plant growth can be alleviated by adding lime to the soil to convert exchangeable aluminum to nonexchangeable polymeric hydrolysis species. High levels of organic matter can also alleviate aluminum toxicity.

Sources of exchangeable hydrogen in soils include hydrolysis of exchangeable and nonexchangeable aluminum and pH-dependent exchange sites on metal oxides, certain layer silicates, and organic matter. Exchangeable hydrogen, as determined by extraction with such neutral salts as potassium chloride, is normally not a major component of soil acidity. Exchangeable hydrogen is not readily replaced by other cations unless accompanied by a neutralization reaction. Most of the neutral salt exchangeable hydrogen in soils apparently comes from aluminum hydrolysis.

Acidity from hydrolysis of neutral salt exchangeable aluminum plus neutral salt exchangeable hydrogen from pH-dependent exchange sites makes up 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 or 8.2, and constitutes the total potential acidity of a soil. 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.

Most soils of Vernon Parish have a low pH, contain significant quantities of exchangeable aluminum, and have high levels of total acidity in many of the soil horizons. Examples are Angie, Beauregard, Eastwood, and Guyton soils. The high levels of exchangeable aluminum are a major limiting factor in crop production. High levels of exchangeable aluminum in the surface layer of the soils can be reduced by adding lime. No economical methods are presently available to neutralize soil acidity at depth. Some reduction of exchangeable aluminum levels at depth can be achieved by applying gypsum so that the calcium leaches through the soil and replaces the exchangeable aluminum.

Cation-exchange capacity. The cation-exchange capacity is a measure of the amount of nutrient and non-nutrient cations a soil can hold in an exchangeable form. The cation-exchange capacity depends on the number of negatively charged sites, both permanent and pH-dependent, present in the soil. Permanent charge cation-exchange sites occur because a net negative charge develops on 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. These include 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 specific 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, pH 7 and 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, which includes calcium, magnesium, potassium, and sodium. Effective cation-exchange capacity is determined by extraction with 1 molar ammonium acetate at pH 7, plus the sum of neutral salt-exchangeable aluminum and hydrogen (exchangeable acidity). The sum cation-exchange capacity is the sum 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 cation.

The pH-dependent charge is a significant source of the cation-exchange capacity in most of the soils in Vernon Parish. Since the pH-exchange cation-exchange capacity increases with pH, cation-exchange capacity of many of the soils can be increased by adding lime. This would result in a greater storage capacity for nutrient cations, such as potassium, magnesium, and calcium.

Physical and Chemical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are given in table 17 and the results of chemical analysis in table 18. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Characterization Laboratory, Louisiana Agricultural Experiment Station.

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 ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1984).

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).
Water retained—pressure extraction, percentage of ovendry weight of less than 2 mm material; 1/3 or 1/10 bar (4B1), 15 bars (4B2).
Bulk density—of less than 2 mm material, saran-coated clods field moist (4A1a), 1/3 bar (4A1d), ovendry (4A1h).
Organic carbon—dichromate, photometric (6A1a).
Extractable cations—ammonium acetate pH 7.0, atomic absorption; calcium (6N2e), magnesium (6O2d), sodium (6P2d), potassium (6Q2b).
Extractable acidity—barium chloride-triethanolamine II (6H2b).
Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).
Base saturation—sum of cations, TEA, pH 8.2 (5C3).
Reaction (pH)—1:1 water dilution (8C1a).
Reaction (pH)—potassium chloride (8C1c).
Reaction (pH)—calcium chloride (8C1e).
Aluminum—potassium chloride extraction (6G9).
Iron—dithionate-citrate extract (6C2b).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1996 and 1999). 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 19 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 Entisol.

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 Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of 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 Fluvaquents (*Fluv*, meaning river, plus *aquent*, the suborder of the Entisols that has an aquic 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 Fluvaquents.

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, smectitic, acid, thermic Typic Fluvaquents.

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. An example is the Cypress series, which is a member of the fine, smectitic, acid, thermic Typic Fluvaquents.

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" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1999) and in "Keys to Soil Taxonomy" (USDA, 1996). 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."

Angie Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine sediments
Slope range: 1 to 5 percent
Taxonomic classification: Clayey, mixed, thermic Aquic Paleudults
Commonly associated soils: Beauregard, Kirbyville, Malbis, and Niwana

- Beauregard, Kirbyville, and Malbis soils are in similar landscape positions as the Angie soil and are loamy throughout
- Niwana soils are on low mounds and are loamy throughout

Typical Pedon

Angie very fine sandy loam, 1 to 5 percent slopes, in woodland; on West Louisiana Experiment Station, 600 feet west of stream and 100 feet south of gravel road; sec. 27, T. 1 S., R. 9 W.; latitude 30 degrees 56 minutes 40 seconds N.; longitude 93 degrees 16 seconds 10 minutes W.; Rosepine Quadrangle, Louisiana.

Ap—0 to 5 inches; very dark gray (10YR 3/1) very fine sandy loam; weak coarse subangular blocky structure parting to weak fine granular; friable; many fine and medium roots; common fine to coarse ironstone pebbles; slightly acid; clear smooth boundary.

E—5 to 10 inches; brown (10YR 5/3) very fine sandy loam; weak coarse subangular blocky structure; friable; common fine and medium roots; many fine and medium ironstone pebbles that are as large as 1/4 inch in diameter; slightly acid; clear smooth boundary.

Bt1—10 to 20 inches; strong brown (7.5YR 5/6) silty clay loam; moderate coarse and medium subangular blocky structure; friable; common fine roots; common fine pores and root channels; few faint clay films on faces of peds; few fine soft red accumulations; few fine ironstone pebbles; moderately acid; gradual wavy boundary.

Bt2—20 to 28 inches; yellowish brown (10YR 5/6) silty clay; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; friable; few fine roots; few fine pores; common fine soft red masses of iron accumulation; few distinct clay films on faces of peds; moderately acid; gradual wavy boundary.

Bt3—28 to 36 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent red (2.5YR 4/8) masses of iron accumulation and few medium distinct grayish brown (10YR 5/2) iron depletions; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; few distinct clay films on faces of peds; red masses of iron accumulation are more brittle than matrix; few fine red accumulations; grayish brown iron depletions are more clayey than matrix; very strongly acid; gradual wavy boundary.

Btg—36 to 48 inches; grayish brown (10YR 5/2) silty clay loam; many coarse prominent red (2.5YR 4/8) distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak coarse subangular blocky structure; firm; few distinct clay films on faces of peds and in channels; very strongly acid; gradual wavy boundary.

BCg—48 to 65 inches; gray (10YR 6/1) silty clay loam; many coarse distinct yellowish brown (10YR 5/6) and common medium and coarse prominent red (2.5YR 4/8) masses of iron accumulation; weak coarse subangular blocky structure; firm; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—65 to 80 inches; gray (10YR 7/1) silty clay loam; many coarse prominent yellowish brown (10YR 5/6) and common coarse prominent dark red (2.5YR 3/6) masses of iron accumulation; massive; sticky, plastic; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 35 to 60 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 10 to 30 inches deep
Other distinctive soil features: None
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A, E, BA, and BE horizons—very strongly acid to slightly acid; Bt, BC, and C horizons—extremely acid to slightly acid

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none to common quartz gravel or ironstone nodules
Thickness—3 to 9 inches

E horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none to common quartz gravel or ironstone nodules
Thickness—3 to 8 inches

BA or BE horizon (where present):
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 through 6
Redoximorphic features—none
Texture—sandy loam, fine sandy loam, or very fine sandy loam
Other features—none to common quartz gravel or ironstone nodules
Thickness—0 to 8 inches

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 through 8; the lower part of the horizon may also have hue of 2.5Y in some pedons
Redoximorphic features—few or common iron depletions in shades of gray are below a depth of 30 inches; common or many iron accumulations in shades of red or yellow are in the lower part of the horizon
Texture—silty clay loam, clay loam, silty clay, or clay
Other features—none to common quartz gravel or ironstone nodules
Thickness—12 to 55 inches

Btg, BCg, and Cg horizons:
Color—variegated in shades of gray, brown, and red; or gray with iron accumulations in shades of brown and red
Redoximorphic features—depleted matrix with common or many iron accumulations in shades of red or brown
Texture—silty clay loam, clay loam, silty clay, or clay
Other features—none to common quartz gravel or ironstone nodules

Beauregard Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-silty, siliceous, thermic Plinthaquic Paleudults
Commonly associated soils: Caddo, Guyton, and Malbis
- Caddo and Guyton soils are in lower positions than the Beauregard soil and are grayish throughout
- Malbis soils are on slightly higher and more convex ridgetops and side slopes than the Beauregard soil and are fine-loamy

Typical Pedon

Beauregard fine sandy loam, 1 to 3 percent slopes (fig. 4), in woodland; 2.8 miles southwest of the intersection of State Highways 28 and 489 in LaCamp on State Highway 489, 3 miles southeast on parish road, 2 miles west on access road, then 100 feet west of the road; $SE^1/_4SE^1/_4$ sec. 5, T. 1 N., R. 5 W.; latitude 31 degrees 05 minutes 05 seconds N.; longitude 92 degrees 53 minutes 52 seconds W.; Fullerton Lake Quadrangle, Louisiana.

A—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many very fine and fine roots; strongly acid; clear smooth boundary.
BA—6 to 11 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.
Bt—11 to 20 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; few fine concretions of iron and manganese; strongly acid; clear wavy boundary.
Btv1—20 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; many fine distinct strong brown (7.5YR 5/8) and few fine prominent yellowish red (5YR 5/8) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; few fine and medium roots; few faint clay films on faces of peds; few fine concretions of iron and manganese; about 6 percent non-indurated plinthite; strongly acid; gradual wavy boundary.
Btgv1—26 to 36 inches; light brownish gray (10YR 6/2) silty clay loam; many fine prominent yellowish red (5YR 5/8) masses of iron accumulation and many fine faint light gray (10YR 7/2) iron depletions; moderate medium subangular blocky structure; firm; few fine roots;

few faint clay films on faces of peds; about 7 percent plinthite nodules; very strongly acid; gradual wavy boundary.

Btgv2—36 to 54 inches; variegated light gray (10YR 7/2) and yellowish brown (10YR 5/6) silty clay loam; strong medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; about 10 percent plinthite nodules; strongly acid.

Btg—54 to 65 inches; light gray (10YR 7/2) silty clay loam; many medium distinct yellowish brown (10YR 5/6) and common medium prominent red (2.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 50 to more than 80 inches
Clay content in the control section: 18 to 32 percent
Redoximorphic features: Iron depletions with chroma of 1 or 2 beginning at 12 to 30 inches deep
Other distinctive soil features: Layers that contain 5 to 30 percent plinthite at 20 to 40 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—strongly acid to slightly acid; underlying horizons—very strongly acid to moderately acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—3 to 7 inches

E horizon (where present):
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
Redoximorphic features—none to common iron accumulations in shades of brown
Texture—very fine sandy loam or silt loam
Other features—none
Thickness—0 to 12 inches

BA and Bt horizons:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 through 6
Redoximorphic features—iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silt loam or silty clay loam
Other features—none

Btv horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 through 6
Redoximorphic features—iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silt loam or silty clay loam
Other features—5 to 30 percent plinthite

Btgv horizon:
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silt loam or silty clay loam
Other features—5 to 30 percent plinthite

Btg horizon and Cg horizon (where present):
Color—variegated in shades of gray, red, and brown
Redoximorphic features—depleted matrix with iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silt loam or silty clay loam
Other features—none

Besner Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Stream terraces
Parent material: Wind reworked alluvium from Pleistocene age loamy stream deposits
Slope range: 0 to 3 percent
Taxonomic classification: Coarse-loamy, siliceous, thermic Glossic Paleudalfs
Commonly associated soils: Guyton, Hainesville, Kirbyville, Merryville, and Spurger

- Guyton, Hainesville, Merryville, and Spurger soils are in lower positions than the Besner soil; Guyton soils are poorly drained and are fine-silty; Hainesville soils are sandy throughout; Merryville soils are poorly drained and are coarse-silty; and Spurger soils have a fine-textured control section
- Kirbyville soils are at a slightly higher elevation than the Besner soil and are fine-loamy

Typical Pedon

Besner fine sandy loam, in an area of Merryville-Besner complex, in woodland; about 0.2 miles south of Almadane Cemetery Road on Highway 111, then 200 feet east into pine forest; $SE^1/_4SW^1/_4$ sec. 4,

T. 2 S., R. 11 W.; latitude 30 degrees 54 minutes 49 seconds N.; longitude 93 degrees 30 minutes 36 seconds W.; Evans Quadrangle, Louisiana.

A—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; loose; many very fine and fine roots; strongly acid; clear wavy boundary.

E—5 to 25 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; loose; common fine and medium roots; moderately acid; clear wavy boundary.

Bt—25 to 43 inches; yellowish brown (10YR 5/6) loam; few fine distinct strong brown (7.5YR 5/8) and few fine faint brown (10YR 5/3) masses of iron accumulation; few fine pores; few faint clay films bridged between sand grains; very strongly acid; clear wavy boundary.

Bt/E1—43 to 60 inches; yellowish brown (10YR 5/6) loam (Bt); few fine prominent yellowish red (5YR 5/6) masses of iron accumulation; few faint clay films bridged between sand grains; common ped coatings of light brownish gray (10YR 6/2) loam (E); very strongly acid; clear wavy boundary.

Bt/E2—60 to 80 inches; yellowish brown (10YR 5/6) loam (Bt); few fine prominent red (2.5YR 4/6) masses of iron accumulation; common ped coatings of grayish brown (2.5Y 5/2) loam (E); few faint clay films bridged between sand grains; very strongly acid.

Range in Characteristics

Solum thickness: More than 80 inches
Clay content in the control section: 8 to 18 percent
Redoximorphic features: Iron accumulations beginning at 20 to 40 inches deep
Other distinctive soil features: Glossic horizon at 20 to 60 inches deep
Concentrated minerals: None
Reaction: Very strongly acid to slightly acid throughout, except where the surface has been limed

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—2 to 6 inches

E horizon:
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sandy loam, very fine sandy loam, or loam
Other features—none
Thickness—combined thickness of the A and E horizons is 20 to 40 inches

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6
Redoximorphic features—few or common iron accumulations in shades of red, yellow, or brown
Texture—fine sandy loam or loam
Other features—up to 5 percent plinthite nodules in some pedons
Thickness—0 to 20 inches

Bt/E horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 (Bt); hue of 10YR, value of 6 or 7, and chroma of 2 or 3 (E)
Redoximorphic features—few to many iron accumulations in shades of red, yellow, or brown
Texture—loam or sandy clay loam (Bt); fine sandy loam or loam (E)
Other features—interfingerings of E material make up 5 to 15 percent of the horizon
Thickness—20 or more inches

Betis Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age sandy marine deposits
Slope range: 1 to 12 percent
Taxonomic classification: Sandy, siliceous, thermic Psammentic Paleudults
Commonly associated soils: Briley and Ruston
- Briley soils are in positions similar to those of the Betis soil and have a loamy subsoil
- Ruston soils are in lower positions than the Betis soil and are fine-loamy

Typical Pedon

Betis loamy fine sand, 1 to 5 percent slopes, in woodland; about 3.4 miles south of Hicks on artillery road, 0.5 mile south on access road, then 50 feet southeast of road; $SE^1/_4SW^1/_4$ sec. 22, T. 2 N., R. 6 W.; latitude 31 degrees 08 minutes

02 seconds N.; longitude 92 degrees 58 minutes 32 seconds W.; LaCamp Quadrangle, Louisiana.

A—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear wavy boundary.

E—9 to 29 inches; brown (10YR 4/3) loamy fine sand; single grained; loose; many fine and medium roots; strongly acid; gradual wavy boundary.

Bw—29 to 44 inches; strong brown (7.5YR 5/6) loamy fine sand; weak medium granular structure; clay bridging on sand grains; very friable; few fine and medium roots; strongly acid; clear smooth boundary.

Bt/E—48 to 70 inches; yellowish red (5YR 5/6) loamy fine sand (Bt); pockets and streaks of very pale brown (10YR 7/3) clean sand grains (E); weak medium granular structure; very friable; few fine and medium roots; sand grains coated with oxides and clay; strongly acid; gradual wavy boundary.

Range in Characteristics

Solum thickness: More than 80 inches
Clay content in the control section: 2 to 10 percent
Redoximorphic features: None within 80 inches deep
Other distinctive soil features: None
Concentrated minerals: None
Reaction: Very strongly acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—4 to 12 inches

E horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sand or loamy fine sand
Other features—none
Thickness—combined thickness of the A and E horizons is 20 to 45 inches

Bw horizon:
Color—hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—fine sand or loamy fine sand
Other features—few to many pockets of clean sand grains
Thickness—12 to 40 inches

Bt/E horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 3 or 4 (E); hue of 5YR to 10YR, value of 5, and chroma of 6 or 8 (Bt)
Redoximorphic features—none
Texture—loamy fine sand or fine sandy loam (Bt); fine sand or loamy fine sand (E)
Other features—lamellae in some pedons; pockets and streaks of clean sand grains (E)

Bienville Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landscape: Coastal plain
Landform: Stream terraces
Parent material: Sandy alluvium from Pleistocene age river and stream deposits
Slope range: 1 to 5 percent
Taxonomic classification: Sandy, siliceous, thermic Psammentic Paleudalfs
Commonly associated soils: Cahaba and Guyton
- Cahaba soils are in positions similar to those of the Bienville soil and are fine-loamy
- Guyton soils are in lower positions on terraces and on flood plains, are poorly drained, and are fine-silty

Typical Pedon

Bienville loamy fine sand, 1 to 5 percent slopes (fig. 5), in woodland; about 2 miles southwest of Dido along Six Miles Creek; $SE^1/_4NW^1/_4$ sec. 17, T. 25 N., R. 5 W.; latitude 30 degrees 52 minutes 56 seconds N.; longitude 92 degrees 54 minutes 14 seconds W.; Pitkin Quadrangle, Louisiana.

A—0 to 5 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; common very fine and fine roots; slightly acid; clear smooth boundary.

E—5 to 15 inches; brown (10YR 5/3) loamy fine sand; many fine faint brown and few medium distinct dark yellowish brown (10YR 4/6) masses of iron accumulation; massive; very friable; common very fine and fine roots; slightly acid; clear wavy boundary.

Bt/E—15 to 32 inches; dark brown (7.5YR 4/4) loamy fine sand (Bt); many coarse distinct brown (10YR 5/3) streaks of uncoated sand (E); weak fine subangular blocky structure; very friable; few

Figure 4.—Profile of Beauregard fine sandy loam.

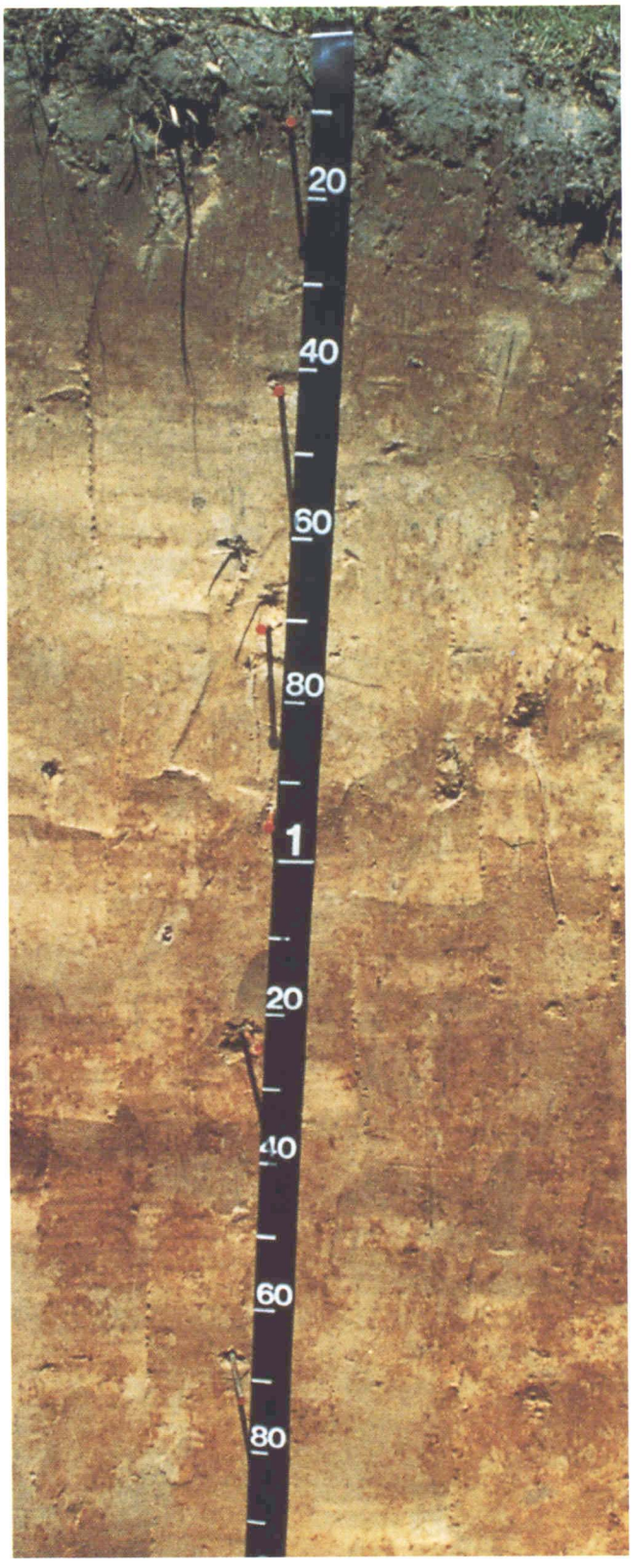

Figure 5.—Profile of Bienville loamy fine sand.

very fine roots; moderately acid; clear wavy boundary.
Bt—32 to 68 inches; strong brown (7.5YR 4/6) loamy fine sand; common fine distinct pale brown (10YR 6/3) clay depletions; weak fine subangular blocky structure; friable; few coarse roots; few faint clay films bridged between sand grains; moderately acid.

Range in Characteristics

Solum thickness: 60 to 80 inches
Clay content in the control section: 2 to 15 percent
Redoximorphic features: Clay depletions in shades of brown or gray beginning at 30 to 60 inches deep
Other distinctive soil features: None
Concentrated minerals: None
Reaction: A, E, and Bt/E horizons—very strongly acid to slightly acid; Bt horizon—very strongly acid to moderately acid

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—4 to 12 inches

E horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 or 4
Redoximorphic features—none
Texture—fine sand or loamy fine sand
Other features—none
Thickness—8 to 30 inches

Bt/E horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 3 or 4 (E); hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6 (Bt)
Redoximorphic features—none
Texture—fine sand or loamy fine sand
Other features—lamellae in some pedons; splotches and pockets of finer textured material (Bt)
Thickness—15 to 30 inches

Bt horizon:
Color—hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 or 6; some pedons have subhorizons with hue of 10YR
Redoximorphic features—clay depletions in shades of brown or gray beginning at 30 to 60 inches deep
Texture—fine sand or loamy fine sand in the upper part; fine sandy loam (lower part)
Other features—few or common clay depletions in shades of brown or gray

Bowie Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Plinthic Paleudults
Commonly associated soils: Briley, Dubach, and Letney
- Briley and Letney soils are in higher positions than the Bowie soil and have sandy surface horizons more than 20 inches thick
- Dubach soils are on lower stream terraces and have no plinthite

Typical Pedon

Bowie fine sandy loam, 1 to 5 percent slopes, in woodland; about 0.3 mile north of West Anacoco Creek and 500 feet west of State Highway 171; $SE^1/_4NE^1/_4$ sec. 27, T. 4 N., R. 10 W.; latitude 32 degrees 18 minutes 07 seconds N.; longitude 93 degrees 22 minutes 16 seconds W.; Dowden Creek Quadrangle, Louisiana.

A—0 to 4 inches; dark grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; strongly acid; clear smooth boundary.
E—4 to 12 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak fine granular structure; very friable; many fine roots; few small pebbles; strongly acid; clear wavy boundary.
Bt1—12 to 16 inches; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; firm; many fine and medium roots; few faint clay films on faces of peds; few medium ironstone fragments; strongly acid; clear wavy boundary.
Bt2—16 to 25 inches; strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; common fine and medium roots; common fine pores; common faint clay films on faces of peds and in pores; common fine

black nodules of iron and manganese oxides; strongly acid; gradual wavy boundary.

Btv1—25 to 41 inches; yellowish brown (10YR 5/6) sandy clay loam; few fine prominent red (2.5YR 4/6) masses of iron accumulation and common fine distinct pale brown (10YR 6/3) iron depletions; moderate medium subangular blocky structure; firm; about 8 percent, by volume, red nodular plinthite; few fine iron and manganese concretions; strongly acid; gradual wavy boundary.

Btv2—41 to 63 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium prominent red (2.5YR 5/6) masses of iron accumulation and common medium distinct grayish brown (10YR 5/2) iron depletions; moderate coarse prismatic structure; firm; few faint clay films on faces of peds; 15 percent plinthite nodules; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: Iron accumulations in shades of yellow, red, or brown and iron depletions in shades of gray beginning at 30 to 60 inches deep
Other distinctive soil features: Layers with more than 5 percent plinthite and brittle peds at 25 to 37 inches deep
Concentrated minerals: None
Reaction: A and E horizons—very strongly acid to slightly acid; subsoil—very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—2 to 6 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
Redoximorphic features—none
Texture—very fine sandy loam or fine sandy loam
Other features—none
Thickness—0 to 12 inches

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—none to many iron accumulations in shades of brown, yellow, or red; none to few iron depletions are below 30 inches deep
Texture—fine sandy loam, clay loam, or sandy clay loam
Other features—up to 4 percent nodular plinthite
Thickness—7 to 30 inches

Btv horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—none to many iron accumulations in shades of brown or red; none to few iron depletions in shades of gray
Texture—fine sandy loam, clay loam, or sandy clay loam
Other features—5 to 15 percent nodular plinthite

Boykin Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age sandy and loamy marine sediments
Slope range: 1 to 8 percent
Taxonomic classification: Loamy, siliceous, thermic Arenic Paleudults
Commonly associated soils: Malbis and Ruston
• Malbis and Ruston soils are in lower positions than the Boykin soil and are loamy throughout

Typical Pedon

Boykin loamy fine sand, 1 to 3 percent slopes, in woodland; about 7 miles east of South Fort Polk, 5.4 miles east of the intersection of Lookout Road and Highway 10 on Lookout Road, 1.4 miles south on U.S. Forest Service Road 405, 0.6 mile east on woods trail, then 100 feet west into woods; NW$^1/_4$SE$^1/_4$ sec. 4, T. 1 S., R. 7 W.; latitude 31 degrees 23 minutes 23 seconds N.; longitude 93 degrees 05 minutes 24 seconds W.; Birds Creek Quadrangle, Louisiana.

A—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many very fine roots; strongly acid; clear wavy boundary.

E—8 to 22 inches; yellowish brown (10YR 5/4) loamy fine sand; weak fine granular structure; very friable; common very fine roots; moderately acid; clear wavy boundary.

Bt1—22 to 33 inches; red (2.5YR 4/8) sandy clay

loam; moderate medium subangular blocky structure; firm; few fine roots; strongly acid; clear smooth boundary.
Bt2—33 to 48 inches; yellowish red (5YR 5/8) sandy clay loam; few fine prominent pale brown (10YR 6/3) strippings; weak medium subangular blocky structure; friable; common fine pores; few faint clay films on faces of peds; strongly acid; clear wavy boundary.
Bt3—48 to 79 inches; red (2.5YR 4/6) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; strongly acid, gradual wavy boundary.
BC—79 to 90 inches; red (2.5YR 4/6) sandy loam; weak fine subangular blocky structure; friable; common fine pebbles; few faint clay films on faces of peds; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 30 percent
Redoximorphic features: None
Other distinctive soil features: Thickness of the sandy epipedon is 20 to 40 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to slightly acid; Bt and BC horizons—very strongly acid to moderately acid

A or Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—4 to 10 inches

E horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—10 to 30 inches

Bt horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—fine sandy loam or sandy clay loam
Other features—relict masses of iron accumulation in shades of red, brown, or yellow
Thickness—20 or more inches

BC horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—sandy loam or sandy clay loam
Other features—relict masses of iron accumulation in shades of brown, red, or yellow

Briley Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age sandy and loamy marine deposits
Slope range: 1 to 12 percent
Taxonomic classification: Loamy, siliceous, thermic Arenic Paleudults
Commonly associated soils: Betis and Ruston
- Betis soils are in positions similar to those of the Briley soil and are sandy throughout
- Ruston soils are in lower positions than the Briley soil and are loamy throughout

Typical Pedon

Briley loamy fine sand, 1 to 5 percent slopes, in woodland; about 4.1 miles east of North Fort Polk on Artillery Road, 1.8 miles north and west on access road, then 50 feet west of road; $NE^1/_4SE^1/_4$ sec. 20, T. 2 N., R. 7 W.; latitude 31 degrees 08 minutes 06 seconds N.; longitude 93 degrees 06 minutes 05 seconds W.; Simpson South Quadrangle, Louisiana.

A—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
E—9 to 23 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; common fine and medium roots; moderately acid; clear wavy boundary.
Bt1—23 to 36 inches; red (2.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable, common fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—36 to 47 inches; yellowish red (5YR 5/6) sandy clay loam; few coarse distinct red (2.5YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common fine roots; common fine pores; common faint clay films on faces of peds; few small pockets of uncoated sands; very strongly acid; gradual wavy boundary.

Bt3—47 to 62 inches; yellowish red (5YR 5/6) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

BC—62 to 77 inches; red (2.5YR 4/8) sandy clay loam; few small pockets of uncoated sand; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 15 to 35 percent
Redoximorphic features: None
Other distinctive soil features: Thickness of the sandy epipedon is 20 to 40 inches deep
Concentrated minerals: None
Reaction: A and E horizons—very strongly acid to slightly acid; BE, Bt, and BC horizons—very strongly acid to moderately acid

A or Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—4 to 14 inches

E horizon:
Color—hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 2 to 4
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—7 to 36 inches

BE horizon (where present):
Color—hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 4 through 8
Redoximorphic features—none
Texture—loamy fine sand or fine sandy loam
Other features—none
Thickness—0 to 7 inches

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—fine sandy loam, sandy clay loam, or loam
Other features—iron accumulations in shades of red, yellow, or brown range from none to common
Thickness—20 or more inches

BC horizon:
Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—fine sandy loam, sandy clay loam, or loam
Other features—iron accumulations in shades of red, yellow, or brown range from none to common

Caddo Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age loamy stream deposits
Slope range: 0 to 1 percent
Taxonomic classification: Fine-silty, siliceous, thermic Typic Glossaqualfs
Commonly associated soils: Beauregard, Guyton, Kirbyville, and Messer

- Beauregard and Kirbyville soils are in higher positions than the Caddo soil and contain more than 5 percent plinthite
- Guyton soils are in lower positions than the Caddo soil and do not contain coarse red or brown iron accumulations
- Messer soils are on small convex mounds and are coarse-silty

Typical Pedon

Caddo silt loam, in an area of Caddo-Messer complex, in woodland; about 3.2 miles northeast of Temple on Highway 8, 0.3 mile east on parish road, then 500 feet north of road into woods; $SE^1/_4SE^1/_4$ sec. 18, T. 4 N., R. 5 W.; latitude 31 degrees 19 minutes 33 seconds N.; longitude 92 degrees 54 minutes 51 seconds W.; Temple Quadrangle, Louisiana.

A—0 to 6 inches; dark grayish brown (10YR 4/2) silt

loam; weak fine subangular blocky structure; friable; many very fine and fine roots; moderately acid; clear wavy boundary.
Eg1—6 to 13 inches; light brownish gray (10YR 6/2) silt loam; few fine faint grayish brown and distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; many very fine roots; common very small pockets of light yellowish brown (10YR 6/4) very fine sand; few fine black stains; moderately acid; clear irregular boundary.
E/Btg—13 to 38 inches; grayish brown (10YR 5/2) silt loam; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common very fine roots; common fine dark brown and black concretions; few faint clay films on faces of peds; tongues of light brownish gray (10YR 6/2) silt loam (E) make up about 55 percent of horizon; strongly acid; clear wavy boundary.
Btg1—38 to 51 inches; light brownish gray (10YR 6/2) silty clay loam; many medium distinct brownish yellow (10YR 6/8) masses of iron accumulation and common fine faint dark grayish brown (10YR 4/2) masses of organic accumulation; moderate medium subangular blocky structure; firm; few very fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.
Btg2—51 to 64 inches; light brownish gray (2.5YR 6/2) silty clay loam; many medium distinct yellowish brown (10YR 5/8) and few medium prominent yellowish red (5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; few dark brown and black concretions; some gleyed areas around root channels; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 2 to 8 inches deep
Other distinctive soil features: Glossic horizon at 15 to 35 inches deep
Concentrated minerals: None
Reaction: A, E, E/Btg, and Btg horizons—very strongly acid to moderately; BCg and Cg horizons—strongly acid to moderately acid

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 1 or 2
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—2 to 8 inches

Eg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
Redoximorphic features—depleted matrix with few or common iron accumulations in shades of brown or yellow
Texture—silt loam
Other features—none
Thickness—combined thickness of the A and E horizons is 15 to 35 inches

E/Btg or Bt/Eg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with few or common iron accumulations in shades of red, brown, or yellow
Texture—silt loam or silty clay loam (Bt); silt loam or very fine sandy loam (E)
Other features—vertical intrusions of E material make up more than 15 percent of the horizon
Thickness—8 to 40 inches

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with common or many iron accumulations in shades of red, brown, or yellow
Texture—silt loam or silty clay loam
Other features—up to 5 percent plinthite nodules are in some pedons
Thickness—5 or more inches

BCg or Cg horizon (where present):
Color—hue of 10YR or 2.5Y, value of 5 or 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with common or many iron accumulations in shades of red, brown, or yellow
Texture—silt loam or silty clay loam
Other features—none

Cahaba Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Stream terraces

Parent material: Loamy and sandy alluvium from Pleistocene age river and stream deposits
Slope range: 1 to 3 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Typic Hapludults
Commonly associated soils: Bienville, Guyton, Hainesville, and Iuka

- Bienville and Hainesville soils are in positions similar to those of the Cahaba soil and have sandy particle-size control sections
- Guyton and Iuka soils are on flood plains; Guyton soils are poorly drained and grayish brown throughout; and Iuka soils are moderately well drained and are coarse-loamy

Typical Pedon

Cahaba fine sandy loam, 1 to 3 percent slopes, in woodland; about 0.5 mile northwest of Mount Moriah Church; SW¼SW¼ sec. 35, T. 2 N., R. 5 W.; latitude 31 degrees 06 minutes 05 seconds N.; longitude 92 degrees 51 minutes 16 seconds W.; Afeman Quadrangle, Louisiana.

A—0 to 7 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary.
A/B—7 to 12 inches; dark grayish brown (10YR 4/2) fine sandy loam (A); yellowish red (5YR 5/8) sandy loam (B); weak fine granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
Bt1—12 to 20 inches; red (2.5YR 4/6) sandy clay loam; weak fine subangular blocky structure; common medium roots; few faint clay films on faces of peds and in pores; few small pockets of clean sand grains; strongly acid; granular wavy boundary.
Bt2—20 to 55 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; few fine and medium roots; few faint clay films on faces of peds; few small pockets of clean sand grains; very strongly acid; clear wavy boundary.
C—55 to 71 inches; strong brown (7.5YR 5/6) loamy sand; common medium distinct yellowish red (5YR 5/6) relict masses of iron accumulation and few medium distinct pale brown (10YR 6/3) relict iron depletions; massive; very friable; few fine roots; very strongly acid.

Range in Characteristics

Solum thickness: 36 to 60 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: None
Other distinctive soil features: Relict iron accumulations and iron depletions at 40 to more than 60 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: Very strongly acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—4 to 8 inches

E horizon (where present):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4; or hue of 7.5YR, value of 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—0 to 8 inches

A/B horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4 (A); hue of 7.5YR or 5YR, value of 5, and chroma of 6 or 8 (B)
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—0 to 8 inches

Bt horizon:
Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—none
Texture—sandy clay loam, loam, or clay loam
Other features—silt content is 20 to 50 percent
Thickness—24 to 56 inches

BC or CB horizon (where present):
Color—strong brown, yellowish red, or red
Redoximorphic features—none
Texture—sandy loam or fine sandy loam
Other features—relict iron accumulations in shades of yellow or brown
Thickness—0 to 20 inches

C horizon:
Color—variegated in shades of brown and red
Redoximorphic features—none
Texture—stratified layers of sand, loamy sand, and sandy loam

Other features—none to common relict iron accumulations in shades of red or brown and relict iron depletions in shades of gray or brown
Thickness—more than 20 inches

Corrigan Series

Depth class: Moderately deep
Drainage class: Moderately well drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Residuum from Tertiary age siltstone or mudstone
Slope range: 1 to 5 percent
Taxonomic classification: Fine, smectitic, thermic Albaquic Hapludalfs
Commonly associated soils: Kisatchie, Letney, Mayhew, and Rayburn

- Kisatchie and Rayburn soils are at a similar elevation as the Corrigan soil; Kisatchie soils are well drained and do not have a seasonal high water table; and Rayburn soils are deep to siltstone
- Letney soils are at a higher elevation than the Corrigan soil and have thick sandy surface and subsurface layers
- Mayhew soils are at a slightly higher elevation than the Corrigan soil and have a solum thicker than 40 inches

Typical Pedon

Corrigan fine sandy loam, 1 to 5 percent slopes, in woodland; about 8 miles southwest of Anacoco, 1 mile east of the intersection of Highway 111 and Highway 392 on Highway 111, 2 miles south on parish road, then 2.6 miles west on timber company road; NE¼SE¼ sec. 3, T. 2 N., R. 11 W.; latitude 31 degrees 10 minutes 31 seconds N.; longitude 93 degrees 28 minutes 25 seconds W.; Little Sandy Creek Quadrangle, Louisiana.

A—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; common fine and many very fine roots; many fine and medium pores; very strongly acid; clear wavy boundary.
E—5 to 8 inches; grayish brown (10YR 5/2) fine sandy loam; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; weak fine subangular blocky structure; friable; common very fine and fine roots; few fine and medium pores; very strongly acid; clear wavy boundary.
Btg1—8 to 14 inches; grayish brown (10YR 5/2) clay; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation and few fine distinct light brownish gray (2.5Y 6/2) iron depletions; moderate medium subangular blocky structure; very firm; common fine and few medium roots; few faint clay films on ped faces; very strongly acid; clear wavy boundary.
Btg2—14 to 22 inches; grayish brown (2.5Y 5/2) clay; few medium prominent yellowish red (5YR 5/6) masses of iron accumulation and common medium faint light brownish gray (2.5Y 6/2) iron depletions; moderate medium subangular blocky structure; very firm; common fine roots; dark yellowish brown (10YR 4/4) silty clay along root channels; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.
BCg—22 to 32 inches; light brownish gray (2.5Y 6/2) silty clay; few fine distinct olive yellow (2.5Y 6/6) and prominent yellowish red (5YR 5/6) masses of iron accumulation; common medium distinct very dark gray (10YR 3/1) masses of organic accumulation; weak medium prismatic structure; firm; common very fine and fine and roots between peds; very strongly acid; gradual wavy boundary.
Cr—32 to 60 inches; pale olive (5Y 6/3) siltstone; strongly acid.

Range in Characteristics

Solum thickness: 20 to 40 inches
Clay content in the control section: 40 to 60 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 3 to 14 inches deep
Other distinctive soil features: Paralithic contact at 20 to 40 inches deep
Concentrated minerals: None
Reaction: A and E horizons—very strongly acid to moderately acid; Btg and BCg horizons—extremely acid to strongly acid; C horizon—extremely acid to moderately acid

A or Ap horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 or 2
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—3 to 7 inches

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3

Redoximorphic features—none to common masses of iron accumulation in shades of yellow or brown
Texture—fine sandy loam
Other features—none
Thickness—0 to 7 inches

Btg horizon (upper part):
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of red, brown, and olive
Texture—clay or silty clay
Other features—none

Btg horizon (lower part) and Bt horizon (where present):
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 4
Redoximorphic features—few to many iron accumulations in shades of red, brown, and olive; common or many iron depletions in shades of gray
Texture—clay or silty clay
Other features—none
Thickness—5 to 35 inches (Btg)

BCg horizon and BC horizon (where present):
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 4
Redoximorphic features—few to many iron accumulations in shades of red, brown, and olive; common or many iron depletions in shades of gray
Texture—clay or silty clay
Other features—none
Thickness—3 to 5 inches

Cr horizon:
Texture—weakly consolidated bentonitic siltstone or mudstone that contains volcanic ash or glass
Other features—none

Cypress Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Flood plains
Parent material: Alluvium from Recent clayey stream deposits
Slope range: 0 to 1 percent
Taxonomic classification: Fine, mixed, acid, thermic Typic Fluvaquents
Commonly associated soils: Guyton and Urbo
- Guyton soils are in slightly higher positions than the Cypress soil and are fine-silty
- Urbo soils are in similar positions on flood plains as the Cypress soil and are not submerged throughout most of the growing season

Typical Pedon

Cypress clay, in woodland; 3 miles northwest of Burr Ferry on the Sabine River, 2.8 miles north of the intersection of Highway 111 and Highway 8 on Highway 111, 3 miles west on parish road, then 400 feet south of road; $SE^1/_4SE^1/_4$ sec. 6, T. 1 N., R. 11 W.; latitude 31 degrees 05 minutes 20 seconds N.; longitude 93 degrees 31 minutes 29 seconds W.; Wiergate Southeast Quadrangle, Louisiana.

Ag—0 to 8 inches; dark grayish brown (10YR 4/2) clay; common medium faint brown (10YR 4/3) masses of iron accumulation; weak fine subangular blocky structure; slightly plastic, sticky; many fine roots; very strongly acid; clear smooth boundary.
Cg1—8 to 22 inches; gray (10YR 5/1) clay; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; massive; slightly plastic, sticky; many fine and medium roots; extremely acid; gradual smooth boundary.
Cg2—22 to 53 inches; gray (10YR 5/1) clay; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; massive; slightly plastic, very sticky; common fine and medium roots; common black stains; extremely acid; gradual smooth boundary.
2Ab—53 to 60 inches; dark gray (10YR 4/1) fine sandy loam; weak fine subangular blocky structure; many fine and medium roots; firm; very strongly acid.

Range in Characteristics

Solum thickness: 5 to 8 inches
Clay content in the control section: 35 to 60 percent
Redoximorphic features: Reduced matrix with iron accumulations at all depths within 80 inches deep
Other distinctive soil features: Loamy discontinuity at 40 to 60 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: Extremely acid or very strongly acid throughout

Ag horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2
Redoximorphic features—depleted matrix with none to common iron accumulations in shades of brown
Texture—clay
Other features—none
Thickness—5 to 8 inches

Cg horizon:
Color—hue of 10YR to 5GY, value of 5 or 6, and chroma of 1 or less
Redoximorphic features—depleted matrix with iron accumulations in shades of brown or olive
Texture—clay, silty clay, silty clay loam, or clay loam
Other features—none
Thickness—32 to 55 inches

2Ab horizon:
Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2
Redoximorphic features—depleted matrix with iron accumulations in shades of brown or olive
Texture—fine sandy loam, loam, or clay loam
Other features—none

The Cypress soils in Vernon Parish are taxadjuncts to the Cypress series because they typically have smectitic minerology. This difference, however, does not significantly affect the use and management of the soils.

Dubach Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landscape: Coastal plain
Landform: Low stream terraces
Parent material: Loamy alluvium from Pleistocene age stream deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Typic Paleudults
Commonly associated soils: Beauregard, Cahaba, and Guyton

- Beauregard soils are in higher landscape positions than the Dubach soil and are fine-silty
- Cahaba soils are in positions similar to those of the Dubach soil and have a reddish subsoil
- Guyton soils are in lower positions than the Dubach soil, are poorly drained, and are grayish throughout

Typical Pedon

Dubach fine sandy loam, 1 to 5 percent slopes, in woodland; about 5 miles west of Cravens, 1 mile south of the intersection of Highway 10 and Marlow Church Road on Marlow Church Road to Drakes Creek, then 50 feet east into woods; $SE^1/_4NW^1/_4$ sec. 29, T. 1 S., R. 7 W.; latitude 30 degrees 56 minutes 55 seconds N.; longitude 93 degrees 06 minutes 39 seconds W.; Sugrue Quadrangle, Louisiana.

A—0 to 6 inches, dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; moderately acid; clear wavy boundary.
E—6 to 14 inches; brown (10YR 5/3) fine sandy loam; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; weak fine granular structure; very friable; few very fine and common fine roots; slightly acid; clear wavy boundary.
E/B—14 to 19 inches; brown (10YR 5/3) loam (E); few medium distinct dark brown (7.5YR 4/4) masses of iron accumulation; weak fine subangular blocky structure; friable; common fine roots; pockets of strong brown (7.5YR 5/6) sandy clay loam (B) make up about 35 percent of horizon; few small dark brown soft masses of iron and manganese oxides; moderately acid; gradual wavy boundary.
Bt1—19 to 32 inches; strong brown (7.5YR 5/6) sandy clay loam; few fine distinct brownish yellowish (10YR 6/6) masses of iron accumulation and many common distinct pale brown (10YR 6/3) iron depletions; weak medium subangular blocky structure; friable; few medium roots; few faint clay films on faces of peds; few small and medium soft dark brown masses of iron and manganese oxides; strongly acid; clear wavy boundary.
Bt2—32 to 44 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) masses of iron accumulation and many medium distinct pale brown (10YR 6/3) iron depletions; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; common medium dark brown concretions; very strongly acid; clear wavy boundary.
Btv—44 to 70 inches; yellowish brown (10YR 5/6) loam; few fine prominent yellowish red (5YR 4/6) masses of iron accumulation and common medium distinct grayish brown (10YR 5/2) iron depletions; weak medium subangular blocky structure; firm; common distinct clay films on

faces of peds; about 3 percent nodules of plinthite; streaks of clean sand on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: More than 80 inches
Clay content in the control section: 18 to 33 percent
Redoximorphic features: Iron depletions in shades of gray with iron accumulations beginning at 25 to 70 inches deep
Other distinctive soil features: Layers with up to 5 percent plinthite at 25 to 70 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to moderately acid; subsoil—very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—4 to 8 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 through 6
Redoximorphic features—none to common iron accumulations in shades of brown
Texture—fine sandy loam
Other features—none
Thickness—0 to 10 inches

E/B horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 through 6 (E); hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 through 8 (B)
Redoximorphic features—none to common iron accumulations in shades of brown
Texture—fine sandy loam or loam (E); loam, sandy clay loam, or clay loam (B)
Other features—none
Thickness—0 to 10 inches

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—none to common iron accumulations in shades of brown or red and iron depletions in shades of brown
Texture—loam, sandy clay loam, or clay loam
Other features—none
Thickness—15 to 65 inches

Btv horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—iron accumulations in shades of brown or red and iron depletions in shades of gray
Texture—loam, sandy clay loam, or clay loam
Other features—up to 5 percent plinthite nodules
Thickness—10 to 55 inches

Eastwood Series

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey deposits
Slope range: 1 to 12 percent
Taxonomic classification: Fine, smectitic, thermic Vertic Hapludalfs
Commonly associated soils: Briley, Hornbeck, Sawyer, and Vaiden

- Briley soils are in higher positions than the Eastwood soil and have thick sandy surface and subsurface layers
- Hornbeck soils are at a lower elevation than the Eastwood soil and have a very dark gray and black surface layer
- Sawyer soils are at a higher elevation than the Eastwood soil and are loamy in the upper part of the subsoil
- Vaiden soils are in positions similar to those of the Eastwood soil and have a very-fine textured particle-size control section

Typical Pedon

Eastwood silt loam, 1 to 5 percent slopes (fig. 6), in woodland; about 10 miles east of Leesville, 1.3 miles south of the intersection of Highway 469 and Highway 28 on Highway 469, 1.1 miles west on woods road, then 600 feet south into woods; NE$^1/_4$SE$^1/_4$ sec. 14, T. 2 N., R. 8 W.; latitude 31 degrees 09 minutes 07 seconds N.; longitude 93 degrees 09 minutes 13 seconds W.; Slagle Quadrangle, Louisiana.

A—0 to 2 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; very friable; many very fine and fine roots; strongly acid; gradual wavy boundary.
E—2 to 4 inches; brown (10YR 5/3) silt loam; few fine prominent yellowish red (5YR 5/8) relict masses of iron accumulation and common fine faint light

brownish gray relict iron depletions; weak medium subangular blocky structure; very friable; many very fine and fine roots; very strongly acid; clear wavy boundary.

Bt—4 to 10 inches; red (2.5YR 4/6) clay; common fine prominent pale brown (10YR 6/3) relict iron depletions; moderate medium subangular blocky structure; very firm; many very fine, common fine, and few coarse roots; few distinct clay films on faces of peds; common black stains along old root channels; very strongly acid; clear wavy boundary.

Btss1—10 to 17 inches; red (2.5YR 4/8) silty clay; common medium prominent light brownish gray (10YR 6/2) and few medium prominent pale brown (10YR 6/3) relict iron depletions; moderate medium subangular blocky structure; very firm; common very fine and fine and few coarse roots; common black stains along old channels; common faint clay films on faces of peds; many fine and medium intersecting slickensides; very strongly acid; gradual wavy boundary.

Btss2—17 to 27 inches; red (2.5YR 4/8) silty clay; many medium prominent light brownish gray (10YR 6/2) and few medium prominent yellowish brown (10YR 5/4) relict iron depletions; moderate medium prismatic structure; very firm; few very fine and fine roots; many fine and medium and common large intersecting slickensides; few faint clay films on faces of peds; extremely acid; gradual wavy boundary.

Btssg3—27 to 45 inches; light brownish gray (10YR 6/2) silty clay; many fine prominent red (2.5YR 4/6), common fine prominent red (10R 4/8), and few medium distinct yellowish brown (10YR 5/6) relict masses of iron accumulation; moderate medium prismatic structure; very firm; few very fine roots; many fine and medium and common large intersecting slickensides; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btssg4—45 to 67 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium prominent red (10R 4/8), common medium distinct yellowish brown (10YR 5/6), and few fine prominent red (2.5YR 4/6) relict masses of iron accumulation; moderate medium angular blocky structure; firm; few very fine roots; few faint clay flows; many medium and common large intersecting slickensides; common black stains along old root channels; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches

Clay content in the control section: 40 to 60 percent

Redoximorphic features: None

Other distinctive soil features: Cracks open 1/2 inch or more wide when dry at 20 or more inches deep; few or common relict iron depletions in shades of gray beginning at 10 to 20 inches deep

Concentrated minerals: High levels of exchangeable aluminum in the root zone

Reaction: A and E horizons—very strongly acid to moderately acid; Bt and upper part of the Btss horizon—extremely acid to strongly acid; lower part of the Btss horizon—extremely acid to slightly acid

A or Ap horizon:

- Color—hue of 10YR, value of 3 or 4, and chroma of 2
- Redoximorphic features—none
- Texture—silt loam
- Other features—none
- Thickness—2 to 5 inches

E horizon:

- Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 or 4
- Redoximorphic features—none
- Texture—silt loam
- Other features—combined thickness of the A and E horizons is 3 to 10 inches
- Thickness—0 to 8 inches

Bt horizon and Btss horizon (upper part):

- Color—hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8
- Redoximorphic features—few or common relict iron accumulations in shades of brown; common relict iron depletions in shades of gray are within the upper 10 inches of the Bt horizon
- Texture—clay or silty clay
- Other features—pressure faces and slickensides (Btss)
- Thickness—10 to 30 inches

Btss horizon (lower part) and Btssg horizon:

- Color—variegated in shades of red, yellow, brown, and gray; or horizon is grayish brown or light brownish gray with iron accumulations in shades of red, brown, and yellow
- Redoximorphic features—relict iron accumulations in shades of red, brown, and yellow and relict iron depletions in shades of gray are common or many
- Texture—clay, silty clay, or silty clay loam
- Other features—pressure faces and slickensides

Glenmora Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from silty Pleistocene age stream deposits
Slope range: 1 to 3 percent
Taxonomic classification: Fine-silty, siliceous, thermic Glossaquic Paleudalfs
Commonly associated soils: Beauregard, Caddo, Guyton, Kirbyville, Malbis, and Niwana

- Beauregard soils are in slightly lower positions than the Glenmora soil and have less than 35 percent base saturation
- Caddo and Guyton soils are in lower positions than the Glenmora soil, are poorly drained, and are gray throughout
- Kirbyville and Malbis soils are in slightly higher positions than the Glenmora soil and are fine-loamy
- Niwana soils are coarse-loamy and are on pimple mounds

Typical Pedon

Glenmora silt loam, 1 to 3 percent slopes, in woodland; 1.5 miles southeast of Dido; SE¼SE¼ sec. 9, T. 2 S., R. 5 W.; latitude 30 degrees 53 minutes 32 seconds N.; longitude 90 degrees 52 minutes 33 seconds W.; Pitkin Quadrangle, Louisiana.

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many very fine and fine roots; few fine pores; strongly acid; clear wavy boundary.

E—4 to 8 inches; brown (10YR 5/3) silt loam; common medium distinct yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) masses of iron accumulation; weak fine subangular blocky structure; friable; many very fine and fine roots; few fine pores; strongly acid; clear wavy boundary.

E/B—8 to 11 inches; brown (10YR 5/3) silt loam (E); common medium faint grayish brown (10YR 5/2) iron depletions; weak medium subangular blocky structure; common fine roots; few medium pores coated with silt; common medium and large pockets of yellowish brown (10YR 5/6) silt loam (B); common fine black stains; very strongly acid; clear irregular boundary.

Bt—11 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; few fine faint brownish yellowish masses of iron accumulation and common medium distinct grayish brown (10YR 5/2) iron depletions; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; few faint clay films on faces of peds; common small dark brown and black concretions; very strongly acid; clear wavy boundary.

Bt/Eg—20 to 38 inches; yellowish brown (10YR 5/6) silty clay loam (Bt); few fine prominent yellowish red (5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few medium roots; few fine pores; few faint clay films on faces of peds; large krotovinas filled with light brownish gray (10YR 6/2) silt loam (E); very strongly acid; clear wavy boundary.

Btv—38 to 65 inches; strong brown (7.5YR 5/6) silty clay loam; common medium prominent light brownish gray (10YR 6/2) and light gray (10YR 7/1) iron depletions; moderate medium subangular blocky structure; firm; few fine pores; small krotovinas; common small dark brown and black concretions; about 2 to 3 percent plinthite; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 6 to 30 inches deep
Other distinctive soil features: Interfingering of albic materials at 10 to 36 inches deep
Concentrated minerals: None
Reaction: Very strongly acid to moderately acid throughout

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—4 to 6 inches

E horizon:
Color—hue of 10YR, value of 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—0 to 6 inches

E/B horizon:
Color—hue of 10YR, value of 5, and chroma of 2 or 3 (E); hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6 (B)

Redoximorphic features—iron and clay depletions in shades of gray and iron accumulations in shades of red or brown
Texture—silt loam (E); silt loam or silty clay loam (B)
Other features—B part is in pockets and make up less than 15 percent of the horizon
Thickness—0 to 6 inches

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6
Redoximorphic features—iron depletions in shades of gray and iron accumulations in shades of red or brown
Texture—silt loam or silty clay loam
Other features—none
Thickness—6 to 16 inches

Bt/Eg horizon:
Color—hue of 10YR, value of 5, and chroma of 1 or 2 (E); hue of 10YR, value of 5 or 6, and chroma of 1 through 8 (Bt)
Redoximorphic features—iron and clay depletions in shades of gray and iron accumulations in shades of red or brown
Texture—silt loam (E); silt loam or silty clay loam (Bt)
Other features—E part is in pockets and streaks and make up less than 15 percent of the horizon
Thickness—4 to 20 inches

Btv horizon and Btvg horizon (where present):
Color—hue of 10YR, value of 5 or 6, and chroma of 1 through 8
Redoximorphic features—iron depletions in shades of gray and iron accumulations in shades of red or brown
Texture—silt loam or silty clay loam
Other features—1 to 5 percent plinthite nodules

Gore Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age clayey stream deposits
Slope range: 1 to 12 percent
Taxonomic classification: Fine, mixed, thermic Vertic Paleudalfs
Commonly associated soils: Beauregard, Kolin, and Malbis

- Beauregard and Malbis soils are at a higher elevation than the Gore soil and are loamy throughout
- Kolin soils are in slightly higher positions than the Gore soil and are fine-silty

Typical Pedon

Gore very fine sandy loam, 1 to 5 percent slopes, in woodland; about 14 miles southeast of Pickering on Highway 10, 2 miles south on gravel road across Tiger Creek, 0.6 mile northeast on Forest Service road, then 150 feet north into woods; $NW^1/_4SW^1/_4$ sec. 32, T. 1 S., R. 7 W.; latitude 30 degrees 56 minutes 02 seconds N.; longitude 93 degrees 06 minutes 41 seconds W.; Sugrue Quadrangle, Louisiana.

A—0 to 2 inches; dark grayish brown (10YR 4/2) very fine sandy loam; weak fine granular structure; friable; many very fine roots; very strongly acid; clear wavy boundary.
E—2 to 4 inches; brown (10YR 5/3) very fine sandy loam; few medium distinct strong brown (7.5YR 5/6) relict masses of iron accumulation and common medium faint light brownish gray (10YR 6/2) relict iron depletions; weak fine subangular blocky structure; firm; many very fine roots; very strongly acid; clear wavy boundary.
Bt—4 to 16 inches; reddish brown (5YR 5/4) clay; many fine distinct red (2.5YR 4/6) and common medium distinct brown (7.5YR 5/4) relict masses of iron accumulation; moderate medium subangular blocky structure; very firm; few very fine and fine roots; common faint clay films on faces of peds; very strongly acid; clear smooth boundary.
Btss1—16 to 22 inches; red (2.5YR 4/6) clay; few fine prominent yellowish brown (10YR 5/4) relict iron depletions; moderate medium subangular blocky structure; very firm; few very fine roots; few small intersecting slickensides; very strongly acid; clear smooth boundary.
Btss2—22 to 39 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; very firm; few very fine roots; many small intersecting slickensides; very strongly acid; clear smooth boundary.
Btss3—39 to 60 inches; red (2.5YR 4/6) clay; few fine distinct yellowish red (5YR 5/6) relict masses of iron accumulation and few fine prominent light brownish gray (10YR 6/2) relict iron depletions; weak prismatic structure parting to moderate medium subangular blocky; very firm; many large

intersecting slickensides; many black stains along root channels and between slickensides; very strongly acid; clear wavy boundary.
C—60 to 87 inches; reddish brown (5YR 5/4) clay; common coarse prominent light olive gray (5Y 6/2) relict iron depletions; weak fine platy structure; very firm; many large intersecting slickensides; few fine roots along faces of slickensides; common small and medium dark brown and black nodules; strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches
Clay content in the control section: 40 to 60 percent
Redoximorphic features: None
Other distinctive soil features: Intersecting slickensides at 10 to 30 inches deep; relict iron depletions in shades of gray and relict iron accumulations throughout
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to moderately acid; Bt, Btss, and BC horizons—very strongly acid to neutral; C horizon—moderately acid to strongly alkaline

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—1 to 5 inches

E horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 to 3
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—0 to 5 inches

Bt horizon:
Color—hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 4 or 6
Redoximorphic features—none
Texture—clay or silty clay
Other features—relict iron accumulations in shades of red or brown
Thickness—8 to 20 inches

Btss horizon and Btssg horizon (where present):
Color—hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 4 or 6; or hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
Redoximorphic features—none
Texture—clay or silty clay
Other features—intersecting slickensides; relict iron accumulations in shades of red or brown and relict iron depletions in shades of gray
Thickness—10 to 50 inches

BC horizon (where present):
Color—variegated in shades of red and gray
Redoximorphic features—none
Texture—clay or silty clay
Other features—relict iron accumulations in shades of red or brown and relict iron depletions in shades of gray
Thickness—0 to 10 inches

C horizon:
Color—variegated in shades of red and gray
Redoximorphic features—none
Texture—clay or silty clay
Other features—relict iron accumulations in shades of red or brown and relict iron depletions in shades of gray

Guyton Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Landscape: Coastal plain
Landform: Low stream terraces and narrow flood plains
Parent material: Silty alluvium from Pleistocene age stream deposits
Slope range: 0 to 1 percent
Taxonomic classification: Fine-silty, siliceous, thermic Typic Glossaqualfs
Commonly associated soils: Beauregard, Bienville, Caddo, Cahaba, Kirbyville, Iuka, and Osier
- All of these soils are in higher positions than the Guyton soil
- Beauregard and Kirbyville soils have more than 5 percent plinthite in the subsoil
- Bienville and Osier soils have a sandy particle-size control section
- Caddo soils have coarse brown and red iron accumulations in the subsoil
- Cahaba soils are fine-loamy
- Iuka soils are coarse-loamy

Typical Pedon

Guyton silt loam, in an area of Guyton-Iuka complex, frequently flooded (fig. 7), in woodland; about 1.5 miles northeast of Highway 10 on Drakes Creek; NE¼NW¼ sec. 13, T. 11 S., R. 8 W.; latitude

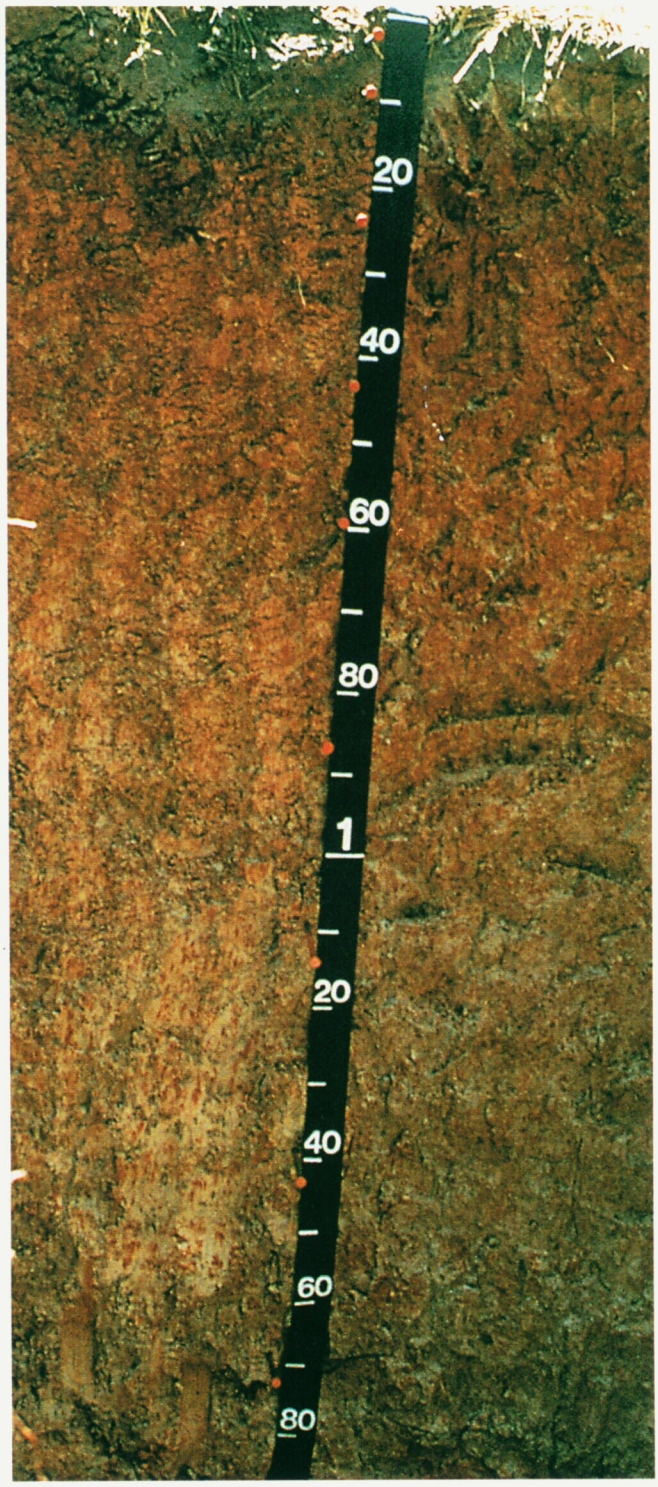

Figure 6.—Profile of Eastwood silt loam.

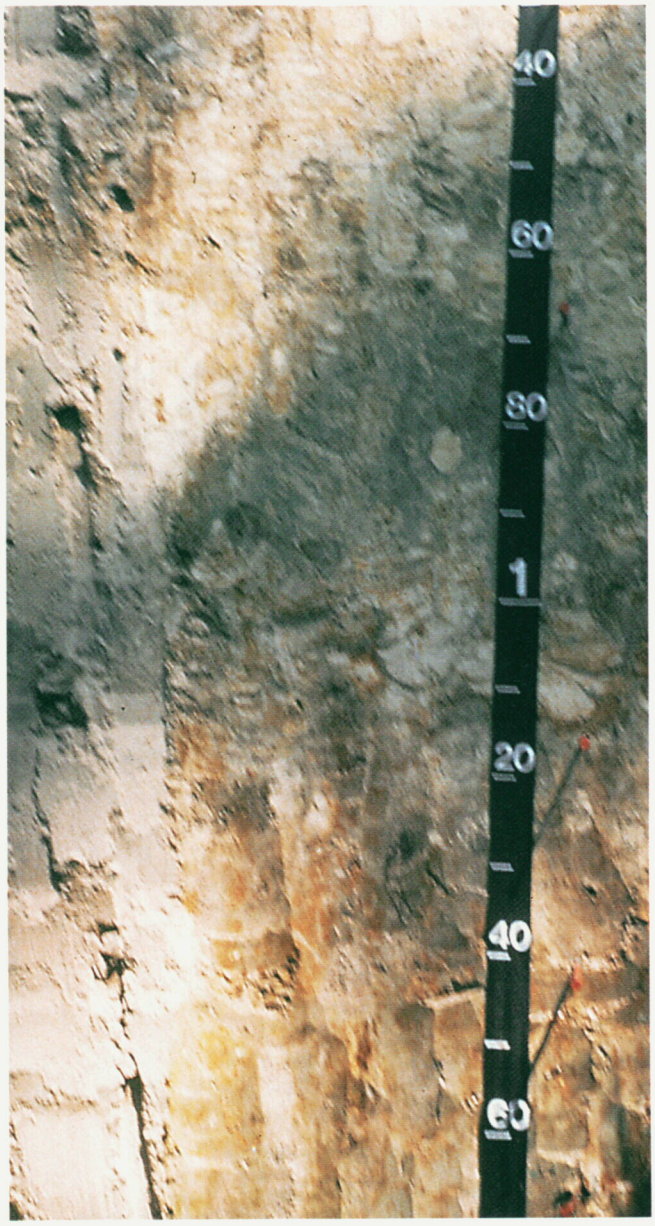

Figure 7.—Profile of Guyton silt loam.

30 degrees 58 minutes 55 seconds N.; longitude 93 degrees 08 minutes 40 seconds W.; Hurricane Branch Quadrangle, Louisiana.

A—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; few fine roots; strongly acid; clear wavy boundary.

Eg1—7 to 13 inches; grayish brown (10YR 5/2) silt loam; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; gradual wavy boundary.

Eg2—13 to 23 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and few fine faint dark grayish brown masses of iron accumulation; weak medium subangular blocky structure; friable; few fine roots; few fine pores; pockets and streaks of light gray (10YR 7/1) silt; very strongly acid; clear irregular boundary.

Bt/Eg—23 to 34 inches; grayish brown (10YR 5/2) silty clay loam (Bt); common medium distinct yellowish brown (10YR 4/4) masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; tongues of light brownish gray (10YR 6/2) silt loam (E) make up about 30 percent of horizon; very strongly acid; clear wavy boundary.

Btg1—34 to 48 inches; grayish brown (10YR 5/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; gleyed areas around root channels; very strongly acid; gradual wavy boundary.

Btg2—48 to 69 inches; light brownish gray (10YR 6/2) silty clay loam; common coarse distinct brown (7.5YR 5/4) masses of iron accumulation; few faint clay films on faces of peds; few fine brown concretions; gleyed areas around root channels; very strongly acid.

Range in Characteristics

Solum thickness: 50 to 80 inches
Clay content in the control section: 20 to 35 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 0 to 6 inches deep
Other distinctive soil features: None
Concentrated minerals: Sodium saturation ranges up to 40 percent below 40 inches
Reaction: A, E, Bt/E Btg, and BCg horizons—extremely acid to moderately acid; Cg horizon—strongly acid to moderately alkaline

A or Ap horizon:
- Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3; where value is 3, thickness is less than 6 inches
- Redoximorphic features—none to few iron accumulations in shades of brown
- Texture—silt loam
- Other features—none
- Thickness—2 to 8 inches

Eg horizon:
- Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2
- Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
- Texture—silt loam
- Other features—none
- Thickness—11 to 27 inches

Bt/Eg horizon:
- Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2 (Bt); hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2 (E)
- Redoximorphic features—few to many iron accumulations in shades of brown and iron depletions in shades of gray
- Texture—silt loam, silty clay loam, or clay loam (Bt); silt loam or very fine sandy loam (E)
- Other features—vertical intrusions or tongues that make up 15 to more than 30 percent of the horizon (E)
- Thickness—8 to 24 inches

Btg horizon:
- Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
- Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
- Texture—silt loam, silty clay loam, or clay loam
- Other features—none
- Thickness—15 to 45 inches

BCg or Cg horizon (where present):
- Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
- Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
- Texture—silt loam, silty clay loam, clay loam, or sandy clay loam
- Other features—none

Hainesville Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age sandy stream deposits
Slope range: 0 to 2 percent
Taxonomic classification: Thermic, coated Argic Quartzipsamments
Commonly associated soils: Cahaba, Guyton, Spurger, and Urbo

- Cahaba and Spurger soils are in higher positions than the Hainesville soil; Cahaba soils are fine-loamy; and Spurger soils have a fine-textured particle-size control section
- Guyton and Urbo soils are on flood plains; Guyton soils are also on terraces and are fine-silty; and Urbo soils have a fine-textured control section

Typical Pedon

Hainesville fine sand, 0 to 2 percent slopes, occasionally flooded, in woodland; about 3.5 miles north of Burr Ferry, 2.5 miles north of the intersection of Highway 111 and Highway 8 on Highway 111, 2.7 miles west on gravel road, then 100 feet south of woods trail; NW1/4NW1/4 sec. 6, T. 1 N., R. 11 W.; latitude 31 degrees 06 minutes 06 seconds N.; longitude 93 degrees 32 minutes 22 seconds W.; Wiergate Southeast Quadrangle, Louisiana.

A—0 to 5 inches; brown (10YR 4/3) fine sand; single grained; very friable; common very fine and fine roots; common fine spots of uncoated sand grains; very strongly acid; clear wavy boundary.
E1—5 to 17 inches; pale brown (10YR 6/3) fine sand; weak medium subangular blocky structure; very friable; few very fine roots; few black stains; strongly acid; clear wavy boundary.
E2—17 to 28 inches; very pale brown (10YR 7/3) fine sand; common medium distinct yellowish brown (10YR 5/6) and few fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; massive; very friable; few very fine roots; strongly acid; clear wavy boundary.
E/Bw—28 to 37 inches; very pale brown (10YR 7/3) fine sand (E); large spots of yellowish brown (10YR 5/6) fine sand (B); few fine distinct strong brown (7.5YR 4/6) masses of iron accumulation and common medium faint pale brown (10YR 6/3) strippings; massive; very friable; few very fine roots; strongly acid; gradual wavy boundary.
Bw/E—37 to 48 inches; yellowish brown (10YR 5/6) fine sand (B); common coarse distinct pale brown (10YR 6/3) spots of uncoated sand (E); common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; weak fine subangular blocky structure; very friable; few very fine roots; strongly acid; clear wavy boundary.
Bw1—48 to 65 inches; strong brown (7.5YR 5/6) fine sand; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and many medium distinct pale brown (10YR 6/3) strippings; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.
Bw2—65 to 83 inches; strong brown (7.5YR 5/8) loamy fine sand; common coarse distinct brown (10YR 5/3) strippings and few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; strongly acid.

Range in Characteristics

Solum thickness: More than 80 inches
Clay content in the control section: 2 to 10 percent
Redoximorphic features: Masses of iron accumulation in shades of brown
Other distinctive soil features: Lamellae with a total thickness up to 6 inches at 40 to 72 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: Very strongly acid to slightly acid throughout

A horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 3 or 4
Redoximorphic features—none
Texture—fine sand
Other features—none
Thickness—3 to 8 inches

E horizon:
Color—hue of 7.5YR or 10YR, value of 6 to 8, and chroma of 3 or 4
Redoximorphic features—none to common masses of iron accumulation in shades of brown
Texture—fine sand
Other features—none
Thickness—0 to 35 inches

E/Bw and Bw/E horizons:
Color—hue of 7.5YR or 10YR, value of 6 to 8, and chroma of 3 or 4 (E); hue of 5YR to 10YR, value of 5 to 7, and chroma of 6 or 8 (Bw)

Redoximorphic features—none to common masses of iron accumulation in shades of brown
Texture—fine sand or loamy fine sand
Other features—none

Bw horizon:
Color—hue of 5YR to 10YR, value of 5 to 7, and chroma of 6 or 8
Redoximorphic features—none to common masses of iron accumulation in shades of brown
Texture—fine sand or loamy fine sand
Other features—lamellae with a cumulative thickness up to 6 inches

Hornbeck Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age clayey, calcareous marine deposits
Slope range: 1 to 8 percent
Taxonomic classification: Fine, smectitic, thermic Aquic Hapluderts
Commonly associated soils: Eastwood and Vaiden
- Eastwood soils are in higher positions than the Hornbeck soil and are acid throughout
- Vaiden soils are in slightly higher positions than the Hornbeck soil and are acid throughout the upper part of the subsoil

Typical Pedon

Hornbeck clay, 1 to 5 percent slopes (fig. 8), in an abandoned field; about 2 miles south of Llano on Highway 171, 0.2 mile west on parish road (beside old drive-in theater), then 200 feet south into a field; $SE^1/_4NE^1/_4$ sec. 10, T. 1 N., R. 9 W.; latitude 31 degrees 05 minutes 01 second N.; longitude 93 degrees 16 minutes 32 seconds W.; New Llano Quadrangle, Louisiana.

A1—0 to 7 inches; very dark gray (10YR 3/1) clay; weak medium subangular blocky structure; firm; many very fine and fine roots; few fine calcium carbonate masses; mildly alkaline; gradual wavy boundary.
A2—7 to 22 inches; black (10YR 2/1) clay; weak medium subangular blocky structure; very firm; many very fine and fine roots; common very fine calcium carbonate concretions; moderately alkaline; abrupt wavy boundary.
Bkss—22 to 35 inches; yellowish brown (10YR 5/4) clay; many medium distinct light brownish gray (10YR 6/2) and few medium distinct dark gray (10YR 4/1) relict iron depletions; common fine faint yellowish brown relict masses of iron accumulation; moderate medium angular blocky structure; very firm; many very fine roots; common small and medium slickensides; many medium and large pockets of calcium carbonate concretions (calcium carbonate equivalent 25 percent); moderately alkaline; gradual wavy boundary.
Bkssg1—35 to 50 inches; light brownish gray (2.5Y 6/2) clay; many fine distinct olive yellow (2.5Y 6/6) relict masses of iron accumulation; moderate coarse angular blocky structure parting to weak medium prismatic; very firm; common very fine roots; many large intersecting slickensides; many large pockets of calcium carbonate concretions (calcium carbonate equivalent 19 percent); moderately alkaline; diffuse wavy boundary.
Bkssg2—50 to 67 inches; variegated light brownish gray (2.5Y 6/2), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) clay; moderate medium angular blocky structure; very firm; few very fine roots; large crawfish hole; many large and common very large slickensides that intersect; common black stains; many medium and large pockets of calcium carbonate concretions (calcium carbonate equivalent 19 percent); moderately alkaline; clear wavy boundary.
Cg—67 to 75 inches; light brownish gray (10YR 6/2) silty clay loam; common medium distinct light yellowish brown (2.5Y 6/4) and olive yellow (2.5Y 6/8) relict masses of iron accumulation; weak medium subangular blocky structure; bedding planes evident in this pedon; firm; large gray (N 5/0) crawfish hole; moderately alkaline.
C2—75 to 86 inches; yellowish brown (10YR 5/8) clay; common fine distinct red (2.5YR 5/6) relict masses of iron accumulation and many coarse distinct light brownish gray (2.5Y 6/2) relict iron depletions; moderate medium angular blocky structure; friable; very thin clay films; moderately alkaline.

Range in Characteristics

Solum thickness: 40 to 60 inches
Clay content in the control section: 40 to 60 percent
Redoximorphic features: None

Other distinctive soil features: Intersecting slickensides and free carbonates at 18 to 25 inches deep; relict iron depletions in shades of gray and relict iron accumulations beginning at 20 to 40 inches deep
Concentrated minerals: None
Reaction: Neutral to moderately alkaline throughout

A1 or Ap horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1
Redoximorphic features—none
Texture—clay
Other features—none
Thickness—3 to 8 inches

A2 horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1
Redoximorphic features—none
Texture—clay or silty clay
Other features—none
Thickness—10 to 21 inches

Bkss horizon (upper part):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4
Redoximorphic features—none
Texture—clay or silty clay
Other features—intersecting slickensides and many calcium carbonate concretions; relict iron depletions in shades of gray and relict iron accumulations in shades of brown, olive, or yellow
Thickness—4 to 21 inches

Bkss horizon (lower part) and Bkssg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4; or horizon is variegated in shades of gray, brown, olive, and yellow
Redoximorphic features—none
Texture—clay or silty clay
Other features—intersecting slickensides and many calcium carbonate concretions; relict iron depletions in shades of gray and relict iron accumulations in shades of brown, olive, or yellow
Thickness—4 to 21 inches

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4; or horizon is variegated in shades of gray, brown, olive, and yellow
Redoximorphic features—none
Texture—silty clay loam, clay, or silty clay
Other features—bedding planes in some pedons; relict iron depletions in shades of gray and relict iron accumulations in shades of brown, olive, or yellow
Thickness—8 to 40 inches

Iuka Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Flood plains
Parent material: Alluvium from Recent loamy stream deposits
Slope range: 0 to 1 percent
Taxonomic classification: Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Commonly associated soils: Cahaba, Guyton, and Osier
- Cahaba and Osier soils are on stream terraces; Cahaba soils are fine-loamy; and Osier soils are sandy throughout
- Guyton soils are in slightly lower positions on flood plains than the Iuka soil, are poorly drained, and are fine-silty

Typical Pedon

Iuka fine sandy loam, in an area of Guyton-Iuka complex, frequently flooded, in woodland; about 5.4 miles north of Fullerton, 2.7 miles north of the intersection of Highway 399 and Lookout Road on access road, 1,600 feet northwest then 2,000 feet south on access road, then 50 feet east of Six Mile Creek; $SE^1/_4SE^1/_4$ sec. 9, T. 1 N., R. 6 W.; latitude 31 degrees 04 minutes 23 seconds N.; longitude 92 degrees 59 minutes 10 seconds W.; Fullerton Lake Quadrangle, Louisiana.

A1—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; extremely acid; clear wavy boundary.
A2—5 to 11 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.
C—11 to 40 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) iron depletions; weak medium subangular blocky structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

Cg1—40 to 56 inches; variegated light brownish gray (10YR 6/2), yellowish brown (10YR 5/4), strong brown (7.5YR 5/6), and pale brown (10YR 6/3) loam; weak medium subangular blocky structure; friable; common fine and medium roots; extremely acid; clear smooth boundary.
Cg2—56 to 60 inches; grayish brown (10YR 5/2) fine sandy loam; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; massive; friable; common fine roots; extremely acid.

Range in Characteristics

Solum thickness: 5 to 12 inches
Clay content in the control section: 5 to 18 percent
Redoximorphic features: Iron depletions with chroma of 2 or less beginning at 5 to 20 inches deep
Other distinctive soil features: Bedding planes and irregular organic carbon distribution at 5 to 80 inches deep
Concentrated minerals: None
Reaction: Extremely acid to strongly acid throughout, except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—5 to 12 inches

C horizon:
Color—hue of 2.5Y to 7.5YR, value of 4 to 6, and chroma of 3 through 6; or hue of 10YR or 7.5YR, value of 4, and chroma of 2
Redoximorphic features—iron depletions with chroma of 2 or less are within 20 inches; iron accumulations are in shades of brown
Texture—fine sandy loam, sandy loam, loam, or silt loam
Other features—bedding planes and irregular organic carbon decrease with depth
Thickness—8 to 30 inches

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2; or horizon is variegated in shades of gray, brown, red, and yellow
Redoximorphic features—depleted matrix with iron accumulations in shades of brown, red, or yellow
Texture—fine sandy loam, sandy loam, loam, or loamy sand
Other features—bedding planes and irregular organic carbon decrease with depth

Kirbyville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age loamy marine sediments
Slope range: 0 to 2 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Commonly associated soils: Caddo, Glenmora, Guyton, Malbis, and Niwana
- Caddo and Guyton soils are in lower positions than the Kirbyville soil, are poorly drained, and are fine-silty; Guyton soils are also on narrow flood plains
- Glenmora, Malbis, and Niwana soils are in higher positions than the Kirbyville soil; Glenmora soils have less than 5 percent plinthite in the subsoil; Malbis soils do not have gray iron depletions within 30 inches of the soil surface; and Niwana soils are on pimple mounds and are coarse-loamy

Typical Pedon

Kirbyville loam, in an area of Kirbyville-Niwana complex, in woodland; about 1 mile south of Drakes Creek; NW¼NW¼ sec. 36, T. 1 S., R. 7 W.; latitude 30 degrees 56 minutes 58 seconds N.; longitude 93 degrees 08 minutes 40 seconds W.; Hurricane Branch Quadrangle, Louisiana.

A—0 to 5 inches; dark grayish brown (10YR 4/2) loam; common medium faint pale brown (10YR 6/3) strippings; weak fine granular structure; friable; many very fine and common fine roots; very strongly acid; clear wavy boundary.
A/E—5 to 9 inches; grayish brown (10YR 5/2) (A) and light yellowish brown (10YR 6/4) (E) loam; weak fine granular structure; friable; many very fine and common fine and medium roots; very strongly acid; clear diffuse boundary.
E—9 to 15 inches; light yellowish brown (10YR 6/4) loam; common medium distinct grayish brown (10YR 5/2) iron depletions; weak fine granular structure; friable; many very fine and few fine roots; very strongly acid; clear wavy boundary.
Btv1—15 to 29 inches; yellowish brown (10YR 5/6) and pale brown (10YR 6/3) loam; many medium prominent red (2.5YR 4/6) and few fine distinct yellowish brown (10YR 5/8) masses of iron accumulation; common fine distinct light brownish gray (10YR 6/2) iron depletions; weak

medium subangular blocky structure; friable; common very fine and few fine roots; few faint clay films on ped faces; 11 percent plinthite; 2 large krotovinas; very strongly acid; gradual wavy boundary.

Btv2—29 to 47 inches; yellowish brown (10YR 5/6) loam; common medium prominent red (2.5YR 4/6) and few fine distinct yellowish brown (10YR 5/8) masses of iron accumulation; many medium distinct light brownish gray (10YR 6/2) iron depletions; weak fine subangular blocky structure; friable; few very fine roots; few faint clay films on faces of peds; 8 percent plinthite; several small krotovinas; common large black stains; many small and medium dark brown rounded concretions; very strongly acid; gradual wavy boundary.

Bt1—47 to 66 inches; light yellowish brown (10YR 6/4) loam; few medium prominent red (2.5YR 4/6) masses of iron accumulation, common medium distinct light brownish gray (10YR 6/2) iron depletions, and many fine faint yellowish brown (10YR 5/4) masses of iron accumulation; weak medium subangular blocky structure parting to weak fine prismatic; few faint clay films on ped faces; many small and medium dark brown round concretions; large krotovinas (10YR 5/3); very strongly acid; clear wavy boundary.

Bt2—66 to 79 inches; yellowish brown (10YR 5/6) loam; common medium prominent red (2.5YR 4/8) and prominent brownish yellow (10YR 6/6) masses of iron accumulation; many medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) iron depletions; weak medium subangular blocky structure parting to weak fine prismatic; friable; few faint clay films on faces of peds; many small and medium dark brown rounded concretions; large krotovinas; 3 percent plinthite; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches

Clay content in the control section: 18 to 30 percent

Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 6 to 25 inches deep

Other distinctive soil features: 5 to 15 percent plinthite nodules at 10 to 30 inches deep

Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone

Reaction: A, A/E, and E horizons—very strongly acid to slightly acid; Btv and Bt horizons—very strongly acid or strongly acid

A or Ap horizon:
- Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3
- Redoximorphic features—none
- Texture—loam
- Other features—none
- Thickness—4 to 8 inches

A/E horizon:
- Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3 (A); hue of 10YR, value of 5 or 6, chroma of 3 through 6 (E)
- Redoximorphic features—none
- Texture—loam
- Other features—lighter colored pockets and streaks (E)
- Thickness—0 to 5 inches

E horizon:
- Color—hue of 10YR, value of 5 to 7, chroma of 3 through 6
- Redoximorphic features—iron accumulations in shades of brown and yellow and clay depletions in shades of gray
- Texture—loam
- Other features—none
- Thickness—6 to 20 inches

Btv horizon and Btv/E horizon (where present):
- Color—hue of 10YR or 7.5YR, value of 5 or 6, chroma of 4 through 8
- Redoximorphic features—few or common iron accumulations in shades of brown, red, or yellow in ped interiors; few or common iron depletions in shades of gray on faces of peds
- Texture—loam or sandy clay loam
- Other features—5 to 15 percent plinthite nodules; E part of the Btv/E horizon consists of tongues or krotovinas and make up 5 to 40 percent of the horizon
- Thickness—more than 25 inches

Bt horizon:
- Color—hue of 10YR or 7.5YR, value of 5 or 6, chroma of 4 through 8
- Redoximorphic features—few or common iron accumulations in shades of brown, red, or yellow in ped interiors; few or common iron depletions in shades of gray on faces of peds
- Texture—loam or sandy clay loam
- Other features—none

Kisatchie Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age clayey marine deposits over siltstone or sandstone
Slope range: 5 to 20 percent
Taxonomic classification: Fine, smectitic, thermic Typic Hapludalfs
Commonly associated soils: Betis, Corrigan, Mayhew, Rayburn, and Trep

- Betis, Corrigan, and Trep soils are at a higher elevation than the Kisatchie soil; Betis and Trep soils have thick sandy surface and subsurface layers; and Corrigan soils have a seasonal high water table
- Mayhew and Rayburn soils are in positions similar to those of the Kisatchie soil; Mayhew soils are clayey throughout the subsoil; and Rayburn soils have a subsoil that is reddish in the upper part

Typical Pedon

Kisatchie fine sandy loam, in an area of Kisatchie-Rayburn fine sandy loams, 5 to 20 percent slopes, in woodland; about 6 miles north of Kurthwood on Highway 117, 8.5 miles southwest on Peason Loop Road, then 50 feet south into woods; NW$^1/_4$SE$^1/_4$ sec. 16, T. 4 N., R. 9 W.; latitude 31 degrees 19 minutes 30 seconds N.; longitude 93 degrees 17 minutes 45 seconds W.; Dowden Creek Quadrangle, Louisiana.

A—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many very fine and fine roots; very strongly acid; clear wavy boundary.
E—3 to 6 inches; grayish brown (10YR 5/2) fine sandy loam; few fine distinct yellowish brown (10YR 5/4) lithochromic mottles; weak fine subangular blocky structure; friable; common very fine roots; few large krotovinas; very strongly acid; clear wavy boundary.
Btg1—6 to 12 inches; grayish brown (10YR 5/2) clay loam; few medium distinct yellowish brown (10YR 5/4) and few fine distinct yellowish brown (10YR 5/6) lithochromic mottles; moderate medium subangular blocky structure; firm; common very fine and fine roots; few faint clay films on faces of peds; common black stains from burnt roots; very strongly acid; clear wavy boundary.
Btg2—12 to 16 inches; grayish brown (10YR 5/2) silty clay; common medium distinct yellowish brown (10YR 5/6) lithochromic mottles; moderate medium subangular blocky structure; very firm; common very fine and fine roots; few faint clay films on faces of peds; common black stains; very strongly acid, clear wavy boundary.
Btg3—16 to 28 inches; grayish brown (2.5Y 5/2) clay loam; common medium prominent yellowish brown (10YR 5/8) lithochromic mottles; moderate medium subangular blocky structure; very firm; few fine roots; few faint clay films on faces of peds; few small sandstone fragments; very strongly acid; clear wavy boundary.
2Cr—28 to 55 inches; pale olive (5Y 6/4) sandstone; dark grayish brown (10YR 4/2) clay between vertical cracks; few fine roots in upper part; extremely acid.

Range in Characteristics

Solum thickness: 20 to 40 inches
Clay content in the control section: 35 to 55 percent
Redoximorphic features: None
Other distinctive soil features: Paralithic contact at 20 to 40 inches deep; lithochromic mottles in shades of gray and brown beginning at 5 to 13 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid or strongly acid; Bt horizon—extremely acid or very strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 2 to 4, and chroma of 1 or 2
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—2 to 7 inches

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—0 to 6 inches

Btg horizon and Bt horizon (where present):
Color—hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 through 6
Redoximorphic features—none
Texture—clay loam, silty clay loam, or silty clay

Other features—few or common small sandstone fragments in the lower part of the horizon; lithochromic mottles in shades of brown and gray
Thickness—9 to 30 inches

2Cr horizon:
Color—variegated in shades of olive, yellow, and brown
Redoximorphic features—none
Texture—weathered sandstone that can be dug with a spade
Other features—none

Kolin Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Stream terraces
Parent material: Alluvium from Pleistocene age loamy over clayey stream deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-silty, siliceous, thermic Haplic Glossudalfs
Commonly associated soils: Beauregard, Gore, and Malbis

- Beauregard soils are in higher positions than the Kolin soil and contain plinthite in the subsoil
- Gore soils are at a slightly lower elevation than the Kolin soil and have a fine-textured particle-size control section
- Malbis soils are in higher positions than the Kolin soil and are fine-loamy

Typical Pedon

Kolin silt loam, 1 to 5 percent slopes, in woodland; about 1 mile west of Leander on Highway 121, 2.5 miles south and east of Boise Cascade access road, then 300 feet north of road; SE$^1/_4$NE$^1/_4$ sec. 26, T. 2 N., R. 5 W.; latitude 31 degrees 07 minutes 18 seconds N.; longitude 92 degrees 50 minutes 55 seconds W.; Afeman Quadrangle, Louisiana.

A—0 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; extremely acid; clear wavy boundary.
E—3 to 6 inches; brown (10YR 5/3) silt loam; common medium faint brown (10YR 4/3) masses of organic accumulation; weak medium subangular blocky structure; friable; many fine and medium roots; very strongly acid; clear smooth boundary.
Bt1—6 to 12 inches; yellowish brown (10YR 5/6) silt loam; few fine prominent reddish yellow (5YR 6/8) and faint yellowish brown masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.
Bt2—12 to 17 inches; yellowish brown (10YR 5/6) silty clay loam; common medium prominent red (2.5YR 5/8) and common fine faint yellowish brown masses of iron accumulation; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; strongly acid; abrupt irregular boundary.
Bt/E—17 to 29 inches; yellowish brown (10YR 5/6) silty clay loam (Bt); gray (10YR 6/1) clay depletions surround peds (E) and make up about 8 percent of horizon; common medium prominent red (2.5YR 4/8) and common fine faint yellowish brown masses of iron accumulation; moderate medium and coarse subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; strongly acid; clear irregular boundary.
2Bt1—29 to 42 inches; variegated light brownish gray (10YR 6/2), yellowish brown (10YR 5/6), and red (2.5YR 4/8) silty clay; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.
2Bt2—42 to 65 inches; red (2.5YR 4/6) clay; common medium prominent gray (10YR 6/2) iron depletions; moderate medium and coarse subangular blocky structure; very firm; few faint clay films on faces of peds; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 20 to 35 percent
Redoximorphic features: Iron accumulations and clay depletions beginning at 12 to 30 inches deep
Other distinctive soil features: Clayey lithologic discontinuity at 20 to 40 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—extremely acid to slightly acid; Bt and Bt/E horizons—very strongly acid to moderately acid; 2Bt and 2C horizons—very strongly acid to slightly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 or 4, and chroma of 1 to 3
Redoximorphic features—none
Texture—silt loam

Other features—none
Thickness—3 to 6 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 1 to 3
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—0 to 6 inches

Bt horizon:
Color—hue of 7.5YR to 10YR, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—none to common iron accumulations in shades of red or brown
Texture—silt loam or silty clay loam
Other features—total sand content is less than 25 percent
Thickness—10 to 20 inches

Bt/E horizon and E/Bt horizon (where present):
Color—hue of 7.5YR to 10YR, value of 5 or 6, and chroma of 4 through 8 (Bt); hue of 10YR, value of 5 or 6, and chroma of 1 to 3 (E)
Redoximorphic features—none to common iron accumulations in shades of red or brown; common or many clay depletions in shades of gray
Texture—silt loam (E); silt loam or silty clay loam (Bt)
Other features—E part consists of silt coatings and interfingering of albic materials between peds
Thickness—5 to 15 inches

2Bt horizon:
Color—hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 6 or 8
Redoximorphic features—few to many iron accumulations in shades of red or brown; common or many iron depletions in shades of gray
Texture—clay or silty clay
Other features—clay content ranges from 40 to 55 percent

2C horizon (where present):
Color—variegated in shades of red, brown, or gray
Redoximorphic features—few to many iron accumulations in shades of red or brown; common or many iron depletions in shades of gray
Texture—clay or silty clay
Other features—none

Letney Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediment from Tertiary age sandy and loamy marine deposits
Slope range: 1 to 12 percent
Taxonomic classification: Loamy, siliceous, thermic Arenic Paleudults
Commonly associated soils: Corrigan, Kisatchie, Mayhew, and Rayburn
- All of these soils are at a lower elevation than the Letney soil and have a clayey subsoil

Typical Pedon

Letney loamy sand, 1 to 5 percent slopes, in a pine plantation; 3 miles northeast of Hornbeck just inside the west boundary of the Peason Ridge Military Training Area, 0.1 mile north of Highway 392 on Peason Ridge Loop Road, 0.2 mile west on woods trail, then 300 feet west; $NW^1/_4NW^1/_4$ sec. 7, T. 4 N., R. 9 W.; latitude 31 degrees 20 minutes 48 seconds N.; longitude 93 degrees 20 minutes 13 seconds W.; Dowden Creek Quadrangle, Louisiana.

A—0 to 9 inches, dark grayish brown (10YR 4/2) loamy sand; single grained; loose; nonsticky, nonplastic; common very fine and fine and few medium roots; slightly acid; clear wavy boundary.
E—9 to 27 inches; pale brown (10YR 6/3) loamy sand; single grained; loose; nonsticky, nonplastic; common fine and medium roots; 5 to 10 percent siliceous gravel; slightly acid; clear wavy boundary.
Bt1—27 to 54 inches; strong brown (7.5YR 5/6) sandy clay loam; few medium distinct yellowish red (5YR 4/6) relict masses of iron accumulation and common fine distinct pale brown (10YR 6/3) relict iron depletions; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; few medium roots; 5 to 10 percent siliceous gravel; common small and medium iron concretions; sand grains are coated and bridged with clay; moderately acid; gradual wavy boundary.
Bt2—54 to 62 inches; reddish yellow (7.5YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) relict masses of iron accumulation and few fine prominent pale brown (10YR 6/3) relict iron depletions; moderate medium subangular blocky structure; friable; 5 to

10 percent siliceous gravel; sand grains are coated and bridged with clay; strongly acid; gradual wavy boundary.

BC—62 to 83 inches; variegated reddish yellow (7.5YR 6/8) and strong brown (7.5YR 4/6) sandy loam; many fine prominent brownish yellow (10YR 6/6) relict masses of iron accumulation and common medium prominent grayish brown (10YR 5/2) relict iron depletions; weak medium subangular blocky structure; friable; strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: None
Other distinctive soil features: Sandy epipedon at 20 to 40 inches deep; relict iron depletions with chroma of 2 or less at 60 or more inches deep
Concentrated minerals: None
Reaction: Very strongly acid to slightly acid throughout

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3; where value is 3, the horizon is less than 7 inches thick
Redoximorphic features—none
Texture—loamy sand
Other features—none
Thickness—5 to 10 inches

E horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 3 or 4
Redoximorphic features—none
Texture—loamy sand
Other features—up to 10 percent quartz gravel in some pedons
Thickness—10 to 35 inches

Bt horizon (upper part):
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 or 6
Redoximorphic features—none
Texture—sandy clay loam or sandy loam
Other features—up to 10 percent quartz gravel in some pedons; relict iron accumulations in shades of red and brown; relict iron depletions with chroma of 2 or less are below 60 inches in some pedons

Bt horizon (lower part) and BC horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8
Redoximorphic features—none
Texture—sandy clay loam or sandy loam
Other features—up to 10 percent quartz gravel in some pedons; relict iron accumulations in shades of red and brown; relict iron depletions with chroma of 2 or less are below 60 inches in some pedons

Malbis Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Plinthic Paleudults
Commonly associated soils: Beauregard, Guyton, Kirbyville, and Ruston

- Beauregard and Kirbyville soils have slightly less convex slopes than the Malbis soil and have grayish iron depletions within a depth of about 30 inches
- Guyton soils are on narrow flood plains, are poorly drained, and are fine-silty
- Ruston soils are on higher, more convex slopes than the Malbis soil and do not have plinthite in the subsoil

Typical Pedon

Malbis fine sandy loam, 1 to 3 percent slopes, in woodland; about 2.3 miles south of LaCamp on Highway 489, then 2.3 miles southwest on parish road, 0.6 mile west on an access road, then 80 feet north of road; SE$^1/_4$ sec. 31, T. 2 N., R. 5 W.; latitude 31 degrees 06 minutes 31 seconds N.; longitude 92 degrees 54 minutes 57 seconds W.; Fullerton Lake Quadrangle, Louisiana.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; common fine and medium roots; common medium pores; strongly acid; clear smooth boundary.

E—4 to 9 inches; yellowish brown (10YR 5/4) fine sandy loam; few coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak fine granular structure; very friable; common fine roots; common fine and medium pores; strongly acid; clear smooth boundary.

Bt1—9 to 17 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure;

firm; few fine and medium roots; few fine and medium tubular pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 28 inches; strong brown (7.5YR 5/8) sandy clay loam; moderate medium subangular blocky structure; firm; common fine roots; common fine and medium tubular pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Btv1—28 to 46 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) and few medium distinct brown (7.5YR 4/4) masses of iron accumulation; moderate medium subangular blocky structure; firm; common fine roots; few distinct clay films on faces of peds; 7 percent coarse rounded plinthite nodules; strongly acid; gradual wavy boundary.

Btv2—46 to 60 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (2.5YR 4/8) and yellowish red (5YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; firm; few fine roots; common faint clay films on faces of peds; common medium iron oxide concretions; 10 percent fine to coarse plinthite nodules; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 33 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 30 to 50 inches deep
Other distinctive soil features: 5 percent or more plinthite nodules at 25 to 40 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to moderately acid; Bt and Btv horizons—very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—4 to 8 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
Redoximorphic features—none to few iron accumulations in shades of brown
Texture—fine sandy loam
Other features—none
Thickness—0 to 11 inches

BE horizon (where present):
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 through 8
Redoximorphic features—none to few iron accumulations in shades of brown
Texture—loam, sandy clay loam, or clay loam
Other features—none
Thickness—0 to 10 inches

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 through 8
Redoximorphic features—none to common iron accumulations in shades of red
Texture—loam, sandy clay loam, or clay loam
Other features—none
Thickness—8 to 32 inches

Btv horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 through 8; or hue of 10YR, value of 6, and chroma of 6 or 8
Redoximorphic features—iron accumulations are in shades of brown, yellow, or red; iron depletions with chroma of 2 are below a depth of 30 inches
Texture—loam, sandy clay loam, or clay loam
Other features—5 to 25 percent plinthite nodules
Thickness—30 or more inches

Mayhew Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age acid, clayey marine deposits underlain by soft clay shale
Slope range: 1 to 5 percent
Taxonomic classification: Fine, smectitic, thermic Vertic Ochraqualfs
Commonly associated soils: Corrigan, Kisatchie, Letney, and Rayburn

- Corrigan soils are at a higher elevation than the Mayhew soil and Kisatchie soils are in positions similar to those of the Mayhew soil; Corrigan and Kisatchie soils have a paralithic contact at depths of 20 to 40 inches

- Letney soils are on higher convex ridgetops and have thick sandy surface and subsurface layers over a loamy subsoil
- Rayburn soils are in positions similar to those of the Mayhew soil and have a red clayey subsoil and a paralithic contact at depths of 40 to 60 inches

Typical Pedon

Mayhew silt loam, 1 to 5 percent slopes, in a pine forest; about 8 miles southwest of Anacoco, 1 mile east of the junction of Highway 392 and Highway 111 on Highway 111, 2 miles south on parish road, 2.3 miles west on a timber company road, then 50 feet north into woods; SE¼NW¼ sec. 3, T. 2 N., R. 11 W.; latitude 31 degrees 11 minutes 05 seconds N.; longitude 93 degrees 28 minutes 59 seconds W.; Little Sandy Creek Quadrangle, Louisiana.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; common medium faint dark brown (10YR 4/3) masses of iron accumulation and common fine distinct grayish brown (2.5Y 5/2) iron depletions; weak fine subangular blocky structure; friable; many fine and common very fine roots; extremely acid; abrupt wavy boundary.

Btg—5 to 13 inches; grayish brown (2.5Y 5/2) clay; common fine distinct yellowish brown (10YR 5/4) and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; many fine and common very fine roots; extremely acid; gradual smooth boundary.

Btssg1—13 to 27 inches; light brownish gray (2.5Y 6/2) clay; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few fine and medium roots; common small intersecting slickensides; many distinct pressure faces on surfaces of peds; extremely acid; gradual wavy boundary.

Btssg2—27 to 40 inches; light brownish gray (2.5Y 6/2) clay; common fine distinct dark yellowish brown (10YR 4/4) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few medium roots; many small and common medium intersecting slickensides; many distinct pressure faces on surfaces of peds; extremely acid; gradual wavy boundary.

Btssg3—40 to 62 inches; light brownish gray (2.5Y 6/2) clay; common fine distinct light yellowish brown (2.5Y 6/4) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few medium roots; common very fine roots between slickensides; common medium and few large grooved slickensides; many distinct pressure faces on surfaces of peds; extremely acid; gradual wavy boundary.

BCg—62 to 77 inches; light brownish gray (2.5Y 6/2) silty clay; few medium prominent olive yellow (5Y 6/6) masses of iron accumulation; weak medium angular blocky structure parting to weak fine platy; extremely acid.

Range in Characteristics

Solum thickness: 40 to more than 80 inches
Clay content in the control section: 35 to 60 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 2 to 8 inches deep
Other distinctive soil features: Intersecting slickensides at 10 to 40 inches deep
Concentrated minerals: None
Reaction: Extremely acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—2 to 8 inches

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2
Redoximorphic features—depleted matrix with none to common iron accumulations in shades of brown and yellow
Texture—silty clay loam, silty clay, or clay
Other features—none
Thickness—2 to 36 inches

Btssg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown and yellow
Texture—silty clay loam, silty clay, or clay
Other features—intersecting slickensides and pressure faces
Thickness—combined thickness of the Btg and Btssg horizons is more than 30 inches

BCg horizon:
Color—variegated in shades of gray, brown, and olive

Redoximorphic features—depleted matrix with few to many iron accumulations in shades of red, brown, and yellow
Texture—silty clay loam, silty clay, or clay
Other features—none

Cg horizon (where present):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown and yellow
Texture—silty clay loam, silty clay, or clay
Other features—none

Merryville Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age loamy stream deposits
Slope range: 0 to 1 percent
Taxonomic classification: Coarse-silty, siliceous, thermic Typic Glossaqualfs
Commonly associated soils: Besner, Guyton, Hainesville, and Spurger

- Besner soils are on low mounds, are well drained, and are coarse-loamy
- Guyton, Hainesville, and Spurger soils are in positions similar to those of the Merryville soil; Guyton soils are fine-silty; Hainesville soils are sandy throughout and are somewhat excessively drained; and Spurger soils have a fine-textured control section

Typical Pedon

Merryville silt loam, in an area of Merryville-Besner complex, in a pine forest; about 0.2 miles south of the intersection of Almadane Cemetery Road and Highway 111 on Highway 111, then 100 feet east into woods; SE¼SW¼ sec. 4, T. 2 S., R. 11 W.; latitude 30 degrees 54 minutes 51 seconds N.; longitude 93 degrees 30 minutes 36 seconds W.; Evans Quadrangle, Louisiana.

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; very friable; many very fine and fine roots; very strongly acid; gradual irregular boundary.
Eg—5 to 11 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; very friable; common fine roots; common fine and medium pores; many black stains along root channels; strongly acid; gradual irregular boundary.
E/Bt—11 to 27 inches; mottled light gray (10YR 7/2) silt loam (E) and about 20 percent brown (10YR 5/3) silt loam (Bt); common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation and common fine faint light brownish gray iron depletions; weak medium prismatic structure; very friable; few fine roots; many medium and coarse pores; many black stains along root channels; very strongly acid; gradual irregular boundary.
E/Btg—27 to 45 inches; light gray (10YR 7/2) silt loam in the form of tongues and grayish brown (10YR 5/2) loam (Btg); common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few medium roots; few large krotovinas; very strongly acid; gradual irregular boundary.
Btg1—45 to 57 inches; grayish brown (10YR 5/2) loam; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; many small tongues of light gray (10YR 7/2) silt loam; few large krotovinas; few faint clay films along seams; very strongly acid; gradual wavy boundary.
Btg2—57 to 65 inches; light brownish gray (10YR 6/2) loam; few coarse distinct yellowish brown (10YR 5/6) and few fine distinct light yellowish brown (10YR 6/4) masses of iron accumulation; moderate medium subangular blocky structure; friable; few faint clay films along seams; few small spots of light gray (10YR 7/2) silt coats; moderately acid.

Range in Characteristics

Solum thickness: 70 to more than 80 inches
Clay content in the control section: 10 to 18 percent
Redoximorphic features: Depleted matrix with iron accumulations beginning at 3 to 7 inches deep
Other distinctive soil features: Glossic horizon at 7 to 21 inches deep
Concentrated minerals: Moderately high levels of sodium salts in the root zone
Reaction: Extremely acid to moderately acid throughout, except where the surface has been limed

A or Ap horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 or 3
Redoximorphic features—none
Texture—silt loam
Other features—none
Thickness—3 to 7 inches

Eg horizon:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
Texture—silt loam
Other features—none
Thickness—4 to 14 inches

E/Bt and E/Btg horizons:
Color—hue of 10YR, value of 5 to 7, and chroma of 1 or 2 (E); hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 3 (Bt)
Redoximorphic features—few to many iron accumulations in shades of brown; clay depletions in shades of gray
Texture—silt loam or very fine sandy loam (E); silt loam, loam, or very fine sandy loam (Bt)
Other features—exchangeable sodium ranges from 1 to 15 percent
Thickness—12 to 35 inches

Btg horizon:
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
Texture—silt loam, loam, or very fine sandy loam
Other features—some pedons have thin strata of silty clay loam or clay loam; exchangeable sodium ranges from 1 to 15 percent
Thickness—12 to 30 inches

2BCg or Cg horizon (where present):
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with few to many iron accumulations in shades of brown
Texture—loamy fine sand, fine sandy loam, very fine sandy loam, sand, or very fine sand
Other features—none

The Merryville soils in Vernon Parish are taxadjuncts to the Merryville series because they typically have a natric horizon. This difference, however, does not significantly affect the use and management of the soils.

Messer Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age loamy stream deposits
Slope range: 1 to 3 percent
Taxonomic classification: Coarse-silty, siliceous, thermic Haplic Glossudalfs
Commonly associated soils: Beauregard, Caddo, Dubach, Guyton, Kirbyville, and Niwana
- None of these soils are on small mounds, except the Niwana soils
- Beauregard, Caddo, and Guyton soils are fine-silty
- Dubach and Kirbyville soils are fine-loamy
- Niwana soils are coarse-loamy

Typical Pedon

Messer silt loam, in an area of Caddo-Messer complex, in woodland; about 3.2 miles northeast of Temple on Highway 8, 0.3 mile east on parish road, then 500 feet north into wooded area; $SE^1/_4SE^1/_4$ sec. 18, T. 4 N., R. 5 W.; latitude 31 degrees 19 minutes 35 seconds N.; longitude 92 degrees 54 minutes 52 seconds W.; Temple Quadrangle, Louisiana.

A—0 to 3 inches; grayish brown (10YR 5/2) very fine sandy loam; weak fine granular structure; very friable; many very fine and fine roots; moderately acid; gradual wavy boundary.

E—3 to 7 inches; brown (10YR 5/3) very fine sandy loam; weak fine subangular blocky structure; very friable; common very fine and fine roots; few fine pores; common fine black and brown concretions; moderately acid; clear wavy boundary.

Bw—7 to 28 inches; light yellowish brown (10YR 6/4) very fine sandy loam; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and common fine and medium faint brown (10YR 5/3) iron depletions; weak medium subangular block structure; friable; common fine and medium pores lined with gray (10YR 6/1) silt; many fine and medium dark brown and black concretions;

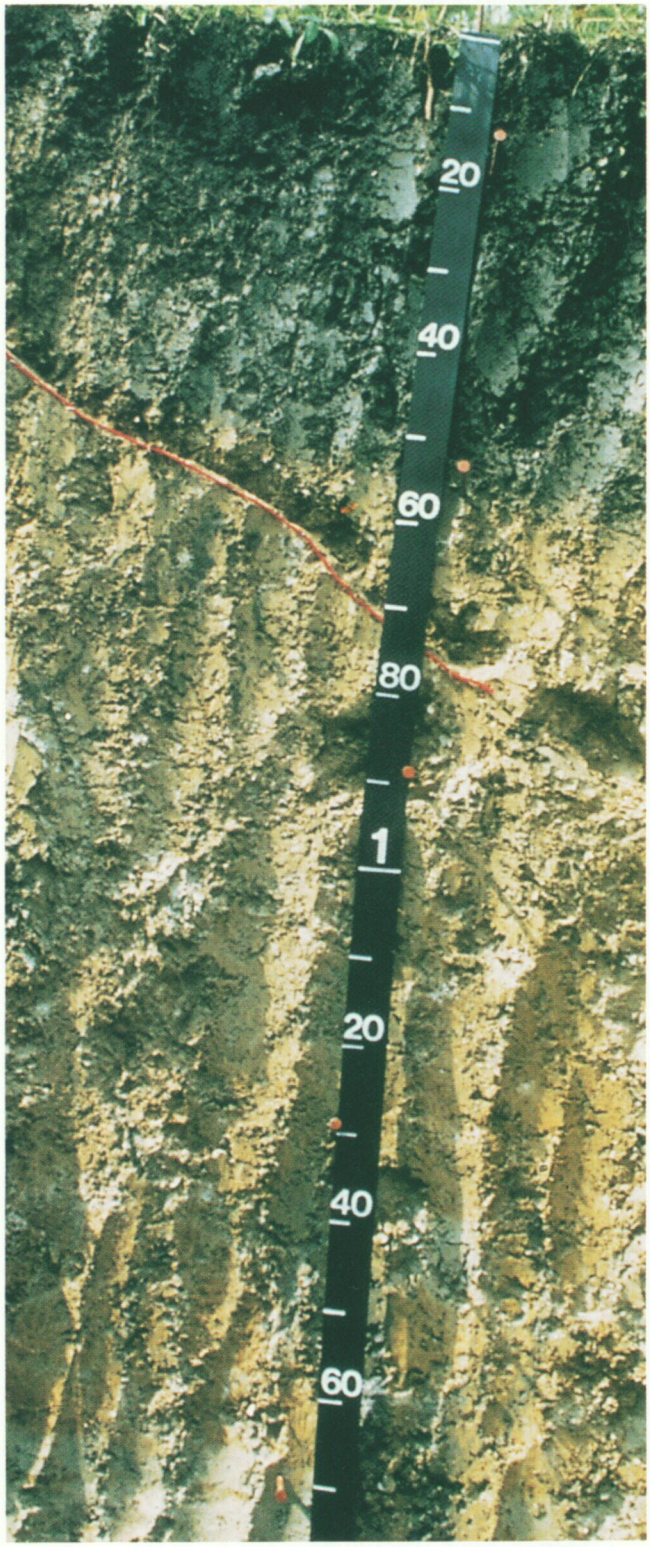

Figure 8.—Profile of Hornbeck clay.

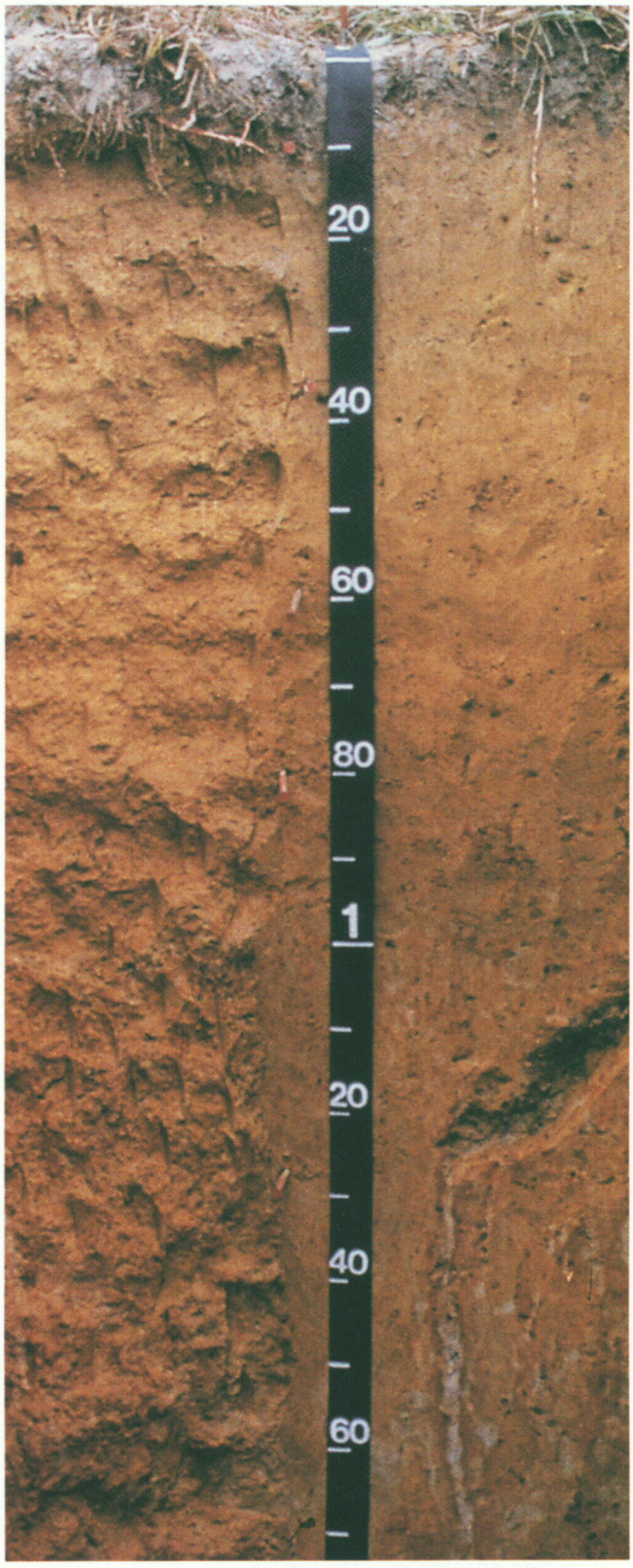

Figure 9.—Profile of Niwana fine sandy loam.

few medium brown soft accumulations; strongly acid; clear wavy boundary.

Bt/E—28 to 33 inches; yellowish brown (10YR 5/6) loam (Bt); few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; friable; few fine roots between peds; common fine pores; few faint clay films on faces of peds; tongues of grayish brown (10YR 5/2) silt (E) make up about 25 percent of horizon; common brown and yellow soft accumulations; very strongly acid; clear wavy boundary.

Bt—33 to 61 inches; yellowish brown (10YR 5/6) silty clay loam; common fine and medium prominent red (2.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; common fine pores coated with gray (10YR 6/1) silt; few fine and medium yellowish brown (10YR 5/4) soft accumulations; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 10 to 18 percent
Redoximorphic features: Iron and clay depletions in shades of gray and iron accumulations at 24 to 50 inches deep
Other distinctive soil features: Glossic horizon at 20 to 40 inches deep
Concentrated minerals: None
Reaction: Very strongly acid to moderately acid throughout

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—2 to 6 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—3 to 4 inches

Bw horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6
Redoximorphic features—none to common iron accumulations in shades of brown and iron or clay depletions in shades of gray or brown
Texture—silt loam, loam, or very fine sandy loam
Other features—none to common silt coatings on faces of peds and in pores
Thickness—15 to 32 inches

Bt/E horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6 (Bt); hue of 10YR, value of 5 or 6, and chroma of 2 or 3 (E)
Redoximorphic features—none to common iron accumulations in shades of brown and iron or clay depletions in shades of gray or brown
Texture—loam, silty clay loam, or clay loam (Bt); silt or silt loam (E)
Other features—E part consists of vertical intrusions between peds and coatings on faces of peds that make up 15 to 50 percent of the horizon
Thickness—3 to 6 inches

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 through 6
Redoximorphic features—iron and clay depletions in shades of gray and iron accumulations in shades of red and yellow
Texture—silty clay loam, clay loam, or loam
Other features—none
Thickness—more than 18 inches

BC horizon (where present):
Color—variegated in shades of gray, brown, or olive
Redoximorphic features—iron and clay depletions in shades of gray and iron accumulations in shades of yellow
Texture—silty clay loam, clay loam, loam, or silt loam
Other features—none

Niwana Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits
Slope range: 0 to 3 percent
Taxonomic classification: Coarse-loamy, siliceous, thermic Typic Paleudults
Commonly associated soils: Caddo, Guyton, Kirbyville, and Malbis

- Caddo and Guyton soils are in lower positions than the Kirbyville and Niwana soils, are poorly drained, and are fine-silty
- Kirbyville and Malbis soils are fine-loamy and have more than 5 percent plinthite; Kirbyville soils are in intermound areas; and Malbis soils are in slightly higher positions than Niwana soils

Typical Pedon

Niwana fine sandy loam, in an area of Kirbyville-Niwana complex (fig. 9), in woodland; 1 mile south of Drakes Creek; NE¼NW¼ sec. 36, T. 1 S., R. 7 W.; latitude 30 degrees 56 minutes 59 seconds N.; longitude 93 degrees 08 minutes 38 seconds W.; Hurricane Branch Quadrangle, Louisiana.

A—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many very fine and common fine roots; very strongly acid; abrupt wavy boundary.

E—4 to 14 inches; light yellowish brown (10YR 6/4) very fine sandy loam; few fine faint yellowish brown masses of iron accumulation; weak fine subangular blocky structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B/E—14 to 23 inches; brownish yellow (10YR 6/6) fine sandy loam (Bt); few fine faint yellowish brown masses of iron accumulation and common fine distinct grayish brown (10YR 5/2) clay depletions; weak medium subangular blocky structure; very friable; few fine roots; few fine pores; about 15 percent of horizon is tongues of light yellowish brown (10YR 6/4) very fine sandy loam (E); very strongly acid; gradual wavy boundary.

Bt—23 to 32 inches; yellowish brown (10YR 5/6) loam; common fine prominent red (2.5YR 4/8) masses of iron accumulation and few medium distinct dark yellowish brown (10YR 4/4) iron depletions; moderate medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

Bt/E1—32 to 50 inches; yellowish brown (10YR 5/6) loam (Bt); many medium distinct yellowish brown (10YR 5/4) and few fine distinct dark grayish brown (2.5YR 4/2) clay depletions; moderate medium subangular blocky structure; friable; few large tongues of light brownish gray (10YR 6/2) fine sandy loam (E); many fine pores; few fine and medium ironstone concretions; very strongly acid; clear wavy boundary.

Bt/E2—50 to 71 inches; yellowish brown (10YR 5/6) loam (Bt); many medium distinct strong brown (7.5YR 4/6) and common fine prominent red (2.5YR 4/8) masses of iron accumulation; moderate medium prismatic structure; friable; few large tongues of light brownish gray (10YR 6/2) fine sandy loam (E); many fine pores; few fine and medium ironstone concretions; 3 percent plinthite; very strongly acid; gradual wavy boundary.

Btv—71 to 83 inches; strong brown (7.5YR 5/8) loam; many medium distinct strong brown (7.5YR 4/6) and common coarse prominent red (2.5YR 4/6) masses of iron accumulation; common medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium prismatic structure; friable; 3 percent plinthite; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 8 to 15 percent
Redoximorphic features: Iron and clay depletions in shades of gray beginning at 10 to 30 inches deep
Other distinctive soil features: Glossic horizon at 20 to 40 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to moderately acid; subsoil—very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—4 to 6 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4
Redoximorphic features—none to common iron accumulations in shades of brown
Texture—fine sandy loam
Other features—none
Thickness—10 to 23 inches

B/E horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8 (B); hue of 10YR, value of 5 or 6, and chroma of 2 to 4 (E)
Redoximorphic features—none to common iron accumulations in shades of yellow, red, and brown
Texture—fine sandy loam or loam (B); very fine sandy loam or fine sandy loam (E)
Other features—none
Thickness—0 to 6 inches

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8
Redoximorphic features—none to common iron accumulations in shades of yellow, red, and brown
Texture—fine sandy loam or loam
Other features—none

Bt/E horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8 (Bt); hue of 10YR, value of 5 or 6, and chroma of 2 to 4 (E)
Redoximorphic features—few or common iron accumulations in shades of yellow, red, and brown; few to many iron and clay depletions in shades of gray
Texture—loam or sandy clay loam (Bt); very fine sandy loam or fine sandy loam (E)
Other features—none

Btv horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8
Redoximorphic features—few or common iron accumulations in shades of yellow, red, and brown; few to many iron depletions in shades of gray
Texture—loam or sandy clay loam
Other features—up to 3 percent plinthite nodules

Osier Series

Depth class: Deep
Drainage class: Poorly drained
Permeability: Rapid
Landscape: Coastal plain
Landform: Low stream terraces
Parent material: Sandy alluvium from Recent stream deposits
Slope range: 0 to 2 percent
Taxonomic classification: Siliceous, thermic Typic Psammaquents
Commonly associated soils: Betis, Briley, Guyton, and Iuka

- Betis and Briley soils are on nearby uplands; Betis soils have a brownish and reddish sandy subsoil; and Briley soils have a red loamy subsoil
- Guyton and Iuka soils are on flood plains; Guyton soils are also in low positions on terraces and are fine-silty; and Iuka soils are coarse-loamy

Typical Pedon

Osier loamy fine sand, 0 to 2 percent slopes, in woodland; about 5.6 miles north of Fullerton, 2.4 miles north of the intersection of Highway 399 and Lookout Road on access road, then 500 feet west of road; SE$^1/_4$NW$^1/_4$ sec. 10, T. 1 N., R. 6 W.; latitude 31 degrees 04 minutes 49 seconds N.; longitude 92 degrees 58 minutes 29 seconds W.; Fullerton Lake Quadrangle, Louisiana.

A—0 to 5 inches; very dark gray (10YR 3/1) loamy fine sand; moderate fine granular structure; very friable; many fine and medium roots; very strongly acid; gradual wavy boundary.
AC—5 to 19 inches; dark gray (10YR 4/1) loamy sand; many medium faint light gray (10YR 7/2) iron depletions; weak medium granular structure; very friable; many fine and medium roots; very strongly acid; gradual wavy boundary.
Cgl—19 to 30 inches; gray (10YR 6/1) loamy sand; common medium faint light gray (10YR 7/2) and light brownish gray (10YR 6/2) iron depletions; massive; loose; few fine and medium roots; very strongly acid; gradual wavy boundary.
Cg2—30 to 46 inches; light brownish gray (10YR 6/2) loamy sand; few medium distinct brownish yellow (10YR 6/6) and pale brown (10YR 6/3) masses of iron accumulation; massive; loose; few fine roots; strongly acid; gradual wavy boundary.
Cg3—46 to 60 inches; light brownish gray (10YR 6/2) sand; thin horizontal layer of brownish yellow (10YR 6/6) fine sand; massive; loose; few coarse sand grains and small chert pebbles; strongly acid.

Range in Characteristics

Solum thickness: 3 to 20 inches
Clay content in the control section: 1 to 10 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 3 to 7 inches deep
Other distinctive soil features: Thin, horizontal strata of fine sand or loamy fine sand in some pedons at more than 10 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: Extremely acid to moderately acid in throughout

A horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 1 or 2; or hue of 2.5Y, value of 5, and chroma of 2
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—3 to 7 inches

AC horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 1 or 2; or hue of 2.5Y, value of 5, and chroma of 2
Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown
Texture—sand, loamy sand, or loamy fine sand
Other features—none
Thickness—0 to 15 inches

Cg horizon:
Color—hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 or 2
Redoximorphic features—depleted matrix with none to common iron accumulations in shades of brown or yellow
Texture—sand, loamy sand, or loamy fine sand
Other features—thin horizontal strata of fine sand or loamy fine sand in some pedons

Rayburn Series

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Very Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Loamy and clayey residuum from Tertiary age tuffaceous siltstone and sandstone
Slope range: 1 to 5 percent
Taxonomic classification: Fine, smectitic, thermic Vertic Hapludalfs
Commonly associated soils: Corrigan, Kisatchie, Letney, Mayhew, and Trep

- Corrigan and Kisatchie soils are in positions similar to those of the Rayburn soil and have a subsoil that is brown and moderately deep to siltstone or sandstone
- Letney, Mayhew, and Trep soils are at a higher elevation than the Rayburn soil; Letney and Trep soils have a sandy epipedon 20 to 40 inches thick; and Mayhew soils are gray throughout

Typical Pedon

Rayburn fine sandy loam, 1 to 5 percent slopes, in woodland; 0.35 mile south of the Sabine-Vernon Parish line on Peason Loop Road, 0.37 mile west on woods trail, then 60 feet north into woods; NW$^1/_4$NW$^1/_4$ sec. 6, T. 4 N., R. 9 W.; latitude 31 degrees 21 minutes 45 seconds N.; longitude 93 degrees 20 minutes 00 seconds W.; Dowden Creek Quadrangle, Louisiana.

A—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; few very fine and fine roots; very strongly acid; clear smooth boundary.
E—3 to 7 inches; brown (10YR 5/3) fine sandy loam; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and common medium faint grayish brown (10YR 5/2) iron depletions; weak fine and medium granular structure; friable; few fine and medium roots; very strongly acid; clear wavy boundary.
Bt1—7 to 15 inches; red (2.5YR 4/6) clay; few fine distinct red (10R 4/8) masses of iron accumulation and few medium distinct grayish brown (10YR 5/2) iron depletions; moderate medium angular blocky structure; very firm; few faint clay films on faces of peds; few fine and medium roots; very strongly acid; gradual wavy boundary.
Bt2—15 to 22 inches; grayish brown (10YR 5/2) clay; common medium prominent red (10R 4/8) and few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium angular blocky structure; very firm; few faint clay films on faces of peds; few very fine and fine roots; very strongly acid; clear wavy boundary.
Bt3—22 to 32 inches; light brownish gray (2.5Y 6/2) clay; many fine distinct pale olive (5Y 6/3) and few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderate medium angular blocky structure; very firm; few non-intersecting slickensides; few fine roots; extremely acid; clear wavy boundary.
BC—32 to 43 inches; pale olive (5Y 6/3) and grayish brown (10YR 5/2) clay; common medium prominent brown (7.5YR 4/4) masses of iron accumulation and many fine distinct light gray (2.5Y 7/2) iron depletions; weak medium subangular blocky structure; very firm; plastic; common fine siltstone fragments; very strongly acid; gradual wavy boundary.
Cr—43 to 55 inches; light gray (2.5Y 7/2) siltstone; common fine distinct pale olive (5Y 6/3) and few fine distinct grayish brown (2.5Y 5/2) lithochromic mottles; massive; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches
Clay content in the control section: 40 to 60 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations at 3 to 15 inches deep
Other distinctive soil features: Paralithic contact at 40 to 60 inches deep

Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to moderately acid; Bt and BC horizons—extremely acid to strongly acid; Cr horizon—extremely acid to moderately acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—3 to 6 inches

E horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none
Thickness—0 to 5 inches

Bt horizon (upper part):
Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 3 through 8
Redoximorphic features—none to few iron depletions in shades of gray and iron accumulations in shades of brown
Texture—clay or silty clay
Other features—none

Bt horizon (lower part) and BC horizon:
Color—hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 or 3
Redoximorphic features—common or many iron accumulations in shades of red and brown (upper part); few or common iron depletions in shades of gray, and iron accumulations in shades of yellow or brown (lower part)
Texture—clay or silty clay
Other features—none

Cr horizon:
Color—variegated in shades of gray, brown, and olive
Redoximorphic features—none
Texture—weakly consolidated siltstone or sandstone
Other features—none

Ruston Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Pleistocene age loamy marine deposits
Slope range: 1 to 8 percent
Taxonomic classification: Fine-loamy, siliceous, thermic Typic Paleudults
Commonly associated soils: Betis, Briley, and Malbis
- Betis and Briley soils are in higher positions than the Ruston soil and have thick sandy surface and subsurface layers
- Malbis soils are on slightly less convex slopes and have more than 5 percent plinthite in the subsoil

Typical Pedon

Ruston fine sandy loam, 1 to 3 percent slopes, in woodland; about 5.8 miles southwest of LaCamp, then 350 feet north of a dirt road; SW$^1/_4$ sec. 34, T. 2 N., R. 6 W.; latitude 31 degrees 06 minutes 07 seconds N.; longitude 92 degrees 58 minutes 46 seconds W.; Fullerton Lake Quadrangle, Louisiana.

A—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; common fine roots; very strongly acid; clear smooth boundary.
E—5 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; few pockets of yellowish red (5YR 5/6) loamy material in lower part; weak medium subangular blocky structure; very friable; common fine roots; many fine pores; strongly acid; clear smooth boundary.
Bt1—11 to 29 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; common distinct clay films on faces of peds; strongly acid; clear wavy boundary.
Bt2—29 to 40 inches; red (2.5YR 4/6) sandy clay loam; common medium red (10YR 4/6) lithochromic mottles; weak medium subangular blocky structure; friable; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.
Bt/E—40 to 48 inches; yellowish red (5YR 5/8) loam (Bt); common streaks and pockets of pale brown (10YR 6/3) sandy loam (E); weak medium subangular blocky structure; friable; few fine pores; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.
B´t—48 to 70 inches; red (2.5YR 4/6) sandy clay loam; common medium yellowish brown (10YR 6/4) lithochromic mottles; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: None
Other distinctive soil features: Buried B´t horizon at 18 to 60 inches deep; lithochromic mottles in shades of red and brown
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to slightly acid; subsoil—very strongly acid to moderately acid

A horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—fine sandy loam
Other features—none to few quartz gravel or ironstone nodules
Thickness—3 to 6 inches

E horizon and BE horizon (where present):
Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—fine sandy loam
Other features—none to few quartz gravel or ironstone nodules
Thickness—0 to 15 inches

Bt horizon:
Color—hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4 through 8
Redoximorphic features—none
Texture—sandy clay loam, loam, or clay loam
Other features—none to few quartz gravel or ironstone nodules
Thickness—10 to 40 inches

Bt/E horizon:
Color—hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4 through 8 (Bt); hue of 10YR, value of 5 or 6, and chroma of 2 to 4 (E)
Redoximorphic features—none
Texture—sandy clay loam, loam, or clay loam (Bt); loamy sand, fine sandy loam, or sandy loam (E)
Other features—Bt/E horizon has a clay decrease of 20 percent or more than the clay content of the overlying Bt horizon; total clay content of the Bt/E horizon is 10 to 20 percent; E part consists of streaks and pockets that make up as much as 50 percent of the horizon
Thickness—4 to 20 inches

B´t horizon:
Color—hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4 through 8
Redoximorphic features—none
Texture—sandy clay loam, loam, or clay loam
Other features—clay content in the B't horizon increases from that of the Bt/E horizon; none to few quartz gravel or ironstone nodules; few to many lithochromic mottles in shades of red, brown, yellow, or gray

Sacul Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine deposits
Slope range: 1 to 12 percent
Taxonomic classification: Clayey, mixed, thermic Aquic Hapludults
Commonly associated soils: Briley, Guyton, Kisatchie, Mayhew, Rayburn, and Trep
- Briley and Trep soils are at a higher elevation than the Sacul soil and have a sandy surface layer and a loamy subsoil
- Guyton soils are in drainageways, are poorly drained, and are fine-silty
- Kisatchie and Rayburn soils mainly are on steeper side slopes than the Sacul soil and are underlain by sandstone or siltstone
- Mayhew soils are on broad ridgetops at a lower elevation than the Sacul soil and have smectitic mineralogy and more than 35 percent base saturation

Typical Pedon

Sacul fine sandy loam, 1 to 5 percent slopes, in woodland; about 11 miles northeast of Leesville, 3.5 miles west of the intersection of Highway 111 and Highway 117 on Highway 111, about 0.8 mile northwest on woods roads, then 75 feet east of road; $SW^1/_4NE^1/_4$ sec. 10, T. 3 N., R. 9 W.; latitude 31 degrees 15 minutes 25 seconds N.; longitude 93 degrees 16 minutes 27 seconds W.; Dowden Creek Quadrangle, Louisiana.

A—0 to 5 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many very fine and fine roots; strongly acid; clear smooth boundary.
Bt1—5 to 16 inches; yellowish red (5YR 5/6) clay;

common fine distinct red (2.5YR 4/6) masses of iron accumulation and common medium prominent yellowish brown (10YR 5/4) iron depletions; moderate medium subangular blocky structure; very firm; many very fine and common fine roots; common distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—16 to 25 inches; variegated red (2.5YR 4/6), light brownish gray (10YR 6/2), and yellowish brown (10YR 5/4) clay; moderate medium subangular blocky structure; very firm; common very fine roots between peds; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—25 to 35 inches; variegated light brownish gray (10YR 6/2), red (10R 4/8), and yellowish brown (10YR 5/4) sandy clay; moderate medium subangular blocky structure; very firm; few very fine roots between peds; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt4—35 to 44 inches; variegated light brownish gray (10YR 6/2), red (2.5YR 4/8), and grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; very firm; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—44 to 60 inches; variegated light brownish gray (10YR 6/2) and yellowish red (5YR 5/6) clay loam; weak medium subangular blocky structure parting to weak fine subangular blocky; firm; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

C—60 to 80 inches; stratified light brownish gray (10YR 6/2) and red (2.5YR 5/6) sandy clay loam; massive; friable; extremely acid.

Range in Characteristics

Solum thickness: 40 to 80 inches

Clay content in the control section: 35 to 60 percent

Redoximorphic features: Iron accumulations and iron depletions beginning at 12 to 30 inches deep

Other distinctive soil features: Paralithic contact at more than 60 inches deep

Concentrated minerals: High levels of exchangeable aluminum in the root zone

Reaction: A and E horizons—very strongly acid to moderately acid; subsoil and substratum—extremely acid to strongly acid

A or Ap horizon:
- Color—hue of 10YR, value of 3 or 4, and chroma of 2 or 3
- Redoximorphic features—none
- Texture—fine sandy loam
- Other features—0 to 10 percent ironstone nodules
- Thickness—1 to 6 inches

E horizon (where present):
- Color—hue of 10YR, value of 5 or 6, and chroma of 3 or 4
- Redoximorphic features—none
- Texture—fine sandy loam, sandy loam, or loam
- Other features—0 to 10 percent ironstone nodules
- Thickness—0 to 10 inches

Bt horizon (upper part):
- Color—hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8
- Redoximorphic features—iron accumulations in shades of brown or red; iron depletions in shades of gray are below 12 inches
- Texture—clay, sandy clay, or clay loam
- Other features—0 to 10 percent ironstone nodules

Bt horizon (lower part) and Btg horizon (where present):
- Color—variegated in shades of brown, red, and gray
- Redoximorphic features—iron accumulations in shades of brown or red and iron depletions in shades of gray
- Texture—clay loam, sandy clay, or sandy clay loam
- Other features—0 to 10 percent ironstone nodules
- Thickness—36 to 70 inches (Bt)

BC horizon and BCg horizon (where present):
- Color—variegated in shades of brown, red, and gray
- Redoximorphic features—iron accumulations in shades of brown or red and iron depletions in shades of gray
- Texture—clay loam, sandy clay, or sandy clay loam
- Other features—0 to 10 percent ironstone nodules

C horizon:
- Color—variegated in shades of brown, yellow, red, and gray
- Redoximorphic features—none
- Texture—clay loam, sandy clay loam, or fine sandy loam
- Other features—0 to 10 percent ironstone nodules; lithochromic mottles in shades of brown, red, and gray

Sawyer Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine-silty, siliceous, thermic Aquic Paleudults
Commonly associated soils: Eastwood and Malbis

- Eastwood soils are on side slopes and have a fine-textured particle-size control section
- Malbis soils are in higher positions than the Sawyer soil and are loamy throughout

Typical Pedon

Sawyer very fine sandy loam, 1 to 5 percent slopes, in woodland; about 0.5 mile west of the Calcasieu River on Highway 28, then 0.25 mile south on parish road, then 75 feet east into woods; SW¼NW¼ sec. 30, T. 3 N., R. 5 W.; latitude 31 degrees 12 minutes 35 seconds N.; longitude 92 degrees 55 minutes 34 seconds W.; LaCamp Quadrangle, Louisiana.

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

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

Bt1—7 to 12 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct brown (10YR 5/3) iron depletions; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films along root channels; few black stains; very strongly acid; gradual wavy boundary.

Bt2—12 to 21 inches; yellowish brown (10YR 5/6) silty clay loam; few fine prominent red (2.5YR 5/8) masses of iron accumulation and few medium distinct light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; common fine roots; common faint clay films on faces of peds; few fine brown and black concretions; very strongly acid; clear wavy boundary.

Bt3—21 to 27 inches; variegated yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), red (2.5YR 4/8), and dark brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btg—27 to 33 inches; light brownish gray (10YR 6/2) silty clay loam; common fine prominent red (2.5YR 4/8), common fine distinct yellowish brown (10YR 5/6), and few fine distinct dark brown (7.5YR 4/4) masses of iron accumulation; moderate medium subangular blocky structure; firm; common faint clay films on faces of peds; very strongly acid; clear wavy boundary.

2Btg1—33 to 56 inches; grayish brown (10YR 5/2) clay; many medium distinct yellowish brown (10YR 5/6) and common medium prominent red (2.5YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

2Btg2—56 to 74 inches; light brownish gray (10YR 6/2) clay; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to 80 inches
Clay content in the control section: 20 to 35 percent
Redoximorphic features: Iron accumulations and iron depletions at 8 to 30 inches deep
Other distinctive soil features: None
Concentrated minerals: None
Reaction: Extremely acid to strongly acid throughout, except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—4 to 10 inches

E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—silt loam, loam, or very fine sandy loam
Other features—none
Thickness—0 to 10 inches

Bt1 and Bt2 horizons:
Color—hue of 10YR or 7.5YR, value of 5, and chroma of 4 or 6

Redoximorphic features—none to common iron accumulations in shades of red and brown and iron depletions in shades of gray or brown
Texture—silt loam or silty clay loam
Other features—none

Bt3 or Btg horizons:
Color—hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 through 8; or horizon is variegated in shades of brown, red, and gray
Redoximorphic features—iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silt loam or silty clay loam
Other features—none

2Btg horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silty clay loam, silty clay, or clay
Other features—none
Thickness—total thickness of Bt part is more than 50 inches

Cg or 2Cg horizon (where present):
Color—hue of 10YR, value of 5 or 6, and chroma of 1 or 2; or hue of 2.5Y, value of 5 or 6, and chroma of 2
Redoximorphic features—iron accumulations in shades of red and brown and iron depletions in shades of gray
Texture—silty clay loam or silty clay
Other features—none

Spurger Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landscape: Coastal plain
Landform: Terraces
Parent material: Alluvium from Pleistocene age clayey and loamy stream deposits
Slope range: 1 to 5 percent
Taxonomic classification: Fine, mixed, thermic Albaquultic Hapludalfs
Commonly associated soils: Cahaba, Guyton, and Hainesville

- Cahaba and Hainesville soils are in positions similar to those of the Spurger soil; Cahaba soils are fine-loamy; and Hainesville soils are sandy throughout
- Guyton soils are in low positions on terraces and flood plains, are fine-silty, and are poorly drained

Typical Pedon

Spurger very fine sandy loam, 1 to 5 percent slopes (fig. 10), in woodland; about 6 miles southwest of Evans, 1.2 miles west of the intersection of Highway 111 and Almadane Cemetery Road on Almadane Cemetery Road, then 58 feet south of road to the edge of power line right of way; $NE^1/_4SW^1/_4$ sec. 6, T. 2 S., R. 11 W.; latitude 30 degrees 55 minutes 8 seconds N.; longitude 93 degrees 31 minutes 38 seconds W.; Evans Quadrangle, Louisiana.

A—0 to 3 inches; dark grayish brown (10YR 4/2) very fine sandy loam; weak fine granular structure; very friable; many very fine and fine and few medium roots; strongly acid; gradual smooth boundary.
E—3 to 6 inches; brown (10YR 5/3) very fine sandy loam; weak fine granular structure; very friable; common very fine and fine and few medium roots; strongly acid; abrupt wavy boundary.
Bt1—6 to 22 inches; red (2.5YR 4/6) clay; few fine prominent grayish brown (10YR 5/2) relict iron depletions; moderate medium subangular blocky structure; very firm; few very fine and fine roots; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.
Bt2—22 to 39 inches; dark red (2.5YR 3/6) clay; common medium distinct red (10R 4/6) masses of iron accumulation and common medium prominent grayish brown (10YR 5/2) relict iron depletions; moderate medium subangular blocky structure; very firm; few very fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.
Bt3—39 to 57 inches; variegated yellowish red (5YR 4/6), grayish brown (10YR 5/2), and dark red (2.5YR 3/6) clay; moderate medium prismatic structure; very firm; few medium and coarse roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.
BC—57 to 69 inches; yellowish red (5YR 5/6) sandy clay loam; common fine prominent brownish yellow (10YR 6/8) and distinct red (2.5YR 4/6) masses of iron accumulation; many medium prominent light brownish gray (10YR 6/2) iron depletions; moderate medium prismatic structure; firm; very strongly acid; clear wavy boundary.
C—69 to 81 inches; strong brown (7.5YR 5/6) very fine sandy loam; weak fine platy structure; friable; very strongly acid.

Range in Characteristics

Solum thickness: 40 to 60 inches
Clay content in the control section: 35 to 60 percent
Redoximorphic features: Relict iron depletions in shades of gray and iron accumulations beginning at 5 to 25 inches deep
Other distinctive soil features: None
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to slightly acid; Bt horizon—very strongly acid to moderately acid; BC and C horizons—very strongly acid to slightly acid

A or Ap horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—3 to 6 inches

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
Redoximorphic features—none
Texture—very fine sandy loam
Other features—none
Thickness—3 to 10 inches

Bt1 and Bt2 horizons:
Color—hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 4 through 8
Redoximorphic features—relict iron depletions in shades of gray and iron accumulations in shades of red or brown are in the upper 10 inches of the Bt horizon
Texture—clay or clay loam
Other features—none

Bt3 horizon:
Color—hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 4 through 8
Redoximorphic features—relict iron depletions in shades of gray and iron accumulations in shades of brown, yellow, or red
Texture—clay, clay loam, sandy clay loam, or loam
Other features—sand or silt coatings on faces of peds in some pedons

BC horizon:
Color—hue of 5YR to 10YR, value of 5 to 7, and chroma of 2 through 8
Redoximorphic features—masses of iron accumulation in shades of brown, yellow, or red and iron depletions in shades of gray
Texture—clay loam, sandy clay loam, or loam
Other features—sand or silt coatings on faces of peds in some pedons

C horizon:
Color—hue of 5YR to 10YR, value of 5 to 7, and chroma of 2 through 8
Redoximorphic features—none
Texture—fine sandy loam, loamy fine sand, sandy loam, loamy sand, or sand
Other features—thin strata of clay loam, sandy clay loam, or loam are in some pedons; lithochromic mottles in shades of gray, brown, or yellow

The Spurger soils in Vernon Parish are taxadjuncts to the Spurger series because they typically have a base saturation less than 35 percent in the lower part of the solum and have more than 60 percent clay in the upper part of the argillic horizon. This difference, however, does not significantly affect the use and management of the soils.

Trep Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age sandy and loamy marine deposits
Slope range: 1 to 12 percent
Taxonomic classification: Loamy, siliceous, thermic Arenic Paleudults
Commonly associated soils: Betis, Bowie, Briley, Eastwood, Kisatchie, and Rayburn

- Betis and Briley soils are in positions similar to those of the Trep soil; Betis soils are sandy throughout; and Briley soils have a red subsoil
- Bowie and Eastwood soils are at a lower elevation than the Trep soil; Bowie soils are loamy throughout; and Eastwood soils have a clayey subsoil
- Kisatchie and Rayburn soils are on steep side slopes, have a clayey subsoil, and are underlain by siltstone or sandstone

Typical Pedon

Trep loamy fine sand, 1 to 5 percent slopes, in woodland; about 12 miles north of Leesville on

Highway 117 to Kurthwood Fire Tower Road, 0.2 mile west on gravel road, then 200 feet north into woods; $SW^1/_4SW^1/_4$ sec. 22, T. 4 N., R. 8 W.; latitude 31 degrees 18 minutes 33 seconds N.; longitude 93 degrees 10 minutes 58 seconds W.; Bienville Quadrangle, Louisiana.

A—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; very friable; many very fine roots; very strongly acid; clear wavy boundary.

E—8 to 25 inches; brown (10YR 5/3) loamy fine sand; few fine distinct brownish yellow (10YR 6/6) masses of iron accumulation; weak medium granular structure; very friable; common very fine roots; moderately acid; clear smooth boundary.

Bt1—25 to 39 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; firm; few very fine and fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—39 to 58 inches; variegated light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) sandy clay loam; common medium prominent red (10YR 4/8) masses of iron accumulation; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—58 to 73 inches; variegated light brownish gray (10YR 6/2) and red (2.5YR 5/6) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) masses of iron accumulation; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

Range in Characteristics

Solum thickness: 60 to more than 80 inches
Clay content in the control section: 18 to 35 percent
Redoximorphic features: Iron depletions in shades of gray at more than 30 inches deep
Other distinctive soil features: Sandy epipedon over a loamy subsoil at 20 to 40 inches deep
Concentrated minerals: Moderately high levels of exchangeable aluminum in the root zone
Reaction: A and E horizons—very strongly acid to slightly acid; Bt horizon—very strongly acid or strongly acid

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—loamy fine sand
Other features—none
Thickness—5 to 10 inches

E horizon:
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 2 or 3
Redoximorphic features—none
Texture—loamy fine sand or fine sand
Other features—none
Thickness—14 to 30 inches

Bt horizon (upper part):
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 through 8
Redoximorphic features—few or common iron accumulations in shades of red or brown; iron depletions in shades of gray are below a depth of 30 inches
Texture—sandy clay loam or loam
Other features—none
Thickness—15 to 35 inches

Bt horizon (lower part):
Color—variegated in shades of gray, brown, and red
Redoximorphic features—iron accumulations in shades of red or brown and iron depletions in shades of gray
Texture—sandy clay or sandy clay loam
Other features—none

Urbo Series

Depth class: Deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Flood plains
Parent material: Clayey alluvium from Recent stream deposits
Slope range: 0 to 2 percent
Taxonomic classification: Fine, mixed, acid, thermic Aeric Haplaquepts
Commonly associated soils: Cypress, Guyton, and Hainesville

- Cypress soils are in swales and old ox bows, are very poorly drained, and are ponded most of the time
- Guyton soils are in positions similar to those of the Urbo soil, are poorly drained, and are fine-silty
- Hainesville soils are in higher positions than the Urbo soil and are sandy throughout

Typical Pedon

Urbo silty clay, in an area of Urbo silty clay,

frequently flooded, in woodland; 3 miles northwest of Burr Ferry, 2.8 miles north of the intersection of Highway 111 and Highway 8 on Highway 111, 3.3 miles west on parish road, then 400 feet south of power line in woods; NE¼NE¼ sec. 7, T. 1 N., R. 11 W.; latitude 31 degrees 05 minutes 06 seconds N.; longitude 93 degrees 31 minutes 42 seconds W.; Wiergate Southeast Quadrangle, Louisiana.

Ap—0 to 4 inches; brown (10YR 4/3) silty clay; common fine faint grayish brown iron depletions; weak fine subangular blocky structure; friable; many fine roots; very strongly acid; clear wavy boundary.

A—4 to 13 inches; grayish brown (10YR 5/2) silty clay; many medium distinct yellowish brown (10YR 5/4) and common fine prominent yellowish red (5YR 4/6) masses of iron accumulation; weak fine subangular blocky structure; firm; common very fine and fine roots; extremely acid; clear wavy boundary.

Bg1—13 to 28 inches; grayish brown (2.5Y 5/2) silty clay; common medium prominent strong brown (7.5YR 5/6 and 4/6) masses of iron accumulation; weak medium subangular blocky structure; very firm; few very fine roots; common fine black stains; extremely acid; gradual wavy boundary.

Bg2—28 to 37 inches; grayish brown (2.5Y 5/2) silty clay; many medium prominent strong brown

Figure 10.—Profile of Spurger very fine sandy loam.

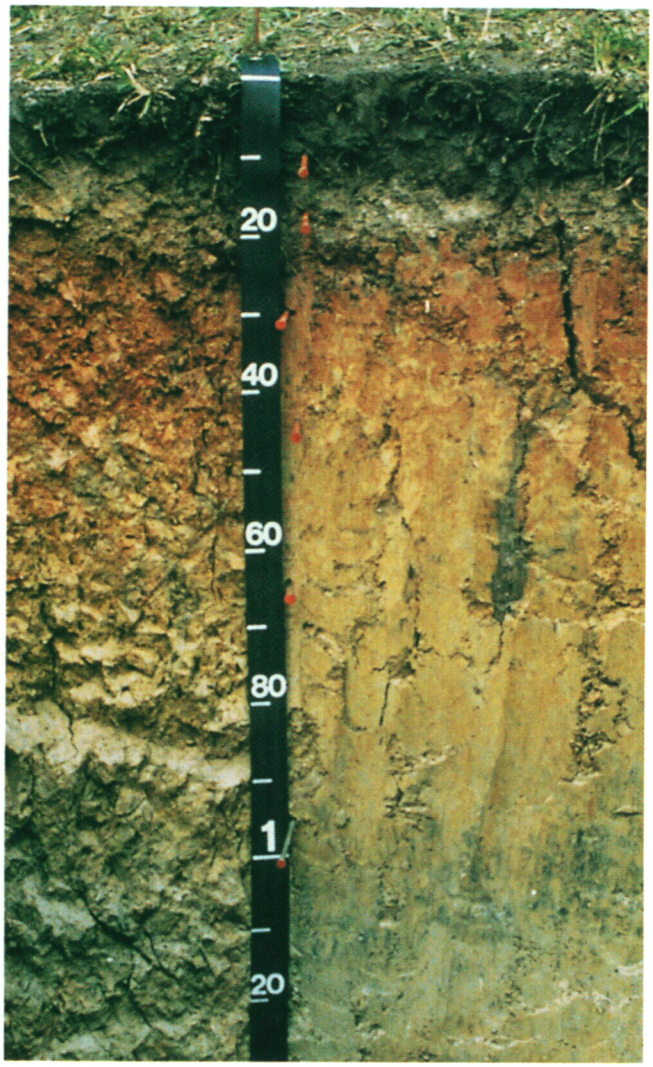

Figure 11.—Profile of Vaiden loam.

(7.5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; very firm; few very fine roots; common fine black stains; extremely acid; gradual wavy boundary.

Bg3—37 to 48 inches; grayish brown (2.5Y 5/2) silty clay; common medium and fine prominent strong brown (7.5YR 5/8) masses of iron accumulation and few fine distinct light gray (10YR 7/2) iron depletions; moderate medium subangular blocky structure; very firm; extremely acid; clear wavy boundary.

2Bg4—48 to 69 inches; grayish brown (10YR 5/2) silty clay; many medium distinct strong brown (7.5YR 4/6) and common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; common fine black stains; very strongly acid; clear wavy boundary.

2Bssg—69 to 81 inches; grayish brown (10YR 5/2) silty clay; many medium distinct strong brown (7.5YR 4/6) and few medium prominent yellowish red (5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; few slickensides; extremely acid.

Range in Characteristics

Solum thickness: More than 60 inches
Clay content in the control section: 35 to 55 percent
Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 4 to 16 inches deep
Other distinctive soil features: Slickensides and pressure faces at more than 60 inches deep
Concentrated minerals: High levels of exchangeable aluminum in the root zone
Reaction: Extremely acid to strongly acid throughout

Ap and A horizons:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Redoximorphic features—none
Texture—silty clay
Other features—none
Thickness—8 to 17 inches

B or Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown or red
Texture—silty clay, clay loam, or silty clay loam
Other features—none

2B or 2Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown or red
Texture—silty clay, clay loam, or silty clay loam
Other features—none

2Bss or 2Bssg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown or red
Texture—silty clay
Other features—slickensides and pressure faces

The Urbo soils in Vernon Parish are taxadjuncts to the Urbo series because they typically have smectitic minerology. This difference, however, does not significantly affect the use and management of the soils.

Vaiden Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Landscape: Coastal plain
Landform: Uplands
Parent material: Coastal plain sediments from Tertiary age loamy and clayey marine deposits
Slope range: 1 to 5 percent
Taxonomic classification: Very-fine, smectitic, thermic Vertic Hapludalfs
Commonly associated soils: Eastwood and Hornbeck
- Eastwood soils are in positions similar to those of the Vaiden soil, are acid throughout, and have a subsoil that is reddish in the upper part
- Hornbeck soils are in slightly lower positions than the Vaiden soil and are alkaline and calcareous throughout the subsoil

Typical Pedon

Vaiden loam, 1 to 5 percent slopes (fig. 11), in woodland; 8 miles east of Leesville, 2 miles south of the intersection of Highway 469 and Highway 28 on Highway 469, 0.9 mile west on access road, then 300 feet south of road; $SE^1/_4SE^1/_4$ sec. 14, T. 2 N., R. 8 W.; latitude 31 degrees 09 minutes 02 seconds N.; longitude 93 degrees 09 minutes 11 seconds W.; Slagle Quadrangle, Louisiana.

A—0 to 3 inches; dark grayish brown (10YR 4/2) loam; weak fine subangular blocky structure; friable; many very fine and fine roots; very strongly acid; clear wavy boundary.

Bt—3 to 8 inches; variegated light olive brown (2.5Y 5/4), yellowish brown (10YR 5/4), yellowish red (5YR 5/6), and dark grayish brown (10YR 4/2) clay; moderate medium angular blocky structure; very firm; many fine and common medium roots; many yellowish brown (10YR 5/6) pressure faces; strongly acid; clear wavy boundary.

Btss1—8 to 20 inches; yellowish brown (10YR 5/4) clay; common fine prominent yellowish red (5YR 5/6) masses of iron accumulation and common medium distinct light yellowish brown (2.5Y 6/4) iron depletions; moderate medium angular blocky structure; very firm; many fine and medium roots; few small intersecting slickensides; strongly acid; gradual wavy boundary.

Btss2—20 to 34 inches; light olive brown (2.5Y 5/4) clay; many fine distinct light brownish gray (10YR 6/2) iron depletions and yellowish brown (10YR 5/6) masses of iron accumulation; few fine distinct grayish brown (10YR 5/2) iron depletions; moderate medium subangular blocky structure; very firm; many very fine and fine roots; few small intersecting slickensides; common very fine black stains; neutral; clear wavy boundary.

Ckss1—34 to 47 inches; light brownish gray (10YR 6/2) clay; many fine prominent olive yellow (2.5Y 6/6) and common medium distinct (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; very firm; many very fine and common fine roots between common medium intersecting slickensides; many black stains on faces of slickensides; few small pockets of calcium carbonate concretions; moderately alkaline; gradual wavy boundary.

Ckss2—47 to 55 inches; light brownish gray (10YR 6/2) clay; many medium faint yellowish brown (10YR 5/4) masses of iron accumulation; moderate medium subangular blocky structure; very firm; many very fine and common fine roots between slickensides; many medium and large intersecting slickensides; many black stains on faces of slickensides; common very fine black concretions; many small pockets of calcium carbonate concretions; moderately alkaline; gradual wavy boundary.

Ckss3—55 to 73 inches; light brownish gray (2.5Y 6/2) clay; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; moderate medium angular blocky structure; firm; common very fine roots between slickensides; common large intersecting slickensides; large pockets of calcium carbonate concretions; moderately alkaline.

Range in Characteristics

Solum thickness: 20 to 36 inches

Clay content in the control section: 60 to 75 percent

Redoximorphic features: Iron depletions in shades of gray and iron accumulations beginning at 3 to 6 inches deep

Other distinctive soil features: Intersecting slickensides and pressure faces at 3 to 12 inches deep

Concentrated minerals: None

Reaction: A horizon—very strongly acid to slightly acid; Bt and Btss horizons—very strongly acid to neutral; Ckss horizon—very strongly acid to moderately alkaline

A horizon:

- Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3
- Redoximorphic features—none
- Texture—loam
- Other features—none
- Thickness—3 to 6 inches

Bt horizon:

- Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 through 8; or horizon is variegated in shades of gray, brown, or red
- Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown or red
- Texture—silty clay or clay
- Other features—none
- Thickness—0 to 6 inches

Btss horizon:

- Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 through 8; or horizon is variegated in shades of gray, brown, or red
- Redoximorphic features—few to many iron depletions in shades of gray and iron accumulations in shades of brown or red
- Texture—clay
- Other features—intersecting slickensides and pressure faces
- Thickness—more than 25 inches

Ckss horizon:

- Color—variegated in shades of gray, yellow, brown, or red

Redoximorphic features—depleted matrix or iron depletions in shades of gray and iron accumulations in shades of yellow, brown, or red
Texture—silty clay or clay
Other features—few to many calcium carbonate nodules

The Vaiden soils in Vernon Parish are taxadjuncts to the Vaiden series because they typically have less than 60 percent clay in the upper part of the argillic horizon. This difference, however, does not significantly affect the use and management of the soils.

Formation of the Soils

In this section, the processes and factors of soil formation are explained and related to the soils in the survey area, and the landforms and surface geology of the parish are described.

Processes of Soil Formation

Dr. W. H. Hudnall, Department of Agronomy, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, prepared this section.

The processes of soil formation influence the kind and degree of profile development. The factors of soil formation—parent material, climate, living organisms, relief, and time—determine the rate and relative effectiveness of different processes.

Important soil-forming processes are those that result in additions of organic, mineral, and gaseous materials to the soil; losses of these same materials from the soil; translocation of materials from one point to another within the soil; and physical and chemical transformation of mineral and organic materials within the soil (Buol and others, 1980; Simonson, 1959).

Many processes occur simultaneously. Examples are the accumulation of organic matter, the development of soil structure, the formation and translocation of clay, and the leaching of bases from some soil horizons. Some important processes that have contributed to the formation of soils in Vernon Parish are discussed in the following paragraphs.

Organic matter has accumulated in all of the soils, has partly decomposed, and has been incorporated into the soils. Organic matter production is greatest in and above the surface horizon. This results in the formation of soils in which the surface horizon is higher in organic matter content than the deeper horizons. Living organisms decompose, incorporate, and mix organic residue into the soil horizons. Many of the more stable products of decomposition remain as finely divided material that contributes to darken the soil, increases the available water-holding and cation-exchange capacities, contributes to granulation, and serves as a source of plant nutrients. In Vernon Parish, the conversion of woodland and pastureland to cropland has reduced the content of organic matter in many of the soils.

The addition of alluvial sediment at the surface has been important in the formation of some of the soils in the parish by providing new parent material in which processes of soil formation then occur. In many areas, new material has accumulated faster than the processes of soil formation could appreciably alter it. The evident depositional strata in Iuka soils are the result of this type of accumulation. The addition of alluvial sediment is also occurring in flooded areas of Guyton soils.

Processes resulting in the development of soil structure have taken place in all of the soils. Plant roots and other organisms are effective agents in the rearrangement of soil material into secondary aggregates. Decomposition products or organic residue, secretions of organisms, clays, and oxides of elements, such as iron, which form during soil development, all serve as cementing agents that help to stabilize structural aggregates.

Alternative periods of wetting and drying and shrinking and swelling contribute to the development of structural aggregates, particularly in soils that have large amounts of clay, such as Eastwood soils.

The poorly drained soils in the survey area have horizons in which the reduction and segregation of iron and manganese compounds are important processes. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese are more abundant than the less soluble oxidized forms. Reduced forms of these elements result in the gray colors that are characteristic in the subsoil of Caddo and Guyton soils. In the more soluble reduced forms, appreciable amounts of iron and manganese can be removed from the soil or translocated from one position to another within the soil by water. The browner mottles in predominantly gray horizons indicate segregation and concentration of oxidized iron compounds that resulted from alternate conditions of oxidizing and reducing.

In most of the soils, water moving through the soil has leached soluble bases and any free carbonates

that may have been initially present from some horizons. The effects of leaching are the least pronounced in Hornbeck soils. These soils formed in parent material that initially contained large amounts of free calcium carbonate. Hornbeck soils contain free calcium carbonate throughout. Except for Hornbeck soils, all of the other soils in the parish are typically acid throughout. Hornbeck soils are in the Tertiary uplands and formed in loamy and clayey sediment. Because water moves at a very slow rate through the profile; carbonates have not been leached from the soil.

The formation, translocation, and accumulation of clay in the profile have been important processes during the development of all of the soils in the parish, except for Cypress, Iuka, and Osier soils. Silicon and aluminum, released as a result of weathering of such minerals as pyroxenes, amphiboles, and feldspar, can recombine with the components of water to form secondary clay minerals, such as kaolinite. Layer silicate minerals, such as biotite and montmorillonite, can also weather to form other clay minerals, such as vermiculite or kaolinite. Horizons consisting of secondary accumulations of clay result largely from the translocation of clays from the upper to the lower horizons. As water moves downward, it can carry small amounts of clay in suspension. The clay is deposited and accumulates at the depths of water penetration or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over long periods of time, these processes can result in distinct horizons of clay accumulation.

Factors of Soil Formation

Soil is produced by soil-forming processes acting on material deposited or accumulated by geologic forces.

The characteristics of the soil at any given point are determined by the physical and mineralogical composition of the parent material, the climate under which the soil has accumulated and existed since accumulation, the plant and animal life on and in the soil, the relief, and the length of time these forces of soil formation have acted on the soil material (Jenny, 1941).

Climate and plant and animal life, chiefly plants, are active factors of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it to a natural body that has genetically related horizons. The effects of climate and plant and animal life are conditioned by relief. The parent material also affects the kind of soil profile that is formed and, in some cases, determines it almost entirely. Finally, time is needed to change the parent material into a soil profile. In most cases, a very long time is needed to develop distinct soil horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the other four. In the following paragraphs the factors of soil formation are discussed as they relate to soils in the survey area.

Climate

Vernon Parish is in a region characterized by a humid, subtropical climate. Detailed climatological data is given in the section "General Nature of the Survey Area".

The climate is relatively uniform throughout the parish. Local differences among the soils are not the result of great differences in climate. The warm, moist climate promotes rapid soil formation. High rates of precipitation promote rapid weathering of readily weatherable minerals and the downward movement of colloidal material in the soil. Plant remains decompose rapidly in the warm climate. This prevents the formation of soils that have high organic matter content. The organic acids produced by decomposition hasten the development of clay minerals and removal of carbonates. Soil development is increased because the soil is seldom frozen for prolonged periods.

Living Organisms

Plants, animals, insects, bacteria, fungi, other micro-organisms, and humans are important in the formation of soils in Vernon Parish. Plant growth and animal activity physically alter the soil. The activities of humans, such as the clearing of land and the cultivation of crops, also physically alter the surface layer of soils.

The native vegetation on bottomland and on low terraces in the parish was primarily hardwood forests. The native vegetation in the uplands was primarily mixed hardwood and pine forests. Soils that developed under mixed hardwood and pine forests generally have a lower content of organic matter and a more distinct E horizon than soils that developed under hardwood forests.

Bacteria, fungi, and other micro-organisms are primarily responsible for decomposition of organic matter and oxidation-reduction reactions that affect

the physical and chemical properties of the soils. Aerobic bacteria, which are more abundant in well drained soils, decompose organic matter rapidly; aerobic bacteria, which are more abundant in poorly drained soils, decompose organic matter slowly. Therefore, the content of organic matter in well drained soils is lower than that in poorly drained soils.

Parent Material

Parent material is the mass from which soil develops. It affects the color, texture, permeability, mineralogy, and the erosion potential of the soil.

The soils in Vernon Parish formed in alluvium deposited by local streams. They also formed in Pleistocene and Tertiary sediment (Anderson, 1960; Welch, 1942).

The characteristics, distribution, and depositional pattern of the different parent material in the parish are discussed in more detail in the section "Landforms and Surface Geology."

Relief

Relief influences soil formation by affecting soil drainage, runoff, erosion, deposition, and soil temperature. The influence of relief on soils in Vernon Parish is especially evident in the rate of surface runoff, in internal soil drainage, and in depth to a seasonal high water table. For example, relief on the Kisatchie, Rayburn, and Mayhew soils is progressively less in the order in which the soils are listed. The same order also indicates progressively lower elevations. For example, Kisatchie soils are in the highest positions and are well drained; runoff is rapid, and a seasonal high water table is at a depth of more than 6 feet. Mayhew soils generally are in the lowest positions and are poorly drained; runoff is slow to medium, and a seasonal high water table fluctuates from near the soil surface to a depth of about 1 foot below the surface.

In some areas in the uplands, relief is great and slopes are steep. Runoff is rapid, and little water enters the soil. Erosion is occurring on soils in these areas at rates nearly equal to those of soil formation. This accounts for the relatively thin sola of the Sacul soils.

Time

In the process of soil formation, many years are required to change the parent material (Jenny, 1941). The age of a soil, however, is generally determined by the degree of profile development. For soils that have the same parent material, the soils that exhibit little profile development are immature, and those that have a well expressed soil profile are mature.

Generally, the longer the parent material has remained in place, the more fully developed the soil profile. In Vernon Parish, parent material ranges in age from a few hundred years to many millions of years.

The youngest soils in the parish, such as Iuka soils, formed in recent alluvium that was deposited by overflow from local streams during the last 500 years. These soils have relatively weakly expressed soil horizons.

The oldest soils in the parish are in the uplands. They formed in parent material ranging in age from 20,000 years to about 35 million years (Welch, 1942).

Landforms and Surface Geology

Michael C. Cooley, area resource soil scientist, Natural Resources Conservation Service, prepared this section.

Vernon Parish is located in west-central Louisiana. It is bounded on the north by Natchitoches and Sabine Parishes, on the east by Rapides Parish, and on the south by Beauregard and Allen Parishes. Its western boundary is the Sabine River, which is also the boundary between Louisiana and Texas.

About 60 percent of Vernon Parish is drained by creeks and bayous that form the uppermost drainage basin of the Calcasieu River. These streams flow eastward, southeastward, and southerly to form the Calcasieu River, which eventually empties into Calcasieu Lake and then into the Gulf of Mexico. The major tributaries of the Calcasieu River in Vernon Parish include Devil's Creek, Comrade Creek, Ten Mile Creek, Six Mile Creek, and the upper drainages of Whiskey Chitto Creek and Bundicks Creek. About 40 percent of Vernon Parish along the northwestern and western edges is drained by creeks and bayous which empty into the Sabine River along the Louisiana-Texas border. These drainages include, from north to south, Anacoco Creek, West Anacoco Creek, Sandy Creek, Prairie Creek, Bayou Castor, and Bayou Anacoco. The water from these drainages flows westward into the Sabine River then southward to Sabine Lake into the Gulf of Mexico.

There are three main physiographic areas in Vernon Parish—Tertiary Uplands, High Terraces of the Pleistocene Uplands, and the local alluvial valleys that drain the uplands. The Tertiary Uplands are found over the northern two-thirds of the parish, and the High Terraces of the Pleistocene Uplands are

found over the southern one-third of the parish. Of minor extent are the intermediate and younger terraces of the Pleistocene Uplands, which flank the valleys of all the major streams in the parish. Each of these areas can be further subdivided on the basis of differences in parent materials, time of deposition, or physiographic features.

Tertiary Uplands

The Louisiana Geological Survey indicates that the Tertiary sediments of Vernon Parish consist of the Jackson, Vicksburg, and Grand Gulf Groups (Welch, 1942). Only the Grand Gulf Group is differentiated in Vernon Parish. The Jackson and Vicksburg Groups are undifferentiated due to the small size of outcrop areas in the parish.

Jackson Group

The Jackson Group of sediments outcrop only in a small area of Vernon Parish. This outcrop area is limited to a one-half square mile in the extreme northwest corner of Vernon Parish. These sediments were derived from brackish water marine sediments and have an average thickness of 600 feet. The sediments consist of calcareous, fossiliferous, glauconitic, arenaceous clays and silts that are sometimes thin-bedded (Welch, 1942). In nearby Sabine Parish, the Jackson Group outcrops have been identified as Danville Landing Beds.

Vicksburg Group

The Vicksburg Group of sediments outcrop only in a small area of northwest Vernon Parish near North and South Lucius Creeks. This outcrop area is limited to about one square mile in size. These sediments were also derived from brackish water marine deposits and have a thickness of about 200 feet. They are composed of interlaminated arenaceous silt and lignitic shales.

Grand Gulf Group

The majority of Tertiary sediments found, by far, in Vernon Parish belong to the Grand Gulf Group. These sediments are considered to be Miocene in age. Two formations have been differentiated within the Grand Gulf Group—the Catahoula Formation, which is found in a band along the Natchitoches-Vernon Parish line, and the Fleming Formation, which covers most of the north-central and central portions of the parish. These sediments are approximately 3,000 feet thick in Vernon Parish and consist of poorly consolidated fluviatile and brackish water sediments. These beds increase in thickness southward toward the Gulf of Mexico (Welch, 1942).

The Catahoula Formation outcrops as a band 4 to 8 miles wide across the northern portion of Vernon Parish. It is largely fluviatile in origin (Welch, 1942). It is the most extensive formation in western Louisiana that contains bentonitic and tuffaceous materials. This formation consists of channel and point bar sandstone, levee and crevasse-splay sandstone, siltstone, and mudstone. Materials of the Catahoula Formation contain volcanic ash to the intricate mixing of sediments from different sources during deposition.

Pleistocene Terraces

The Pleistocene age was characterized by periods of deposition associated with continental glaciation. Each period produced alluvial coast-trending terraces. The oldest terrace occupies the highest elevation and each subsequent terrace at a slightly lower elevation. The sediments for these terraces were deposited as lobes of a major delta system with a variety of sediment sources (USDA, 1990).

High Terraces

The High Terraces in Vernon Parish occur as a belt along the southern one-third of the parish in an east-west trend. These terraces are a part of a regional coast-trending terrace that extends across Louisiana. The Sabine River has dissected this terrace along the western edge of the parish.(Bpss Geo Sect)

The High Terraces in Vernon Parish are characterized by narrow, gently sloping ridgetops and strongly sloping side slopes dissected by numerous drains. Several larger streams have completely dissected the High Terraces leaving Tertiary age Fleming clays exposed on many of the toeslopes. The soils that developed on the High Terraces of Vernon Parish include Boykin, Malbis, and Ruston.

Intermediate Terraces

This physiographic region is found along the Sabine River south of Burr's Ferry, along Anacoco Creek as isolated remnant outcrop areas, in the vicinity of Pitkin, and along Big Creek. The Intermediate Terraces are very gently sloping to strongly sloping and rest comfortably on top or superposes the High Terraces as the High Terraces dip to the south. These terraces were deposited after the High Terraces had undergone mature dissection by streams; therefore, the Intermediate Terraces also flank these streams north, well into the streams of the High Terraces.

The Intermediate Terraces have undergone dissection by local streams, producing some of the more sloping landscapes found on the Pleistocene Terraces in the parish. The soils that have developed on these landscapes include Caddo-Messer complex, Glenmora, Gore, Kirbyville-Niwana complex, Kolin, and Malbis.

Lower Terraces

These landforms are found throughout the parish along major drainageways of the uplands. Along the Sabine River near Burr's Ferry, the Lower Terraces lie about 20 feet above the Recent flood plain (Welch, 1942). The sandy material of this valley fill is the result of a great pluvial period that affected the larger stream valleys.

The Lower Terraces occupy broad, nearly level to gently sloping areas adjacent to major drainageways with Recent flood plains of the uplands. The soils that have developed on these terraces include Cahaba, Dubach, and Hainesville.

Recent Alluvium

Alluvial deposits found on the flood plains of Sabine River, Anacoco Creek, Calcasieu River, and other smaller streams in Vernon Parish are Holocene in age. These flood plains are subject to occasional and frequent flooding, local erosion of deposited sediments, and deposition of other sediments. The topography of the Recent flood plains is level to gently sloping, with a slightly higher natural levee adjacent to the incised stream channels. The soils that have developed in these flood plains include Guyton, Iuka, and Urbo.

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Glossary

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, and 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.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottomland. 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 depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

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.

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.

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.

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 the 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 in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The movement of water into the soil is rapid.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Footslope. The inclined surface at the base of a hill.

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 the 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated rock (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.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

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

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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.

Large stones (in tables). Rock fragments that are 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

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.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three 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.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called ""a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects 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, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, 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.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed

also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

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:

Ultra acid	below 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly 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

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Seepage (in tables). The movement of water through the soil adversely affects 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 underlying material. 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.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and

codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level to nearly level	0 to 1 percent
Very gently sloping	1 to 2 percent
Gently sloping	1 to 3 percent
Moderately sloping	3 to 5 percent
Sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of 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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

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

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion 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.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

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.

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.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1931-91 at Leesville, Louisiana)

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January	60.0	37.5	48.7	79	14	113	4.95	2.47	7.11	7
February	64.0	40.3	52.1	83	18	141	4.93	2.64	6.94	6
March	71.1	46.4	58.8	87	24	288	4.43	2.47	6.17	6
April	78.3	54.3	66.3	89	33	470	4.71	1.73	7.18	5
May	84.6	61.2	72.9	93	44	675	5.44	2.74	7.79	6
June	90.5	67.6	79.0	98	53	833	4.67	1.76	7.10	5
July	92.7	70.3	81.5	100	61	948	4.76	2.75	6.55	7
August	93.1	69.6	81.4	101	53	937	3.83	1.79	5.71	5
September	88.5	64.4	76.5	98	44	764	3.74	1.57	5.58	5
October	80.7	53.1	66.9	102	31	506	3.34	1.16	5.58	4
November	70.0	44.8	57.4	95	19	248	4.72	2.21	7.36	5
December	62.4	39.2	50.8	87	14	130	5.62	3.18	7.97	6
Yearly:										
Average	78.0	54.1	66.0	---	---	---	---	---	---	---
Extreme	108	1	---	102	12	---	---	---	---	---
Total	---	---	---	---	---	6,053	55.13	40.81	65.30	67

* 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 1931-91 at Leesville, Louisiana)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 6	March 23	April 4
2 years in 10 later than--	February 27	March 15	March 29
5 years in 10 later than--	February 10	February 28	March 18
First freezing temperature in fall			
1 year in 10 earlier than--	November 14	October 29	October 22
2 years in 10 earlier than--	November 22	November 5	October 27
5 years in 10 earlier than--	December 8	November 19	November 7

Table 3.--Growing Season

(Recorded in the period 1931-91 at Leesville, Louisiana)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	258	229	207
8 years in 10	268	240	216
5 years in 10	288	260	233
2 years in 10	307	281	250
1 year in 10	318	292	258

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AnC	Angie very fine sandy loam, 1 to 5 percent slopes	600	0.1
BaB	Beauregard fine sandy loam, 1 to 3 percent slopes	9,600	1.1
BaC	Beauregard fine sandy loam, 3 to 5 percent slopes	1,000	0.1
BeC	Betis loamy fine sand, 1 to 5 percent slopes	8,200	1.0
BEE	Betis loamy fine sand, 5 to 12 percent slopes	13,900	1.6
BhC	Bienville loamy fine sand, 1 to 5 percent slopes	2,800	0.3
BnC	Bowie fine sandy loam, 1 to 5 percent slopes	1,100	0.1
BoB	Boykin loamy fine sand, 1 to 3 percent slopes	7,000	0.8
BoD	Boykin loamy fine sand, 3 to 8 percent slopes	4,900	0.6
BrC	Briley loamy fine sand, 1 to 5 percent slopes	31,100	3.6
BRE	Briley loamy fine sand, 5 to 12 percent slopes	22,100	2.6
CaA	Caddo silt loam, 0 to 1 percent slopes	3,500	0.4
CbA	Caddo-Messer complex	2,800	0.3
ChB	Cahaba fine sandy loam, 1 to 3 percent slopes	11,200	1.3
CoC	Corrigan fine sandy loam, 1 to 5 percent slopes	6,900	0.8
CYA	Cypress clay	600	0.1
DuC	Dubach fine sandy loam, 1 to 5 percent slopes	4,900	0.6
EaC	Eastwood silt loam, 1 to 5 percent slopes	27,200	3.2
EAE	Eastwood silt loam, 5 to 12 percent slopes	69,100	8.1
GeB	Glenmora silt loam, 1 to 3 percent slopes	1,000	0.1
GoC	Gore very fine sandy loam, 1 to 5 percent slopes	4,700	0.5
GOE	Gore very fine sandy loam, 5 to 12 percent slopes	6,300	0.7
GtA	Guyton silt loam, 0 to 1 percent slopes	800	0.1
GuA	Guyton silt loam, occasionally flooded	8,200	1.0
GYA	Guyton-Iuka complex, frequently flooded	158,200	18.3
HaB	Hainesville fine sand, 0 to 2 percent slopes, occasionally flooded	12,400	1.4
HoC	Hornbeck clay, 1 to 5 percent slopes	6,300	0.7
HoD	Hornbeck clay, 5 to 8 percent slopes	5,800	0.7
KcB	Kirbyville-Niwana complex	57,500	6.7
KEF	Kisatchie-Rayburn fine sandy loams, 5 to 20 percent slopes	35,800	4.2
KoC	Kolin silt loam, 1 to 5 percent slopes	1,500	0.2
LtC	Letney loamy sand, 1 to 5 percent slopes	3,400	0.4
LTE	Letney loamy sand, 5 to 12 percent slopes	2,200	0.3
MaB	Malbis fine sandy loam, 1 to 3 percent slopes	88,900	10.4
MaC	Malbis fine sandy loam, 3 to 5 percent slopes	69,400	8.1
MhC	Mayhew silt loam, 1 to 5 percent slopes	22,200	2.6
MoB	Merryville-Besner complex	2,600	0.3
OsB	Osier loamy fine sand, 0 to 2 percent slopes	2,200	0.3
Pg	Pits	800	0.1
RaC	Rayburn fine sandy loam, 1 to 5 percent slopes	4,000	0.5
Rh	Riverwash	400	*
RuB	Ruston fine sandy loam, 1 to 3 percent slopes	27,100	3.2
RuD	Ruston fine sandy loam, 3 to 8 percent slopes	37,300	4.3
SaC	Sacul fine sandy loam, 1 to 5 percent slopes	5,400	0.6
SAE	Sacul fine sandy loam, 5 to 12 percent slopes	6,000	0.7
SeC	Sawyer very fine sandy loam, 1 to 5 percent slopes	6,000	0.7
SpC	Spurger very fine sandy loam, 1 to 5 percent slopes	1,000	0.1
TrC	Trep loamy fine sand, 1 to 5 percent slopes	11,500	1.3
TRE	Trep loamy fine sand, 5 to 12 percent slopes	11,300	1.3
UBA	Urbo silty clay, frequently flooded	7,700	0.9
VaC	Vaiden loam, 1 to 5 percent slopes	15,900	1.9
	Water	6,000	0.7
	Total	858,300	100.0

* Less than 0.1 percent.

Table 5.--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	Bahiagrass	Common bermudagrass	Improved bermudagrass
		AUM*	AUM*	AUM*
AnC---------- Angie	IIIe	7.5	5.0	12.0
BaB---------- Beauregard	IIe	7.0	6.0	11.0
BaC---------- Beauregard	IIIe	7.0	6.0	10.5
BeC---------- Betis	IIIs	6.5	---	3.0
BEE---------- Betis	VIe	5.5	---	2.0
BhC---------- Bienville	IIIs	6.5	5.5	11.0
BnC---------- Bowie	IIIe	6.0	5.0	7.0
BoB---------- Boykin	IIIs	8.0	6.0	10.0
BoD---------- Boykin	IIIe	8.0	6.0	10.0
BrC---------- Briley	IIIe	8.0	6.0	9.0
BRE---------- Briley	IVe	8.0	6.0	8.0
CaA---------- Caddo	IIIw	6.5	5.0	---
CbA**:				
Caddo----------	IIIw	6.5	5.0	---
Messer----------	IIw	6.0	4.5	10.0
ChB---------- Cahaba	IIe	8.0	6.0	9.5
CoC---------- Corrigan	IVe	4.5	4.0	---
CYA---------- Cypress	VIIIw	---	---	---
DuC---------- Dubach	IIIe	8.5	4.5	9.5
EaC---------- Eastwood	IVe	6.0	6.0	7.5

See footnote at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Bahiagrass	Common bermudagrass	Improved bermudagrass
		AUM*	AUM*	AUM*
EAE---------- Eastwood	VIe	5.5	5.5	6.5
GeB---------- Glenmora	IIe	7.0	5.0	11.0
GoC---------- Gore	IVe	6.5	4.5	---
GOE---------- Gore	VIe	6.0	4.0	---
GtA---------- Guyton	IIIw	6.5	5.0	---
GuA---------- Guyton	IVw	6.0	4.5	---
GYA**---------- Guyton and Iuka	Vw	---	---	---
HaB---------- Hainesville	IVw	5.0	5.0	7.5
HoC---------- Hornbeck	IIIe	5.5	5.0	---
HoD---------- Hornbeck	IVe	5.0	4.5	---
KcB**---------- Kirbyville and Niwana	IIw	7.2	6.4	9.0
KEF---------- Kisatchie and Rayburn	VIe	---	---	6.3
KoC---------- Kolin	IIIe	8.5	5.5	12.0
LtC---------- Letney	IIIs	6.5	---	6.0
LTE---------- Letney	VIe	5.0	---	5.0
MaB, MaC---------- Malbis	IIe	8.5	5.5	9.5
MhC---------- Mayhew	IIIe	5.0	4.5	---
MoB**:				
Merryville----------	IIIw	---	7.0	---
Besner----------	IIe	7.0	6.0	8.0
OsB---------- Osier	Vw	5.0	---	---
Pg**---------- Pits	VIIIs	---	---	---

See footnote at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Bahiagrass	Common bermudagrass	Improved bermudagrass
		AUM*	AUM*	AUM*
RaC---------- Rayburn	IVe	5.0	---	5.0
Rh**---------- Riverwash	Vw	---	---	---
RuB---------- Ruston	IIe	9.5	5.5	12.0
RuD---------- Ruston	IIIe	9.5	5.5	12.0
SaC---------- Sacul	IVe	7.5	6.5	7.5
SAE---------- Sacul	VIe	6.5	5.5	7.0
SeC---------- Sawyer	IIIe	---	7.0	9.0
SpC---------- Spurger	IIIe	---	5.0	8.0
TrC---------- Trep	IVe	6.0	6.0	9.0
TRE---------- Trep	VIe	5.5	5.5	8.0
UBA---------- Urbo	IVw	5.0	4.5	---
VaC---------- Vaiden	IIIe	6.5	---	4.5

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

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 6.--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	Wood-land suita-bility group	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Plant competi-tion	Common trees	Site index	Produc-tivity class*	
AnC--Angie	2w8	Slight	Moderate	Slight	Severe	Loblolly pine Slash pine Longleaf pine Sweetgum Southern red oak	92 --- --- --- ---	10 --- --- --- ---	Loblolly pine, slash pine.
BaB, BaC--Beauregard	2w8	Slight	Moderate	Moderate	Moderate	Loblolly pine Slash pine Longleaf pine Sweetgum Southern red oak	93 --- --- --- ---	10 --- --- --- ---	Loblolly pine, slash pine, Shumard oak.
BeC, BEE--Betis	3s2	Slight	Severe	Moderate	Moderate	Loblolly pine Shortleaf pine	83 80	8 9	Loblolly pine.
BhC--Bienville	2s2	Slight	Severe	Moderate	Slight	Loblolly pine Longleaf pine Shortleaf pine	96 88 75	10 8 8	Loblolly pine, shortleaf pine.
BnC--Bowie	2o1	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine	86 80	9 9	Loblolly pine.
BoB, BoD--Boykin	2s2	Slight	Slight	Moderate	Moderate	Loblolly pine Shortleaf pine Longleaf pine Slash pine Hickory Southern red oak	90 80 80 --- --- ---	9 9 7 --- --- ---	Loblolly pine.
BrC, BRE--Briley	2s2	Slight	Slight	Moderate	Moderate	Loblolly pine Shortleaf pine Longleaf pine	80 70 ---	8 8 ---	Loblolly pine, slash pine.
CaA--Caddo	2w9	Slight	Severe	Moderate	Severe	Loblolly pine Slash pine Sweetgum Water oak	98 --- --- ---	10 --- --- ---	Loblolly pine, slash pine, water oak.
CbA**:									
Caddo	2w9	Slight	Severe	Moderate	Severe	Loblolly pine Slash pine Sweetgum Water oak	98 --- --- ---	10 --- --- ---	Loblolly pine, slash pine, water oak.
Messer	2w8	Slight	Moderate	Slight	Moderate	Loblolly pine Slash pine Longleaf pine Sweetgum	95 95 75 90	10 12 6 7	Loblolly pine, slash pine, water oak, cherrybark oak, Shumard oak.

See footnote at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Woodland suitability group	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
ChB---------- Cahaba	2o7	Slight	Slight	Slight	Moderate	Loblolly pine----------	87	9	Loblolly pine,
						Slash pine----------	91	12	slash pine,
						Shortleaf pine----------	70	8	sweetgum,
						Sweetgum----------	90	7	water oak.
						Southern red oak----	---	---	
						Water oak----------	---	---	
CoC---------- Corrigan	3c2	Moderate	Moderate	Moderate	Slight	Loblolly pine----------	84	8	Loblolly pine,
						Shortleaf pine----------	70	8	shortleaf
						Longleaf pine----------	80	7	pine, longleaf
						Slash pine----------	---	---	pine.
						Sweetgum----------	---	---	
CYA---------- Cypress	4w6	Slight	Severe	Severe	Severe	Baldcypress----------	78	3	Baldcypress.
						Water tupelo--------	---	---	
DuC---------- Dubach	2o1	Slight	Slight	Slight	Moderate	Loblolly pine----------	94	10	Loblolly pine.
						Slash pine----------	94	12	
						Shortleaf pine----------	---	---	
						Southern red oak----	---	---	
						White oak----------	---	---	
						Sweetgum----------	---	---	
EaC---------- Eastwood	3c2	Slight	Moderate	Slight	Slight	Loblolly pine----------	93	10	Loblolly pine.
						Shortleaf pine----------	---	---	
						Sweetgum----------	---	---	
						Southern red oak----	---	---	
						Hickory----------	---	---	
EAE---------- Eastwood	3c2	Moderate	Moderate	Slight	Slight	Loblolly pine----------	86	9	Loblolly pine.
						Shortleaf pine----------	77	9	
						Sweetgum----------	---	---	
						Southern red oak----	---	---	
						Hickory----------	---	---	
GeB---------- Glenmora	2w8	Slight	Slight	Slight	Severe	Loblolly pine----------	93	10	Loblolly pine,
						Slash pine----------	---	---	slash pine,
						Longleaf pine----------	---	---	cherrybark
						Sweetgum----------	---	---	oak, Shumard
						Water oak----------	---	---	oak.
						Cherrybark oak------	---	---	
GoC, GOE-------- Gore	3c2	Slight	Moderate	Moderate	Moderate	Loblolly pine----------	76	7	Loblolly pine,
						Shortleaf pine----------	---	---	slash pine.
						Slash pine----------	---	---	
GtA, GuA-------- Guyton	2w9	Slight	Severe	Moderate	Severe	Loblolly pine----------	85	8	Loblolly pine,
						Slash pine----------	90	11	water oak,
						Sweetgum----------	---	--	slash pine,
						Green ash----------	---	--	green ash.
						Cherrybark oak------	---	--	
						Water oak----------	---	--	
						Willow oak----------	78	5	

See footnote at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Wood-land suitability group	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Productivity class*	
GYA**:									
Guyton	2w9	Slight	Severe	Severe	Severe	Green ash	100	6	Nuttall oak, green ash.
						Sweetgum	---	--	
						Black willow	---	--	
						Nuttall oak	---	--	
						Eastern cottonwood	---	--	
						Sugarberry	---	--	
						Loblolly pine	95	10	
Iuka	1w8	Slight	Moderate	Moderate	Severe	Loblolly pine	100	9	Loblolly pine, eastern cottonwood, yellow-poplar.
						Sweetgum	100	10	
						Eastern cottonwood	105	10	
						Water oak	100	7	
HaB	2s2	Slight	Moderate	Severe	Slight	Loblolly pine	96	10	Loblolly pine.
Hainesville						Shortleaf pine	---	---	
						Longleaf pine	---	---	
						Slash pine	---	---	
HoC, HoD	3c2	Slight	Severe	Moderate	Severe	Loblolly pine	75	7	Loblolly pine, slash pine.
Hornbeck						Shortleaf pine	---	---	
						Eastern redcedar	---	---	
						Sweetgum	90	7	
KcB**:									
Kirbyville	2w1	Slight	Moderate	Slight	Moderate	Loblolly pine	100	11	Loblolly pine, sweetgum, southern red oak.
						Shortleaf pine	90	10	
						Longleaf pine	98	10	
Niwana	2w8	Slight	Slight	Slight	Slight	Loblolly pine	96	10	Loblolly pine, slash pine, sweetgum.
						Longleaf pine	---	---	
						Sweetgum	---	---	
KEF**:									
Kisatchie	5d3	Moderate	Moderate	Severe	Moderate	Loblolly pine	70	6	Loblolly pine, slash pine, longleaf pine.
						Slash pine	70	8	
						Longleaf pine	---	---	
						Post oak	---	---	
						Hickory	---	---	
Rayburn	2c8	Moderate	Moderate	Moderate	Moderate	Loblolly pine	87	9	Loblolly pine, slash pine.
						Shortleaf pine	---	---	
						Longleaf pine	74	6	
						Slash pine	---	---	
KoC	3w8	Slight	Slight	Slight	Severe	Loblolly pine	85	8	Loblolly pine, slash pine.
Kolin						Longleaf pine	---	---	
						Slash pine	---	---	
						Sweetgum	---	---	
						White oak	---	---	
						Southern red oak	---	---	
LtC, LTE	2s2	Slight	Moderate	Moderate	Moderate	Loblolly pine	86	9	Loblolly pine, slash pine.
Letney						Shortleaf pine	---	---	
						Longleaf pine	81	7	
						Slash pine	---	---	

See footnote at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Woodland suitability group	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Productivity class*	
MaB, MaC-------- Malbis	2o1	Slight	Slight	Slight	Moderate	Loblolly pine------- Slash pine---------- Longleaf pine------- Shortleaf pine------	90 90 80 ---	9 11 7 ---	Loblolly pine, slash pine.
MhC------------- Mayhew	2w9	Slight	Moderate	Moderate	Severe	Loblolly pine------- Longleaf pine------- Shortleaf pine------ Slash pine---------- Sweetgum------------	90 --- --- --- 90	7 --- --- --- 7	Loblolly pine, slash pine.
MoB**: Merryville----- Besner--------- OsB------------- Osier	2w9 2o1 2w9	Slight Slight Slight	Severe Slight Severe	Moderate Slight Severe	Severe Slight Severe	Loblolly pine------- Water oak----------- Willow oak---------- Sweetgum------------ Loblolly pine------- Shortleaf pine------ Sweetgum------------ Southern red oak---- Slash pine---------- Loblolly pine------- Longleaf pine------- Sweetgum------------	109 80 80 80 99 --- --- --- 85 87 69 ---	12 5 5 6 9 --- --- --- 11 9 5 ---	Loblolly pine, water oak. Loblolly pine, slash pine. Slash pine, loblolly pine.
RaC------------- Rayburn	3c2	Slight	Moderate	Moderate	Moderate	Loblolly pine------- Shortleaf pine------ Longleaf pine------- Slash pine----------	87 --- 74 ---	9 -- 6 ---	Loblolly pine, slash pine.
RuB, RuD-------- Ruston	2o1	Slight	Slight	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine------- Southern red oak---- Post oak------------ Sweetgum------------ Hickory------------- Shortleaf pine------	91 91 76 --- --- --- --- ---	9 12 6 --- --- --- --- ---	Loblolly pine, slash pine, longleaf pine.
SaC, SAE-------- Sacul	3c2	Slight	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Southern red oak---- Hickory-------------	94 84 --- ---	10 10 --- ---	Loblolly pine, shortleaf pine.
SeC------------- Sawyer	2w8	Slight	Slight	Slight	Moderate	Loblolly pine------- Slash pine---------- Longleaf pine------- Shortleaf pine------	94 90 80 83	10 11 7 10	Loblolly pine, slash pine, longleaf pine, shortleaf pine.
SpC------------- Spurger	3c2	Slight	Moderate	Slight	Moderate	Loblolly pine------- Shortleaf pine------ Southern red oak---- Sweetgum------------ Slash pine----------	105 90 90 105 ---	12 10 5 11 ---	Loblolly pine, sweetgum, southern red oak.

See footnote at end of table.

Table 6.--Woodland Management and Productivity--Continued

Soil name and map symbol	Wood-land suitability group	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Common trees	Site index	Productivity class*	
TrC, TRE--------- Trep	2s2	Slight	Slight	Moderate	Moderate	Loblolly pine------- Shortleaf pine------ Slash pine----------	90 80 ---	9 9 ---	Loblolly pine, shortleaf pine, slash pine.
UBA-------------- Urbo	2w9	Slight	Severe	Severe	Moderate	Cherrybark oak------ Green ash---------- Sweetgum----------	99 93 98	10 4 9	Green ash, Nuttall oak, baldcypress.
VaC-------------- Vaiden	3c8	Slight	Moderate	Moderate	Severe	Loblolly pine------- Shortleaf pine------ Eastern redcedar---- Southern red oak----	80 65 45 70	8 7 4 4	Loblolly pine, eastern redcedar.

* 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 7.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe.")

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AnC Angie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
BaB, BaC Beauregard	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
BeC Betis	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BEE Betis	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
BhC Bienville	Severe: flooding.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BnC Bowie	Slight	Slight	Moderate: slope.	Slight	Slight.
BoB, BoD Boykin	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BrC Briley	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
BRE Briley	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
CaA Caddo	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CbA*: Caddo	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
ChB Cahaba	Slight	Slight	Moderate: slope.	Slight	Slight.
CoC Corrigan	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CYA Cypress	Severe: flooding, ponding, percs slowly.	Severe: ponding, too clayey, too acid.	Severe: too clayey, ponding, flooding.	Severe: ponding, too clayey.	Severe: too acid, ponding, flooding.
DuC Dubach	Slight	Slight	Moderate: slope.	Slight	Slight.
EaC Eastwood	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
EAE Eastwood	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope.
GeB Glenmora	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
GoC Gore	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: droughty.
GOE Gore	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope, droughty.
GtA Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GuA Guyton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GYA*: Guyton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Iuka	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
HaB Hainesville	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
HoC Hornbeck	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
HoD Hornbeck	Severe: percs slowly, too clayey.	Severe: too clayey, percs slowly.	Severe: slope, too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey.
KcB*: Kirbyville	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
KcB*:					
Niwana	Slight	Slight	Moderate: slope.	Slight	Slight.
KEF*:					
Kisatchie	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight	Moderate: slope.
Rayburn	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope.
KoC	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
Kolin					
LtC	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
Letney					
LTE	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Letney					
MaB, MaC	Slight	Slight	Moderate: slope.	Slight	Slight.
Malbis					
MhC	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Mayhew					
MoB*:					
Merryville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Besner	Slight	Slight	Moderate: slope.	Slight	Slight.
OsB	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Osier					
Pg*	Variable	Variable	Variable	Variable	Variable.
Pits					
RaC	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
Rayburn					
Rh*	Severe: flooding, wetness.	Severe: wetness, too sandy.	Severe: wetness, flooding.	Severe: wetness, too sandy.	Severe: wetness, droughty, flooding.
Riverwash					
RuB, RuD	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Ruston					

See footnote at end of table.

Table 7.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SaC Sacul	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Slight	Slight.
SAE Sacul	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Slight	Moderate: slope.
SeC Sawyer	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
SpC Spurger	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
TrC Trep	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: droughty.
TRE Trep	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty.
UBA Urbo	Severe: flooding, wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness, flooding.	Severe: too clayey.	Severe: flooding, too clayey.
VaC Vaiden	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.--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
AnC---Angie	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BaB---Beauregard	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BaC---Beauregard	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BeC, BEE---Betis	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BhC---Bienville	Fair	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BnC---Bowie	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BoB, BoD---Boykin	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BrC---Briley	Poor	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BRE---Briley	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CaA---Caddo	Fair	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
CbA*:											
Caddo	Fair	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
Messer	Good	Good	Good	Fair	Good	Fair	Poor	Poor	Good	Good	Poor.
ChB---Cahaba	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CoC---Corrigan	Fair	Fair	Good	Good	Good	Good	Fair	Very poor.	Fair	Good	Very poor.
CYA---Cypress	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
DuC---Dubach	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EaC---Eastwood	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EAE---Eastwood	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GeB---Glenmora	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

See footnote at end of table.

Table 8.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
GoC---- Gore	Fair	Fair	Good	Fair	Fair	Good	Poor	Poor	Fair	Fair	Poor.
GOE---- Gore	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
GtA---- Guyton	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good.
GuA---- Guyton	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GYA*:											
Guyton----	Poor	Fair	Fair	Fair	Fair	Poor	Good	Good	Poor	Fair	Good.
Iuka----	Poor	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
HaB---- Hainesville	Poor	Fair	Fair	Fair	Good	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
HoC---- Hornbeck	Fair	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
HoD---- Hornbeck	Fair	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
KcB*:											
Kirbyville----	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Niwana----	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KEF*:											
Kisatchie----	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rayburn----	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KoC---- Kolin	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LtC, LTE---- Letney	Poor	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MaB, MaC---- Malbis	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhC---- Mayhew	Fair	Fair	Good	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
MoB*:											
Merryville----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Besner----	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OsB---- Osier	Very poor.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.

See footnote at end of table.

Table 8.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Pg*--Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
RaC--Rayburn	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Rh*--Riverwash	---	---	---	---	---	---	Very poor.	Very poor.	---	---	Very poor.
RuB--Ruston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuD--Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaC--Sacul	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SAE--Sacul	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SeC--Sawyer	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SpC--Spurger	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
TrC, TRE--Trep	Poor	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
UBA--Urbo	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Fair	Fair	Fair.
VaC--Vaiden	Fair	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." 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
AnC Angie	Moderate: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
BaB Beauregard	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
BaC Beauregard	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Moderate: wetness.
BeC Betis	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: droughty.
BEE Betis	Severe: cutbanks cave.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
BhC Bienville	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
BnC Bowie	Moderate: wetness.	Slight	Slight	Moderate: low strength.	Slight.
BoB Boykin	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: droughty.
BoD Boykin	Severe: cutbanks cave.	Slight	Moderate: slope.	Slight	Moderate: droughty.
BrC Briley	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: droughty.
BRE Briley	Severe: cutbanks cave.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
CaA Caddo	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CbA*: Caddo	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Messer	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.
ChB Cahaba	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CoC---------- Corrigan	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, shrink-swell.	Severe: wetness.
CYA---------- Cypress	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: too acid, ponding, flooding.
DuC---------- Dubach	Moderate: wetness.	Slight----------	Slight----------	Slight----------	Slight.
EaC---------- Eastwood	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
EAE---------- Eastwood	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
GeB---------- Glenmora	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
GoC---------- Gore	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: droughty.
GOE---------- Gore	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope, droughty.
GtA---------- Guyton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
GuA---------- Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
GYA*:					
Guyton----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Iuka----------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
HaB---------- Hainesville	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty.
HoC, HoD---------- Hornbeck	Severe: cutbanks cave.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: too clayey.

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
KcB*:					
Kirbyville	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
Niwana	Moderate: wetness.	Slight	Slight	Slight	Slight.
KEF*:					
Kisatchie	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: slope.	Severe: shrink-swell, low strength.	Moderate: slope.
Rayburn	Moderate: too clayey, wetness, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
KoC	Severe:	Severe:	Severe:	Severe:	Moderate:
Kolin	wetness.	shrink-swell.	shrink-swell.	low strength, shrink-swell.	wetness.
LtC	Severe:	Slight	Slight	Slight	Moderate:
Letney	cutbanks cave.				droughty.
LTE	Severe:	Moderate:	Severe:	Moderate:	Moderate:
Letney	cutbanks cave.	slope.	slope.	slope.	droughty, slope.
MaB	Moderate:	Slight	Slight	Slight	Slight.
Malbis	wetness.				
MaC	Moderate:	Slight	Moderate:	Slight	Slight.
Malbis	wetness.		slope.		
MhC	Severe:	Severe:	Severe:	Severe:	Severe:
Mayhew	wetness.	wetness, shrink-swell.	wetness, shrink-swell.	shrink-swell, low strength, wetness.	wetness.
MoB*:					
Merryville	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
Besner	Moderate: wetness.	Slight	Slight	Slight	Slight.
OsB	Severe:	Severe:	Severe:	Severe:	Severe:
Osier	cutbanks cave, wetness.	wetness.	wetness.	wetness.	wetness.
Pg*	Variable	Variable	Variable	Variable	Variable.
Pits					
RaC	Moderate:	Severe:	Severe:	Severe:	Slight.
Rayburn	too clayey, wetness.	shrink-swell.	shrink-swell.	shrink-swell, low strength.	

See footnote at end of table.

Table 9.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Rh* Riverwash	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, droughty, flooding.
RuB Ruston	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
RuD Ruston	Severe: cutbanks cave.	Slight	Moderate: slope.	Slight	Slight.
SaC Sacul	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
SAE Sacul	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
SeC Sawyer	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Slight.
SpC Spurger	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.
TrC Trep	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: droughty.
TRE Trep	Severe: cutbanks cave.	Slight	Moderate: slope.	Slight	Moderate: droughty.
UBA Urbo	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding, too clayey.
VaC Vaiden	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. 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
AnC Angie	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
BaB, BaC Beauregard	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
BeC Betis	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
BEE Betis	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
BhC Bienville	Moderate: flooding, wetness.	Severe: seepage.	Severe: seepage, wetness, too sandy.	Severe: seepage.	Poor: too sandy.
BnC Bowie	Severe: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Moderate: wetness, too clayey.	Slight	Fair: too clayey.
BoB, BoD Boykin	Moderate: percs slowly.	Severe: seepage.	Slight	Severe: seepage.	Good.
BrC Briley	Moderate: percs slowly.	Severe: seepage.	Slight	Severe: seepage.	Good.
BRE Briley	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
CaA Caddo	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
CbA*: Caddo	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Messer	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
ChB Cahaba	Slight	Severe: seepage.	Severe: seepage.	Slight	Fair: thin layer.

See footnote at end of table.

Table 10.--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
CoC Corrigan	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock, wetness.	Poor: depth to rock, too clayey, hard to pack.
CYA Cypress	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
DuC Dubach	Severe: wetness.	Moderate: seepage, slope, wetness.	Moderate: wetness, too clayey.	Slight	Fair: too clayey.
EaC Eastwood	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
EAE Eastwood	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
GeB Glenmora	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness, thin layer.
GoC Gore	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
GOE Gore	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
GtA Guyton	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
GuA Guyton	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
GYA*: Guyton	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Iuka	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
HaB Hainesville	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, too sandy.	Severe: flooding, seepage.	Poor: too sandy.

See footnote at end of table.

Table 10.--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
HoC, HoD	Severe:	Moderate:	Severe:	Slight	Poor:
Hornbeck	percs slowly.	slope.	too clayey.		too clayey, hard to pack.
KcB*:					
Kirbyville	Severe:	Severe:	Severe:	Moderate:	Fair:
	wetness.	seepage, wetness.	wetness.	wetness.	too clayey, wetness.
Niwana	Moderate:	Severe:	Severe:	Severe:	Good.
	wetness, percs slowly.	seepage.	wetness.	seepage.	
KEF*:					
Kisatchie	Severe:	Severe:	Severe:	Severe:	Poor:
	depth to rock.	depth to rock, slope.	depth to rock, too clayey.	depth to rock.	depth to rock, too clayey, hard to pack.
Rayburn	Severe:	Severe:	Severe:	Moderate:	Poor:
	wetness, percs slowly.	slope.	depth to rock, too clayey.	depth to rock, wetness, slope.	too clayey, hard to pack.
KoC	Severe:	Moderate:	Severe:	Moderate:	Poor:
Kolin	wetness, percs slowly.	slope.	wetness, too clayey.	wetness.	too clayey, hard to pack.
LtC	Severe:	Severe:	Severe:	Severe:	Good.
Letney	poor filter.	seepage.	seepage.	seepage.	
LTE	Severe:	Severe:	Severe:	Severe:	Fair:
Letney	poor filter.	seepage, slope.	seepage.	seepage.	slope.
MaB, MaC	Severe:	Moderate:	Moderate:	Moderate:	Fair:
Malbis	wetness, percs slowly.	seepage, slope.	wetness.	wetness.	wetness.
MhC	Severe:	Moderate:	Severe:	Severe:	Poor:
Mayhew	wetness, percs slowly.	depth to rock, slope.	depth to rock, wetness, too clayey.	wetness.	too clayey, hard to pack, wetness.
MoB*:					
Merryville	Severe:	Severe:	Severe:	Severe:	Poor:
	wetness, percs slowly.	seepage.	seepage, wetness.	wetness.	wetness.
Besner	Moderate:	Severe:	Severe:	Severe:	Good.
	wetness, percs slowly.	seepage.	wetness.	seepage.	
OsB	Severe:	Severe:	Severe:	Severe:	Poor:
Osier	wetness, poor filter.	seepage, wetness.	seepage, wetness, too sandy.	seepage, wetness.	seepage, too sandy, wetness.
Pg*	Variable	Variable	Variable	Variable	Variable.
Pits					

See footnote at end of table.

Table 10.--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
RaC--Rayburn	Severe: wetness, percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, wetness.	Poor: too clayey, hard to pack.
Rh*--Riverwash	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
RuB, RuD--Ruston	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too sandy.	Slight	Fair: too sandy.
SaC--Sacul	Severe: wetness, percs slowly.	Moderate: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
SAE--Sacul	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
SeC--Sawyer	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Poor: thin layer.
SpC--Spurger	Severe: percs slowly.	Moderate: slope.	Severe: seepage, wetness, too clayey.	Slight	Poor: too clayey, hard to pack.
TrC, TRE--Trep	Severe: wetness, percs slowly.	Severe: seepage.	Moderate: wetness.	Severe: seepage.	Poor: thin layer.
UBA--Urbo	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
VaC--Vaiden	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. 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	Topsoil
AnC Angie	Poor: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey.
BaB, BaC Beauregard	Fair: low strength, wetness.	Improbable: excess fines.	Fair: too clayey.
BeC, BEE Betis	Good	Improbable: thin layer.	Poor: too sandy.
BhC Bienville	Good	Improbable: excess fines.	Poor: too sandy.
BnC Bowie	Fair: low strength.	Improbable: excess fines.	Fair: too clayey.
BoB, BoD Boykin	Good	Improbable: excess fines.	Fair: too sandy.
BrC Briley	Good	Improbable: excess fines.	Fair: too sandy.
BRE Briley	Good	Improbable: excess fines.	Fair: too sandy, slope.
CaA Caddo	Poor: low strength, wetness.	Improbable: excess fines.	Poor: wetness.
CbA*: Caddo	Poor: low strength, wetness.	Improbable: excess fines.	Poor: wetness.
Messer	Poor: low strength.	Improbable: excess fines.	Good.
ChB Cahaba	Good	Probable	Fair: too clayey.
CoC Corrigan	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey, wetness.
CYA Cypress	Poor: low strength, wetness.	Improbable: excess fines.	Poor: too clayey, wetness, too acid.
DuC Dubach	Good	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Topsoil
EaC, EAE Eastwood	Fair: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey.
GeB Glenmora	Poor: low strength.	Improbable: excess fines.	Fair: too clayey.
GoC, GOE Gore	Poor: low strength, shrink-swell.	Improbable: excess fines.	Poor: too clayey.
GtA, GuA Guyton	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
GYA*: Guyton	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
Iuka	Fair: wetness.	Improbable: excess fines.	Good.
HaB Hainesville	Good	Improbable: excess fines.	Poor: too sandy.
HoC, HoD Hornbeck	Poor: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey.
KcB*: Kirbyville	Fair: low strength, wetness.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
Niwana	Fair: low strength.	Improbable: excess fines.	Good.
KEF*: Kisatchie	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey.
Rayburn	Poor: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey, too acid.
KoC Kolin	Poor: low strength, shrink-swell.	Improbable: excess fines.	Fair: thin layer, too clayey.
LtC Letney	Good	Improbable: excess fines.	Fair: too sandy.
LTE Letney	Good	Improbable: excess fines.	Fair: too sandy, slope.
MaB, MaC Malbis	Fair: low strength, wetness.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

Table 11.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Topsoil
MhC Mayhew	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Poor: too clayey, area reclaim, wetness.
MoB*:			
Merryville	Poor: wetness.	Probable	Poor: wetness.
Besner	Good	Improbable: excess fines.	Good.
OsB Osier	Poor: wetness.	Probable	Poor: too sandy, wetness.
Pg* Pits	Variable	Variable	Variable.
RaC Rayburn	Poor: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey, too acid.
Rh* Riverwash	Poor: wetness.	Probable	Poor: wetness.
RuB, RuD Ruston	Good	Improbable: excess fines.	Fair: too sandy, small stones.
SaC, SAE Sacul	Poor: low strength.	Improbable: excess fines.	Poor: too clayey.
SeC Sawyer	Poor: low strength.	Improbable: excess fines.	Fair: too clayey, thin layer.
SpC Spurger	Good	Probable	Poor: too clayey.
TrC, TRE Trep	Fair: low strength, thin layer.	Improbable: excess fines.	Poor: too sandy.
UBA Urbo	Poor: low strength.	Improbable: excess fines.	Poor: too clayey.
VaC Vaiden	Poor: shrink-swell, low strength.	Improbable: excess fines.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." 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--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AnC Angie	Moderate: slope.	Moderate: hard to pack, wetness.	Deep to water	Slope, percs slowly.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
BaB Beauregard	Slight	Severe: piping, wetness.	Favorable	Wetness, soil blowing.	Erodes easily, wetness, soil blowing.	Erodes easily.
BaC Beauregard	Moderate: slope.	Severe: piping, wetness.	Slope	Slope, wetness, soil blowing.	Erodes easily, wetness, soil blowing.	Erodes easily.
BeC Betis	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
BEE Betis	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
BhC Bienville	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
BnC Bowie	Moderate: seepage.	Moderate: piping.	Deep to water	Slope	Favorable	Favorable.
BoB Boykin	Severe: seepage.	Moderate: piping.	Deep to water	Droughty, fast intake.	Soil blowing	Droughty.
BoD Boykin	Severe: seepage.	Moderate: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing	Droughty.
BrC Briley	Severe: seepage.	Moderate: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing	Droughty.
BRE Briley	Severe: seepage, slope.	Moderate: piping.	Deep to water	Slope, droughty, fast intake.	Slope, soil blowing.	Slope, droughty.
CaA Caddo	Moderate: seepage.	Severe: wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
CbA*: Caddo	Moderate: seepage.	Severe: wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Messer	Slight	Moderate: piping, wetness.	Percs slowly	Wetness, soil blowing.	Erodes easily, wetness, soil blowing.	Erodes easily, percs slowly.

See footnote at end of table.

Table 12.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting- Drainage	Irrigation	Terraces and diversions	Grassed waterways
ChB---------- Cahaba	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Favorable------	Favorable------	Favorable.
CoC---------- Corrigan	Moderate: depth to rock.	Severe: hard to pack, wetness.	Percs slowly, depth to rock, slope.	Wetness, percs slowly, depth to rock.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, depth to rock.
CYA---------- Cypress	Slight---------	Severe: ponding.	Ponding, percs slowly, flooding.	Ponding, slow intake, percs slowly.	Ponding, percs slowly.	Wetness, percs slowly.
DuC---------- Dubach	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
EaC---------- Eastwood	Slight---------	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
EAE---------- Eastwood	Slight---------	Severe: hard to pack.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
GeB---------- Glenmora	Moderate: seepage.	Moderate: piping, wetness.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
GoC---------- Gore	Moderate: slope.	Moderate: thin layer, hard to pack.	Deep to water	Percs slowly, droughty, slope.	Erodes easily, percs slowly.	Erodes easily, droughty.
GOE---------- Gore	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Percs slowly, droughty, slope.	Slope, erodes easily, percs slowly.	Slope, erodes easily, droughty.
GtA---------- Guyton	Moderate: seepage.	Severe: piping, wetness.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
GuA---------- Guyton	Moderate: seepage.	Severe: piping, wetness.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
GYA*:						
Guyton----------	Moderate: seepage.	Severe: piping, wetness.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Iuka----------	Moderate: seepage.	Severe: piping, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
HaB---------- Hainesville	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
HoC, HoD---------- Hornbeck	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, slow intake, percs slowly.	Erodes easily, percs slowly.	Erodes easily, percs slowly.

See footnote at end of table.

Table 12.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting- Drainage	Irrigation	Terraces and diversions	Grassed waterways
KcB*:						
Kirbyville	Moderate: seepage.	Moderate: piping, wetness.	Favorable	Wetness, soil blowing.	Wetness, soil blowing.	Favorable.
Niwana	Severe: seepage.	Moderate: piping.	Deep to water	Soil blowing	Soil blowing	Favorable.
KEF*:						
Kisatchie	Severe: slope.	Severe: thin layer.	Deep to water	Slope, percs slowly.	Slope, depth to rock.	Slope, depth to rock.
Rayburn	Severe: slope.	Severe: hard to pack.	Percs slowly, slope, too acid.	Slope, wetness, soil blowing.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
KoC	Moderate:	Moderate:	Percs slowly,	Wetness,	Erodes easily,	Erodes easily,
Kolin	slope.	hard to pack, wetness.	slope.	percs slowly, slope.	wetness, percs slowly.	percs slowly.
LtC	Severe:	Slight	Deep to water	Slope,	Soil blowing	Droughty.
Letney	seepage.			droughty, fast intake.		
LTE	Severe:	Slight	Deep to water	Slope,	Slope,	Slope,
Letney	seepage, slope.			droughty, fast intake.	soil blowing.	droughty.
MaB	Moderate:	Severe:	Deep to water	Favorable	Favorable	Favorable.
Malbis	seepage.	piping.				
MaC	Moderate:	Severe:	Deep to water	Slope	Favorable	Favorable.
Malbis	seepage, slope.	piping.				
MhC	Moderate:	Severe:	Percs slowly,	Slope,	Erodes easily,	Wetness,
Mayhew	depth to rock, slope.	wetness.	slope.	wetness.	wetness.	erodes easily, percs slowly.
MoB*:						
Merryville	Severe:	Severe:	Percs slowly	Wetness,	Erodes easily,	Wetness,
	seepage.	piping, wetness.		percs slowly, erodes easily.	wetness.	erodes easily, percs slowly.
Besner	Severe:	Severe:	Deep to water	Slope,	Soil blowing	Favorable.
	seepage.	piping.		soil blowing.		
OsB	Severe:	Severe:	Cutbanks cave	Wetness,	Wetness,	Wetness,
Osier	seepage.	seepage, piping, wetness.		droughty, fast intake.	too sandy.	droughty.
Pg*	Variable	Variable	Variable	Variable	Variable	Variable.
Pits						
RaC	Moderate:	Severe:	Percs slowly,	Slope,	Erodes easily,	Erodes easily,
Rayburn	depth to rock, slope.	hard to pack.	slope, too acid.	wetness, soil blowing.	wetness.	percs slowly.

See footnote at end of table.

Table 12.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Rh* Riverwash	Severe: seepage.	Severe: seepage, piping, wetness.	Flooding, cutbanks cave.	Wetness, droughty, fast intake.	Wetness, too sandy.	Wetness, droughty.
RuB Ruston	Moderate: seepage.	Severe: piping.	Deep to water	Soil blowing	Too sandy, soil blowing.	Favorable.
RuD Ruston	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
SaC Sacul	Moderate: slope.	Moderate: hard to pack, wetness.	Percs slowly, slope.	Slope, wetness.	Wetness, soil blowing.	Percs slowly.
SAE Sacul	Severe: slope.	Moderate: hard to pack, wetness.	Percs slowly, slope.	Slope, wetness.	Slope, wetness, soil blowing.	Slope, percs slowly.
SeC Sawyer	Moderate: slope.	Moderate: piping, wetness.	Percs slowly, slope.	Slope, wetness.	Erodes easily, wetness.	Erodes easily, percs slowly.
SpC Spurger	Moderate: slope.	Severe: thin layer.	Deep to water	Slope, soil blowing, percs slowly.	Erodes easily, soil blowing.	Erodes easily, percs slowly.
TrC, TRE Trep	Severe: seepage.	Moderate: piping.	Deep to water	Slope, droughty, fast intake.	Soil blowing	Droughty.
UBA Urbo	Slight	Severe: wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
VaC Vaiden	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness, percs slowly.	Wetness, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.--Engineering Index Properties

(The symbol < means less than. Absence of an entry indicates that data were not estimated.)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AnC	0-10	Very fine sandy loam.	CL-ML, CL	A-4, A-6	0	95-100	90-100	85-100	60-90	15-38	5-22
Angie	10-80	Silty clay loam, silty clay, clay loam, clay.	CH, CL	A-7-6	0	95-100	90-100	85-100	75-95	41-55	18-29
BaB	0-6	Fine sandy loam	SM, ML	A-4	0	100	85-100	70-85	40-55	<20	NP-3
Beauregard	6-20	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	70-95	25-35	7-15
	20-65	Silty clay loam, silt loam.	CL	A-6	0	100	100	85-100	70-95	30-40	12-19
BaC	0-7	Fine sandy loam	SM, ML	A-4	0	100	85-100	70-85	40-55	<20	NP-3
Beauregard	7-20	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	70-95	25-35	7-15
	20-62	Silty clay loam, silt loam.	CL	A-6	0	100	100	85-100	70-95	30-40	12-19
BeC	0-9	Loamy fine sand	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
Betis	9-29	Fine sand, loamy fine sand.	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	29-70	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	97-100	90-100	25-50	---	NP
BEE	0-4	Loamy fine sand	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
Betis	4-44	Fine sand, loamy fine sand.	SM, SP-SM	A-2	0	100	97-100	90-100	10-35	---	NP
	44-60	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	97-100	90-100	25-50	---	NP
BhC	0-5	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	100	100	90-100	15-50	<25	NP-5
Bienville	5-32	Loamy fine sand, fine sand.	SM	A-2-4, A-4	0	100	100	90-100	15-50	<25	NP-3
	32-68	Loamy fine sand, fine sandy loam, fine sand.	SM, ML	A-2-4, A-4	0	100	100	90-100	20-55	<25	NP-3
BnC	0-12	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	97-100	94-100	90-100	30-55	<25	NP-6
Bowie	12-25	Sandy clay loam, clay loam, fine sandy loam.	SC, CL	A-4, A-6	0	90-100	87-100	80-100	40-72	20-40	8-25
	25-63	Sandy clay loam, clay loam, fine sandy loam.	SC, CL	A-4, A-6, A-2	0	80-100	70-100	65-100	34-77	20-40	8-25
BoB	0-8	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	75-98	17-45	16-25	NP-5
Boykin	8-22	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	70-98	17-45	16-25	NP-5
	22-90	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6, A-7-6	0	95-100	95-100	80-98	36-55	22-45	8-30

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BoD--Boykin	0-9	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	75-98	17-45	16-25	NP-5
	9-23	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	70-98	17-45	16-25	NP-5
	23-77	Fine sandy loam, sandy clay loam.	SC, CL	A-4, A-6, A-7-6	0	95-100	95-100	80-98	36-55	22-45	8-30
BrC--Briley	0-9	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	95-100	95-100	80-100	17-45	16-25	NP-7
	9-23	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	80-100	17-45	16-25	NP-7
	23-77	Fine sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	0	95-100	95-100	85-100	36-65	22-39	8-22
BRE--Briley	0-6	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	95-100	95-100	80-100	17-45	16-25	NP-7
	6-23	Loamy fine sand	SM, SC-SM	A-2-4, A-4	0	97-100	95-100	80-100	17-45	16-25	NP-7
	23-60	Fine sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	0	95-100	95-100	85-100	36-65	22-39	8-22
CaA--Caddo	0-21	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	70-95	<27	NP-7
	21-80	Silt loam, silty clay loam.	CL	A-6	0	100	100	85-100	50-90	30-40	11-18
CbA*:											
Caddo	0-13	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	70-95	<27	NP-7
	13-64	Silt loam, silty clay loam.	CL	A-6	0	100	100	85-100	50-90	30-40	11-18
Messer	0-7	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	<27	NP-7
	7-33	Silt loam, loam, very fine sandy loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	25-33	5-12
	33-61	Silty clay loam, clay loam, loam.	CL	A-6, A-7-6	0	100	100	95-100	80-95	32-45	11-21
ChB--Cahaba	0-12	Fine sandy loam	SM	A-4, A-2-4	0	95-100	95-100	65-90	30-45	---	NP
	12-55	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-75	22-35	8-15
	55-71	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2-4	0	95-100	90-100	60-85	10-35	---	NP
CoC--Corrigan	0-8	Fine sandy loam	ML, CL-ML, SM, SC-SM	A-4	0	100	100	70-100	36-55	21-30	2-7
	8-32	Clay, silty clay	CH	A-7	0	100	100	90-100	65-95	52-76	30-50
	32-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CYA--Cypress	0-8	Clay	CH, CL	A-7-6	0	100	100	90-100	85-95	48-66	25-39
	8-53	Clay loam, clay, silty clay.	CL, CH	A-7-6	0	100	100	90-100	75-95	43-66	21-39
	53-80	Fine sandy loam, loam, clay loam.	SC, ML	A-4, A-6	0	100	100	75-100	45-95	20-66	5-39

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
DuC--------- Dubach	0-14	Fine sandy loam	SM, ML, CL-ML	A-4, A-6	0	100	97-100	91-97	40-62	10-30	NP-11
	14-32	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	15-40	5-19
	32-70	Sandy clay loam, clay loam, loam.	CL, CL-ML	A-4, A-6	0	98-100	96-100	90-100	56-80	15-40	4-19
EaC--------- Eastwood	0-4	Silt loam--------	CL, SC-SM, CL-ML, ML	A-4, A-6	0	98-100	98-100	95-100	40-89	20-37	3-20
	4-45	Clay, silty clay	CH, CL	A-7-6	0	100	95-100	90-100	70-98	40-75	25-48
	45-67	Clay, silty clay loam, silty clay.	CL, CH	A-6, A-7-6	0	100	95-100	90-100	55-99	35-65	15-45
EAE--------- Eastwood	0-6	Silt loam--------	CL, SC-SM, CL-ML, ML	A-4, A-6	0	98-100	98-100	95-100	40-89	20-37	3-20
	6-39	Clay, silty clay	CH, CL	A-7-6	0	100	95-100	90-100	70-98	40-75	25-48
	39-77	Clay, silty clay loam, silty clay.	CL, CH	A-6, A-7-6	0	100	95-100	90-100	55-99	35-65	15-45
GeB--------- Glenmora	0-8	Silt loam--------	ML, CL-ML	A-4	0	100	100	90-100	75-85	<27	NP-7
	8-11	Silty clay loam, silt loam.	CL	A-6, A-4	0	100	100	95-100	80-95	25-38	8-16
	11-65	Silty clay loam, silt loam.	CL	A-6	0	100	100	95-100	80-95	30-40	12-18
GoC--------- Gore	0-4	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	60-90	<27	NP-7
	4-60	Clay, silty clay	CH	A-7-6	0	100	100	95-100	85-100	53-65	28-40
	60-87	Clay, silty clay	CH	A-7-6	0	100	100	95-100	85-100	51-83	25-53
GOE--------- Gore	0-2	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	60-90	<27	NP-7
	2-54	Clay, silty clay	CH	A-7-6	0	100	100	95-100	85-100	53-65	28-40
	54-67	Clay, silty clay	CH	A-7-6	0	100	100	95-100	85-100	51-83	25-53
GtA--------- Guyton	0-28	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	28-48	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	48-60	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18
GuA--------- Guyton	0-23	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	23-46	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	46-80	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18
GYA*: Guyton----------	0-23	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	65-90	<27	NP-7
	23-48	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	0	100	100	94-100	75-95	22-40	6-18
	48-69	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	0	100	100	95-100	50-95	<40	NP-18

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
GYA*:											
Iuka	0-11	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4, A-2	0	95-100	90-100	70-100	30-60	<20	NP-7
	11-40	Fine sandy loam, loam, sandy loam, silt loam.	SM, SC-SM, ML, CL-ML	A-4	0	95-100	85-100	65-100	36-75	<30	NP-7
	40-60	Sandy loam, fine sandy loam, loam, loamy sand.	SM, ML	A-2, A-4	0	95-100	90-100	70-100	25-60	<30	NP-7
HaB	0-28	Fine sand	SM, SC-SM, SW-SM	A-2-4	0	98-100	95-100	80-100	10-30	16-25	NP-5
Hainesville	28-83	Fine sand, loamy fine sand.	SM, SC-SM	A-2-4, A-4	0	98-100	95-100	80-100	13-45	16-25	NP-7
HoC	0-7	Clay	CH, CL	A-7-6	0	100	100	95-100	75-95	45-70	30-50
Hornbeck	7-22	Silty clay, clay	CH	A-7	0	100	100	95-100	75-95	50-75	30-55
	22-67	Silty clay, clay	CH	A-7	0	100	100	95-100	75-95	50-75	30-55
	67-86	Silty clay loam, silty clay, clay.	CL, CH	A-7-6	0	100	100	95-100	75-95	45-70	30-50
HoD	0-7	Clay	CH, CL	A-7-6	0	100	100	95-100	75-95	45-70	30-50
Hornbeck	7-24	Silty clay, clay	CH	A-7	0	100	100	95-100	75-95	50-75	30-55
	24-50	Silty clay, clay	CH	A-7	0	100	100	95-100	75-95	50-75	30-55
	50-60	Silty clay loam, silty clay, clay.	CL, CH	A-7-6	0	100	100	95-100	75-95	45-70	30-50
KcB*:											
Kirbyville	0-15	Loam	CL-ML, ML, CL, SM	A-4	0	95-100	95-100	85-100	48-78	16-27	NP-8
	15-79	Sandy clay loam, loam.	CL, SC	A-6, A-4, A-7-6	0	75-100	74-100	74-100	48-78	25-42	8-25
Niwana	0-23	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	0	98-100	95-100	90-100	45-70	16-25	NP-7
	23-50	Loam, fine sandy loam.	CL-ML, CL	A-4	0	98-100	95-100	90-100	55-80	18-30	4-10
	50-83	Sandy clay loam, loam.	SC, CL	A-4, A-6	0	98-100	95-100	90-100	36-80	20-38	7-22
KEF*:											
Kisatchie	0-6	Fine sandy loam	SM, SC-SM, ML	A-4	0	100	100	70-85	40-55	<25	NP-4
	6-16	Silty clay, silty clay loam, clay loam.	CH, CL	A-7-6	0	100	100	90-100	85-95	45-65	22-36
	16-28	Silty clay, clay loam.	CH, CL	A-7-6	0-5	90-95	65-75	55-65	50-60	45-65	22-36
	28-55	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rayburn	0-7	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-4, A-2-4	0	100	100	70-99	25-65	16-25	NP-7
	7-43	Clay, silty clay	CH	A-7	0	100	100	90-100	75-95	51-80	25-50
	43-80	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
KoC--- Kolin	0-6	Silt loam---	ML, CL-ML	A-4	0	100	100	85-100	60-85	<27	NP-7
	6-29	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	100	100	95-100	85-97	30-46	11-22
	29-65	Clay, silty clay	CH	A-7-6	0	100	100	90-100	75-95	50-63	25-35
LtC--- Letney	0-27	Loamy sand---	SM, SP-SM	A-2	0	95-100	95-100	50-75	10-30	16-20	NP-3
	27-83	Sandy clay loam, sandy loam.	SC, SC-SM	A-6, A-4	0	95-100	95-100	65-90	36-50	20-40	5-20
LTE--- Letney	0-26	Loamy sand---	SM, SP-SM	A-2	0	95-100	95-100	50-75	10-30	16-20	NP-3
	26-70	Sandy clay loam, sandy loam.	SC, SC-SM	A-6, A-4	0	95-100	95-100	65-90	36-50	20-40	5-20
MaB--- Malbis	0-9	Fine sandy loam	SM, ML	A-4	0	100	97-100	91-97	40-62	<30	NP-5
	9-28	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	21-35	5-11
	28-46	Sandy clay loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	0	98-100	96-100	90-100	56-80	29-49	4-15
	46-60	Sandy clay loam, clay loam.	ML, CL	A-4, A-5, A-6, A-7	0	98-100	96-100	90-100	56-80	30-49	4-15
MaC--- Malbis	0-8	Fine sandy loam	SM, ML	A-4	0	100	97-100	91-97	40-62	<30	NP-5
	8-20	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6	0	99-100	95-100	80-100	55-70	21-35	5-11
	20-48	Sandy clay loam, clay loam, loam.	ML, CL	A-4, A-6, A-7	0	98-100	96-100	90-100	56-80	29-49	4-15
	48-60	Sandy clay loam, clay loam.	ML, CL	A-4, A-5, A-6, A-7	0	98-100	96-100	90-100	56-80	30-49	4-15
MhC--- Mayhew	0-5	Silt loam---	ML, CL-ML	A-4	0	100	100	80-100	51-95	<25	NP-7
	5-40	Silty clay, clay, silty clay loam.	CH	A-7-6	0	100	100	90-100	80-100	51-70	25-40
	40-77	Silty clay loam, silty clay.	CL, CH	A-7-6, A-6	0	100	100	90-100	80-100	32-60	12-33
MoB*:											
Merryville---	0-11	Silt loam---	ML, CL-ML	A-4	0	100	100	96-100	70-90	<25	NP-6
	11-45	Silt loam, loam, very fine sandy loam.	ML, CL, CL-ML	A-4	0	100	100	96-100	65-85	<30	NP-8
	45-65	Silt loam, very fine sandy loam, loam.	CL-ML, CL	A-6, A-4	0	100	100	96-100	65-85	13-40	5-20
Besner---	0-5	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	95-100	90-100	29-66	<25	NP-7
	5-25	Fine sandy loam, very fine sandy loam, loam.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	95-100	90-100	29-66	<25	NP-7
	25-80	Loam, fine sandy loam.	CL-ML, ML, SC-SM, SM	A-4, A-2-4	0	100	95-100	80-100	29-66	<25	NP-7
OsB--- Osier	0-5	Loamy fine sand	SM	A-2	0	100	98-100	70-90	13-25	---	NP
	5-46	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	95-100	65-96	5-20	---	NP
	46-60	Loamy sand, sand, loamy fine sand.	SP, SP-SM	A-1, A-3, A-2-4	0	100	90-100	40-60	2-10	---	NP
Pg*--- Pits	0-60	Variable---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RaC--Rayburn	0-7	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-4, A-2-4	0	100	100	70-99	25-65	16-25	NP-7
	7-43	Clay, silty clay	CH	A-7	0	100	100	90-100	75-95	51-80	25-50
	43-55	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Rh*--Riverwash	0-80	Fine sand	SM, SP-SM, SC-SM, ML	A-2-4, A-4	0-5	95-100	95-100	90-100	10-60	<22	NP-7
RuB--Ruston	0-11	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	11-40	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	40-48	Fine sandy loam, sandy loam, loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	48-70	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
RuD--Ruston	0-14	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	0	100	85-100	65-85	30-55	<20	NP-7
	14-37	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
	37-49	Fine sandy loam, sandy loam, loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	0	100	85-100	65-85	30-75	<27	NP-7
	49-73	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	0	100	85-100	80-95	36-75	25-45	11-20
SaC--Sacul	0-5	Fine sandy loam	SM, SC-SM	A-4, A-2	0	75-100	75-100	45-85	25-50	15-25	NP-7
	5-35	Clay, sandy clay, clay loam.	CH, CL, SC	A-7	0	85-100	85-100	70-100	40-95	45-70	20-40
	35-80	Sandy clay loam, clay loam, sandy clay, fine sandy loam.	CL, SC	A-6, A-7, A-4, A-2	0	85-100	85-100	65-100	30-95	25-48	8-25
SAE--Sacul	0-5	Fine sandy loam	SM, SC-SM	A-4, A-2	0	75-100	75-100	45-85	25-50	15-25	NP-7
	5-33	Clay, sandy clay, clay loam.	CH, CL, SC	A-7	0	85-100	85-100	70-100	40-95	45-70	20-40
	33-68	Sandy clay loam, clay loam, sandy clay, fine sandy loam.	CL, SC	A-6, A-7, A-4, A-2	0	85-100	85-100	65-100	30-95	25-48	8-25
SeC--Sawyer	0-4	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	95-100	85-95	50-90	25-30	3-10
	4-33	Silty clay loam, silt loam.	CL	A-6	0	100	95-100	85-95	60-95	30-40	10-20
	33-74	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	95-100	90-100	75-95	45-60	20-35

See footnote at end of table.

Table 13.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	3-10 inches	4	10	40	200		
	In				Pct					Pct	
SpC-------------- Spurger	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	85-95	50-65	16-25	NP-7
	6-57	Clay, clay loam	CH, CL	A-7-6	0	95-100	95-100	90-100	59-85	41-70	20-40
	57-69	Sandy clay loam, clay loam, loam.	CL, SC, SC-SM, CL-ML	A-4, A-6, A-2-4, A-2-6	0	95-100	90-100	80-100	25-55	20-40	4-20
	69-81	Fine sandy loam, sand, loamy fine sand.	SC-SM, SM, SP-SM	A-2-4, A-4, A-3	0	95-100	90-100	50-95	5-50	16-25	NP-7
TrC-------------- Trep	0-8	Loamy fine sand	SM	A-2-4	0	100	95-100	90-95	15-30	<25	NP-4
	8-25	Loamy fine sand, fine sand.	SM	A-2-4	0	100	95-100	90-95	15-30	<25	NP-3
	25-58	Sandy clay loam, loam.	SC, CL	A-6	0	100	95-100	80-90	40-70	25-40	11-20
	58-73	Sandy clay, sandy clay loam.	CL	A-6, A-7	0	100	95-100	85-95	55-75	25-45	11-27
TRE-------------- Trep	0-7	Loamy fine sand	SM	A-2-4	0	100	95-100	90-95	15-30	<25	NP-4
	7-22	Loamy fine sand, fine sand.	SM	A-2-4	0	100	95-100	90-95	15-30	<25	NP-3
	22-51	Sandy clay loam, loam.	SC, CL	A-6	0	100	95-100	80-90	40-70	25-40	11-20
	51-81	Sandy clay, sandy clay loam.	CL	A-6, A-7	0	100	95-100	85-95	55-75	25-45	11-27
UBA-------------- Urbo	0-13	Silty clay-------	CL, CH	A-7	0	100	100	95-100	80-98	44-62	20-36
	13-81	Silty clay, clay loam, silty clay loam.	CL, CH	A-7	0	100	100	95-100	80-98	44-62	20-36
VaC-------------- Vaiden	0-3	Loam-------------	CL-ML, ML	A-4, A-6	0	100	100	85-95	60-75	15-38	5-10
	3-34	Clay, silty clay	CH, MH	A-7	0	100	100	95-100	85-100	50-90	30-50
	34-73	Clay, silty clay	CH	A-7	0	95-100	95-100	90-100	85-100	50-90	30-52

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--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	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AnC	0-10	4-18	1.35-1.65	0.6-2.0	0.18-0.24	4.5-6.5	Low	0.49	5	.5-3
Angie	10-80	35-60	1.20-1.60	0.06-0.2	0.16-0.22	3.6-6.0	High	0.32		
BaB	0-6	5-20	1.30-1.65	0.6-2.0	0.09-0.16	4.5-6.5	Low	0.32	5	.5-5
Beauregard	6-20	18-32	1.35-1.70	0.2-0.6	0.20-0.22	4.5-6.0	Low	0.37		
	20-65	15-32	1.35-1.70	0.06-0.2	0.20-0.22	4.5-6.0	Low	0.37		
BaC	0-7	5-20	1.30-1.65	0.6-2.0	0.09-0.16	4.5-6.5	Low	0.32	5	.5-5
Beauregard	7-20	18-32	1.35-1.70	0.2-0.6	0.20-0.22	4.5-6.0	Low	0.37		
	20-62	15-32	1.35-1.70	0.06-0.2	0.20-0.22	4.5-6.0	Low	0.37		
BeC	0-9	2-10	1.40-1.60	6.0-20	0.05-0.10	4.5-6.0	Low	0.17	5	.5-2
Betis	9-29	2-10	1.40-1.60	6.0-20	0.05-0.10	4.5-6.0	Low	0.17		
	29-70	5-15	1.40-1.65	6.0-20	0.08-0.11	4.5-6.0	Low	0.17		
BEE	0-4	2-10	1.40-1.60	6.0-20	0.05-0.10	4.5-6.0	Low	0.17	5	.5-2
Betis	4-44	2-10	1.40-1.60	6.0-20	0.05-0.10	4.5-6.0	Low	0.17		
	44-60	5-15	1.40-1.65	6.0-20	0.08-0.11	4.5-6.0	Low	0.17		
BhC	0-5	4-10	1.35-1.65	6.0-20	0.07-0.11	4.5-6.5	Low	0.20	5	<2
Bienville	5-32	2-15	1.35-1.60	2.0-6.0	0.08-0.11	4.5-6.5	Low	0.20		
	32-68	5-20	1.35-1.70	2.0-6.0	0.08-0.13	4.5-6.0	Low	0.20		
BnC	0-12	3-15	1.40-1.69	2.0-6.0	0.10-0.15	4.5-6.5	Low	0.32	5	.5-1
Bowie	12-25	18-35	1.30-1.65	0.6-2.0	0.10-0.16	4.5-5.5	Low	0.32		
	25-63	18-35	1.30-1.65	0.2-0.6	0.10-0.16	4.5-5.5	Low	0.32		
BoB	0-8	3-10	1.40-1.60	6.0-20	0.05-0.09	4.5-6.5	Low	0.20	5	.5-1
Boykin	8-22	3-10	1.40-1.60	6.0-20	0.05-0.09	4.5-6.5	Low	0.20		
	22-90	18-30	1.45-1.70	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.28		
BoD	0-9	3-10	1.40-1.60	6.0-20	0.05-0.09	4.5-6.5	Low	0.20	5	.5-1
Boykin	9-23	3-10	1.40-1.60	6.0-20	0.05-0.09	4.5-6.5	Low	0.20		
	23-77	18-30	1.45-1.70	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.28		
BrC	0-9	3-10	1.50-1.65	6.0-20	0.05-0.09	4.5-6.5	Low	0.20	5	.5-2
Briley	9-23	3-10	1.50-1.65	6.0-20	0.05-0.09	4.5-6.5	Low	0.20		
	23-77	15-35	1.55-1.69	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.24		
BRE	0-6	3-10	1.50-1.65	6.0-20	0.05-0.09	4.5-6.5	Low	0.20	5	.5-2
Briley	6-23	3-10	1.50-1.65	6.0-20	0.05-0.09	4.5-6.5	Low	0.20		
	23-60	15-35	1.55-1.69	0.6-2.0	0.10-0.16	4.5-6.0	Low	0.24		
CaA	0-21	14-27	1.35-1.70	0.6-2.0	0.18-0.23	4.5-6.0	Low	0.49	5	.5-2
Caddo	21-80	18-35	1.35-1.70	0.06-0.2	0.20-0.22	4.5-6.0	Low	0.37		
CbA*:										
Caddo	0-13	14-27	1.35-1.70	0.6-2.0	0.18-0.23	4.5-6.0	Low	0.49	5	.5-2
	13-64	18-35	1.35-1.70	0.06-0.2	0.20-0.22	4.5-6.0	Low	0.37		
Messer	0-7	10-15	1.35-1.65	0.6-2.0	0.15-0.21	4.5-6.0	Low	0.49	5	.5-2
	7-33	10-18	1.35-1.70	0.2-0.6	0.20-0.22	4.5-6.0	Low	0.43		
	33-61	20-30	1.35-1.70	0.06-0.2	0.15-0.20	4.5-6.0	Low	0.37		

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
ChB	0-12	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low	0.24	5	.5-2
Cahaba	12-55	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.28		
	55-71	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low	0.24		
CoC	0-8	8-15	1.35-1.60	0.6-2.0	0.11-0.15	4.5-6.0	Low	0.43	3	.5-3
Corrigan	8-32	40-60	1.20-1.35	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	32-60	---	---	0.01-0.6	---	3.6-6.0	---	----		
CYA	0-8	40-60	1.10-1.50	<0.06	0.12-0.18	3.5-5.0	Moderate	0.32	1	2-7
Cypress	8-60	35-60	1.10-1.50	<0.06	0.12-0.20	3.5-5.0	Moderate	0.32		
DuC	0-14	3-25	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low	0.24	5	.5-3
Dubach	14-32	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.28		
	32-70	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
EaC	0-4	3-18	1.20-1.60	0.6-2.0	0.13-0.20	4.5-6.0	Low	0.55	4	.5-3
Eastwood	4-45	40-65	1.20-1.45	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	45-67	27-50	1.20-1.50	0.06-0.2	0.12-0.20	3.6-6.5	High	0.32		
EAE	0-6	3-18	1.20-1.60	0.6-2.0	0.13-0.20	4.5-6.0	Low	0.55	4	.5-3
Eastwood	6-39	40-65	1.20-1.45	<0.06	0.12-0.18	3.6-5.5	High	0.32		
	39-77	27-50	1.20-1.50	0.06-0.2	0.12-0.20	3.6-6.5	High	0.32		
GeB	0-8	8-22	1.35-1.65	0.6-2.0	0.20-0.23	4.5-6.0	Low	0.49	5	.5-2
Glenmora	8-11	18-35	1.35-1.65	0.6-2.0	0.18-0.20	4.5-6.0	Low	0.43		
	11-65	20-35	1.35-1.70	0.06-0.2	0.18-0.20	4.5-6.0	Moderate	0.43		
GoC	0-4	5-15	1.35-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low	0.49	5	.5-4
Gore	4-60	40-60	1.20-1.65	<0.06	0.08-0.14	4.5-7.3	High	0.32		
	60-87	40-80	1.20-1.65	<0.06	0.08-0.14	5.5-9.0	High	0.32		
GOE	0-2	5-15	1.35-1.60	0.6-2.0	0.18-0.22	4.5-6.0	Low	0.49	5	.5-4
Gore	2-54	40-60	1.20-1.65	<0.06	0.08-0.14	4.5-7.3	High	0.32		
	54-67	40-80	1.20-1.65	<0.06	0.08-0.14	5.5-9.0	High	0.32		
GtA	0-28	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low	0.43	5	.5-4
Guyton	28-48	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low	0.37		
	48-60	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low	0.37		
GuA	0-23	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low	0.43	5	.5-4
Guyton	23-46	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low	0.37		
	46-80	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low	0.37		
GYA*:										
Guyton	0-23	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low	0.43	5	.5-4
	23-48	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low	0.37		
	48-69	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low	0.37		
Iuka	0-11	6-15	1.35-1.65	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.24	5	.5-2
	11-40	8-18	1.35-1.65	0.6-2.0	0.10-0.20	3.6-5.5	Low	0.28		
	40-60	5-15	1.35-1.65	0.6-2.0	0.10-0.20	3.6-5.5	Low	0.20		
HaB	0-28	1-4	1.50-1.70	6.0-20	0.04-0.07	4.5-6.5	Low	0.17	5	.5-2
Hainesville	28-83	2-10	1.50-1.70	6.0-20	0.04-0.10	4.5-6.5	Low	0.20		
HoC	0-7	40-60	1.15-1.30	<0.06	0.12-0.18	6.6-8.4	Very high	0.32	5	2-5
Hornbeck	7-22	40-60	1.20-1.50	<0.06	0.12-0.18	6.6-8.4	Very high	0.37		
	22-67	40-60	1.20-1.50	<0.06	0.12-0.18	6.6-8.4	Very high	0.37		
	67-86	30-60	1.20-1.50	<0.06	0.12-0.20	6.6-8.4	Very high	0.37		

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
HoD---	0-7	40-60	1.15-1.30	<0.06	0.12-0.18	6.6-8.4	Very high	0.32	5	2-5
Hornbeck	7-24	40-60	1.20-1.50	<0.06	0.12-0.18	6.6-8.4	Very high	0.37		
	24-50	40-60	1.20-1.50	<0.06	0.12-0.18	6.6-8.4	Very high	0.37		
	50-60	30-60	1.20-1.50	<0.06	0.12-0.20	6.6-8.4	Very high	0.37		
KcB*:										
Kirbyville---	0-15	7-15	1.50-1.70	2.0-6.0	0.11-0.15	4.5-6.5	Low	0.32	5	.5-3
	15-79	18-30	1.50-1.70	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.28		
Niwana---	0-23	5-12	1.20-1.40	2.0-6.0	0.11-0.15	4.5-6.0	Low	0.24	5	.5-2
	23-50	8-15	1.40-1.60	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.32		
	50-83	18-35	1.40-1.60	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.32		
KEF*:										
Kisatchie---	0-6	5-20	1.35-1.65	2.0-6.0	0.11-0.15	4.5-5.5	Low	0.32	3	.5-2
	6-16	35-55	1.20-1.60	<0.06	0.15-0.18	3.6-5.0	High	0.32		
	16-28	27-55	1.20-1.70	<0.06	0.10-0.15	3.6-5.0	High	0.32		
	28-55	---	---	0.2-0.6	---	---	---	---		
Rayburn---	0-7	8-20	1.20-1.40	0.6-2.0	0.11-0.15	4.5-6.0	Low	0.43	4	.5-3
	7-43	40-60	1.30-1.50	<0.06	0.12-0.18	3.5-5.5	High	0.37		
	43-80	---	---	0.01-0.6	---	---	---	---		
KoC---	0-6	10-27	1.35-1.65	0.6-2.0	0.18-0.22	3.6-6.5	Low	0.49	5	.5-4
Kolin	6-29	20-35	1.35-1.65	0.2-0.6	0.18-0.22	4.5-6.0	Moderate	0.37		
	29-65	40-55	1.20-1.50	<0.06	0.15-0.18	4.5-6.5	High	0.32		
LtC---	0-27	2-8	1.50-1.65	6.0-20	0.06-0.10	4.5-6.5	Low	0.20	5	.5-1
Letney	27-83	18-35	1.55-1.70	2.0-6.0	0.12-0.17	4.5-6.5	Low	0.24		
LTE---	0-26	2-8	1.50-1.65	6.0-20	0.06-0.10	4.5-6.5	Low	0.20	5	.5-1
Letney	26-70	18-35	1.55-1.70	2.0-6.0	0.12-0.17	4.5-6.5	Low	0.24		
MaB---	0-9	10-20	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low	0.24	5	.5-1
Malbis	9-28	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.28		
	28-46	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
	46-60	20-35	1.45-1.70	0.2-0.6	0.06-0.12	4.5-5.5	Low	0.28		
MaC---	0-8	10-20	1.30-1.60	0.6-2.0	0.10-0.15	4.5-6.0	Low	0.24	5	.5-1
Malbis	8-20	18-33	1.30-1.70	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.28		
	20-48	20-35	1.40-1.60	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28		
	48-60	20-35	1.45-1.70	0.2-0.6	0.06-0.12	4.5-5.5	Low	0.28		
MhC---	0-5	10-26	1.35-1.65	0.6-2.0	0.17-0.22	3.6-6.0	Low	0.49	5	.5-2
Mayhew	5-40	35-60	1.20-1.60	<0.06	0.12-0.18	3.6-6.0	High	0.32		
	40-77	30-60	1.20-1.65	<0.2	0.08-0.20	3.6-6.0	High	0.32		
MoB*:										
Merryville---	0-11	3-8	1.30-1.60	0.2-0.6	0.13-0.20	3.6-6.0	Low	0.37	5	.5-2
	11-45	4-14	1.50-1.69	0.2-0.6	0.12-0.17	3.6-6.0	Low	0.32		
	45-65	10-18	1.50-1.69	0.06-0.2	0.13-0.17	3.6-6.0	Low	0.32		
Besner---	0-5	4-15	1.20-1.40	2.0-6.0	0.11-0.16	4.5-6.5	Low	0.24	5	.5-2
	5-25	4-17	1.20-1.40	2.0-6.0	0.11-0.16	4.5-6.5	Low	0.24		
	25-80	8-18	1.30-1.50	0.6-2.0	0.12-0.18	4.5-6.5	Low	0.32		
OsB---	0-5	10-15	1.35-1.60	6.0-20	0.10-0.15	3.6-6.0	Low	0.15	5	1-5
Osier	5-46	1-10	1.40-1.60	6.0-20	0.03-0.10	3.6-6.0	Low	0.10		
	46-60	2-10	1.40-1.60	>20	0.02-0.05	3.6-6.0	Low	0.05		

See footnote at end of table.

Table 14.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Pg* Pits	0-60	---	---	---	---	---				---
RaC Rayburn	0-7 7-43 43-55	8-20 40-60 ---	1.20-1.40 1.30-1.50 ---	0.6-2.0 <0.06 0.01-0.6	0.11-0.15 0.12-0.18 ---	4.5-6.0 3.5-5.5 3.6-6.0	Low High	0.43 0.37	4	.5-3
Rh* Riverwash	0-80	5-20	1.40-1.60	2.0-20	0.02-0.12	7.4-8.4	Low	0.17	5	<.5
RuB Ruston	0-11 11-40 40-48 48-70	2-20 18-35 10-20 15-38	1.30-1.70 1.40-1.70 1.30-1.70 1.40-1.70	0.6-2.0 0.6-2.0 0.6-2.0 0.6-2.0	0.09-0.16 0.12-0.17 0.12-0.15 0.12-0.17	4.5-6.5 4.5-6.0 4.5-6.0 4.5-6.0	Low Low Low Low	0.28 0.28 0.28 0.28	5	.5-3
RuD Ruston	0-14 14-37 37-49 49-73	2-20 18-35 10-20 15-38	1.30-1.70 1.40-1.70 1.30-1.70 1.40-1.70	0.6-2.0 0.6-2.0 0.6-2.0 0.6-2.0	0.09-0.16 0.12-0.17 0.12-0.15 0.12-0.17	4.5-6.5 4.5-6.0 4.5-6.0 4.5-6.0	Low Low Low Low	0.28 0.28 0.28 0.28	5	.5-3
SaC Sacul	0-5 5-35 35-80	5-20 35-60 15-40	1.30-1.50 1.25-1.40 1.30-1.45	0.6-2.0 0.06-0.2 0.2-0.6	0.09-0.12 0.15-0.18 0.14-0.18	4.5-6.0 3.6-5.5 3.6-5.5	Low High Low	0.28 0.32 0.28	5	1-3
SAE Sacul	0-5 5-33 33-68	5-20 35-60 15-40	1.30-1.50 1.25-1.40 1.30-1.45	0.6-2.0 0.06-0.2 0.2-0.6	0.09-0.12 0.15-0.18 0.14-0.18	4.5-6.0 3.6-5.5 3.6-5.5	Low High Low	0.28 0.32 0.28	5	1-3
SeC Sawyer	0-4 4-33 33-74	10-20 20-40 30-60	1.35-1.60 1.35-1.55 1.15-1.50	0.6-2.0 0.2-0.6 0.06-0.2	0.15-0.20 0.15-0.20 0.14-0.20	3.6-5.5 3.6-5.5 3.6-5.5	Low Moderate High	0.37 0.32 0.32	5	1-4
SpC Spurger	0-6 6-57 57-69 69-81	6-15 35-60 18-35 2-20	1.20-1.35 1.20-1.50 1.20-1.50 1.20-1.50	0.6-2.0 0.06-0.2 0.2-0.6 0.6-6.0	0.11-0.17 0.12-0.18 0.12-0.17 0.05-0.15	4.5-6.5 4.5-6.0 4.5-6.5 4.5-6.5	Low Moderate Low Low	0.37 0.32 0.32 0.32	5	.5-2
TrC Trep	0-8 8-25 25-58 58-73	4-12 4-12 18-35 30-50	1.35-1.55 1.45-1.60 1.50-1.70 1.60-1.70	6.0-20 6.0-20 0.6-2.0 0.2-0.6	0.06-0.10 0.04-0.10 0.11-0.16 0.12-0.16	4.5-6.5 4.5-6.5 4.5-5.5 4.5-5.5	Low Low Low Moderate	0.24 0.17 0.32 0.32	5	.5-2
TRE Trep	0-7 7-22 22-51 51-81	4-12 4-12 18-35 30-50	1.35-1.55 1.45-1.60 1.50-1.70 1.60-1.70	6.0-20 6.0-20 0.6-2.0 0.2-0.6	0.06-0.10 0.04-0.10 0.11-0.16 0.12-0.16	4.5-6.5 4.5-6.5 4.5-5.5 4.5-5.5	Low Low Low Moderate	0.24 0.17 0.32 0.32	5	.5-2
UBA Urbo	0-13 13-81	28-55 35-55	1.45-1.55 1.45-1.55	0.06-0.2 <0.06	0.18-0.20 0.18-0.20	3.6-5.5 3.6-5.5	Moderate Moderate	0.28 0.28	5	1-3
VaC Vaiden	0-3 3-34 34-73	10-25 60-75 40-75	1.30-1.60 1.00-1.30 1.10-1.40	0.6-2.0 <0.06 <0.06	0.15-0.20 0.10-0.15 0.10-0.15	4.5-6.5 4.5-7.3 4.5-8.4	Low Very high Very high	0.43 0.32 0.32	5	.5-4

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.--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 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	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
AnC---Angie	D	None	---	---	3.0-5.0	Apparent	Dec-Apr	>60	---	High	Moderate.
BaB, BaC---Beauregard	C	None	---	---	1.5-3.0	Apparent	Dec-Mar	>60	---	High	High.
BeC, BEE---Betis	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
BhC---Bienville	A	Rare	---	---	4.0-6.0	Apparent	Dec-Apr	>60	---	Low	High.
BnC---Bowie	B	None	---	---	3.5-5.0	Perched	Jan-Apr	>60	---	Moderate	High.
BoB, BoD---Boykin	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
BrC, BRE---Briley	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
CaA---Caddo	D	None	---	---	0-2.0	Apparent	Dec-Apr	>60	---	High	Moderate.
CbA*:											
Caddo	D	None	---	---	0-2.0	Apparent	Dec-Apr	>60	---	High	Moderate.
Messer	C	None	---	---	2.0-4.0	Perched	Dec-May	>60	---	High	Moderate.
ChB---Cahaba	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
CoC---Corrigan	D	None	---	---	1.0-2.5	Perched	Dec-Mar	20-40	Soft	High	High.
CYA---Cypress	D	Frequent	Very long	Jan-Dec	+4-1.0	Apparent	Jan-Dec	>60	---	Moderate	High.
DuC---Dubach	B	None	---	---	3.5-5.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
EaC, EAE---Eastwood	D	None	---	---	>6.0	---	---	>60	---	High	High.
GeB---Glenmora	C	None	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	High	Moderate.
GoC, GOE---Gore	D	None	---	---	>6.0	---	---	>60	---	High	Low.
GtA---Guyton	D	None	---	---	0-1.5	Perched	Dec-May	>60	---	High	High.
GuA---Guyton	D	Occasional	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	>60	---	High	High.

See footnote at end of table.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
GYA*:											
Guyton	D	Frequent	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	>60	---	High	High.
Iuka	C	Frequent	Very brief to long.	Jan-Dec	1.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
HaB, Hainesville	A	Occasional	Brief to long.	Jan-Dec	4.0-6.0	Perched	Dec-Apr	>60	---	Low	Moderate.
HoC, HoD, Hornbeck	D	None	---	---	>6.0	---	---	>60	---	High	Low.
KcB*:											
Kirbyville	B	None	---	---	1.5-2.5	Perched	Dec-Apr	>60	---	High	Moderate.
Niwana	B	None	---	---	4.0-6.0	Apparent	Dec-Apr	>60	---	Moderate	High.
KEF*:											
Kisatchie	D	None	---	---	>6.0	---	---	20-40	Soft	High	High.
Rayburn	D	None	---	---	2.5-4.5	Perched	Dec-Feb	40-60	Soft	High	High.
KoC, Kolin	C	None	---	---	1.5-3.0	Perched	Dec-Apr	>60	---	High	Moderate.
LtC, LTE, Letney	A	None	---	---	>6.0	---	---	>60	---	Low	High.
MaB, MaC, Malbis	B	None	---	---	2.5-4.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
MhC, Mayhew	D	None	---	---	0-1.0	Perched	Dec-Apr	>40	Soft	High	High.
MoB*:											
Merryville	D	Rare	---	---	0-1.5	Apparent	Dec-Apr	>60	---	Moderate	High.
Besner	B	None	---	---	4.0-6.0	Apparent	Dec-Apr	>60	---	Low	Moderate.
OsB, Osier	A/D	None	---	---	0-0.5	Apparent	Nov-Mar	>60	---	High	High.
Pg*, Pits	-	None	---	---	>6.0	---	---	>60	---	---	---
RaC, Rayburn	D	None	---	---	2.5-4.5	Perched	Dec-Feb	40-60	Soft	High	High.
Rh*, Riverwash	A	Frequent	Brief	Jan-Dec	0.5-6.0	Apparent	Nov-Apr	>60	---	High	Low.
RuB, RuD, Ruston	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
SaC, SAE, Sacul	C	None	---	---	2.0-4.0	Perched	Dec-Apr	>60	---	High	High.
SeC, Sawyer	C	None	---	---	2.0-3.0	Perched	Dec-Apr	>60	---	High	High.

See footnote at end of table.

Table 15.--Soil and Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
SpC---------- Spurger	C	None----------	---	---	5.0-6.0	Apparent	Dec-Apr	>60	---	High-----	High.
TrC, TRE---------- Trep	B	None----------	---	---	3.5-5.0	Perched	Nov-May	>60	---	High-----	High.
UBA---------- Urbo	D	Frequent----	Brief to long.	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	>60	---	High-----	High.
VaC---------- Vaiden	D	None----------	---	---	1.0-2.0	Perched	Dec-Mar	>60	---	High-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.--Fertility Test Data for Selected Soils

(Analyses by the Soil Fertility Laboratory, Louisiana Agricultural Experiment Station. Dashes indicate analyses not made.)

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Extractable phosphorus	Exchangeable cations						Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation-exchange capacity	Effective cation-exchange capacity	
																Na	Al	
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Angie very fine sandy loam:[1] (S90LA-115-27)	Ap	0-5	2.43	6.5	65	5.5	0.9	0.1	0.0	0.0	0.4	3.7	10.2	6.9	63.7	0.0	0.0	6.1
	E	5-10	1.72	6.5	44	3.8	1.0	0.1	0.0	0.0	0.4	5.9	10.8	5.3	45.4	0.0	0.0	3.8
	Bt1	10-20	0.56	6.1	13	4.4	2.6	0.1	0.1	0.4	0.0	6.2	13.4	7.6	53.7	0.7	5.3	1.7
	Bt2	20-28	0.21	5.6	11	2.9	2.0	0.1	0.1	0.6	1.0	8.9	14.0	6.7	36.4	0.7	9.0	1.5
	Bt3	28-36	0.07	4.9	7	1.6	1.3	0.1	0.1	3.8	0.4	12.6	15.7	7.3	19.7	0.6	52.1	1.2
	Btg	36-48	0.00	4.7	7	0.9	1.1	0.1	0.0	4.4	1.4	12.6	14.7	7.9	14.3	0.0	55.7	0.8
	BCg	48-65	0.00	4.5	8	0.5	0.9	0.1	0.0	4.3	1.5	12.6	14.1	7.3	10.6	0.0	58.9	0.6
	Cg	65-80	0.01	4.5	9	0.4	0.8	0.1	0.0	4.2	1.6	12.4	13.7	7.1	9.5	0.0	59.2	0.5
Beauregard fine sandy loam:[1] (S86LA-115-8)	A	0-6	1.09	5.1	7	1.0	0.3	0.2	0.0	1.8	0.0	5.4	6.9	3.3	21.7	0.0	54.5	3.3
	BA	6-11	0.27	5.0	5	1.0	0.4	0.0	0.0	2.0	0.0	5.1	6.5	3.4	21.5	0.0	58.8	2.5
	Bt	11-20	0.08	5.2	6	1.0	1.0	0.1	0.1	3.6	0.0	4.8	7.0	5.8	31.4	1.4	62.1	1.0
	Btv1	20-26	0.07	5.1	4	0.4	1.0	0.1	0.0	4.0	1.2	7.0	8.5	6.7	17.6	0.0	59.7	0.4
	Btgv1	26-36	0.01	5.0	3	0.2	1.0	0.0	0.0	2.7	0.7	5.6	6.8	4.6	17.6	0.0	58.7	0.2
	Btgv2	36-54	0.01	5.1	4	0.1	1.0	0.0	0.0	3.8	0.4	6.0	7.1	5.3	15.5	0.0	71.7	0.1
	Btg	54-65	0.01	5.0	5	0.2	1.0	0.2	0.1	5.2	0.0	7.2	8.7	6.7	17.2	1.1	77.6	0.2
Betis loamy fine sand:[1] (S86LA-115-5)	A	0-9	0.99	5.4	5	1.0	0.2	0.0	0.0	0.2	0.2	3.0	4.2	1.6	28.6	0.0	12.5	5.0
	E	9-29	0.06	5.5	5	1.5	0.6	0.0	0.0	0.0	0.2	1.2	3.3	2.3	63.6	0.0	0.0	2.5
	Bw	29-44	0.00	5.5	5	0.9	0.3	0.0	0.0	0.0	0.2	0.6	1.8	1.4	66.7	0.0	0.0	3.0
	Bt/E	44-70	0.00	5.5	5	0.7	0.2	0.0	0.0	0.0	0.2	2.4	3.3	1.1	27.3	0.0	0.0	3.5
Boykin loamy fine sand:[1] (S88LA-115-18)	A	0-8	0.75	5.2	7	0.3	0.1	0.0	0.0	0.4	0.6	4.8	5.2	1.4	7.7	0.0	28.6	3.0
	E	8-22	0.26	5.6	5	0.4	0.1	0.0	0.0	0.4	0.0	2.4	2.9	0.9	17.2	0.0	44.4	4.0
	Bt1	22-33	0.18	5.4	8	1.1	0.8	0.1	0.0	1.0	0.6	6.6	8.6	3.6	23.3	0.0	27.8	1.4
	Bt2	33-48	0.02	5.2	7	0.5	0.5	0.0	0.0	0.6	0.8	4.2	5.2	2.4	19.2	0.0	25.0	1.0
	Bt3	48-79	0.02	5.3	7	0.3	0.7	0.0	0.0	0.8	1.4	6.0	7.0	3.2	14.3	0.0	25.0	0.4
	BC	79-90	0.05	5.2	7	0.3	0.5	0.0	0.0	2.6	1.0	7.2	8.0	4.4	10.0	0.0	59.1	0.6
Briley loamy fine sand:[1] (S86LA-115-4)	A	0-9	1.12	5.5	5	2.5	0.6	0.0	0.0	0.5	0.1	3.6	6.7	3.7	46.3	0.0	13.5	4.2
	E	9-23	0.15	5.7	5	1.0	0.2	0.0	0.0	0.0	0.2	1.2	2.4	1.4	50.0	0.0	0.0	5.0
	Bt1	23-36	0.01	5.4	5	1.9	1.1	0.1	0.0	0.4	0.2	3.0	6.1	3.7	50.8	0.0	10.8	1.7
	Bt2	36-47	0.01	5.0	5	1.3	0.8	0.0	0.0	0.8	0.1	3.0	5.1	3.0	41.2	0.0	26.7	1.6
	Bt3	47-62	0.00	5.0	5	1.1	0.8	0.0	0.0	1.1	0.5	5.4	7.3	3.5	26.0	0.0	31.4	1.4

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Cahaba fine sandy loam:[2] (S91LA-115-5)	A	0-5	0.93	5.3	12	0.7	0.2	0.1	0.0	0.6	0.6	3.7	4.7	2.2	21.3	0.0	27.3	3.5
	B/E	5-13	0.72	5.1	6	0.8	0.2	0.1	0.0	0.8	0.8	4.4	5.5	2.7	20.0	0.0	29.6	4.0
	Bt1	13-22	0.28	5.2	6	1.0	0.3	0.1	0.0	0.4	0.4	2.2	3.6	2.2	38.9	0.0	18.2	3.3
	Bt2	22-29	0.20	5.3	8	1.2	0.8	0.1	0.0	0.0	0.8	1.5	3.6	2.9	58.3	0.0	0.0	1.5
	Bt3	29-44	0.05	5.0	8	0.5	0.5	0.1	0.0	0.8	0.2	1.4	2.5	2.1	44.0	0.0	38.1	1.0
	BC	44-68	0.01	4.7	10	0.6	0.3	0.1	0.0	1.2	0.6	3.2	4.2	2.8	23.8	0.0	42.9	2.0
Corrigan fine sandy loam:[1] (S91LA-115-2)	A	0-5	1.25	4.9	8	8.3	1.7	0.2	0.3	0.8	0.6	11.8	22.3	11.9	47.1	1.3	6.7	4.9
	E	5-8	1.00	4.9	10	7.7	1.5	0.3	0.2	1.0	1.0	11.8	21.5	11.7	45.1	0.9	8.5	5.1
	Btg1	8-14	0.46	4.8	11	16.3	3.0	0.4	0.6	1.0	0.0	11.9	32.2	21.3	63.0	1.9	4.7	5.4
	Btg2	14-22	0.41	4.9	12	22.9	4.3	0.6	0.9	0.6	0.8	14.1	42.8	30.1	67.1	2.1	2.0	5.3
	BC	22-32	0.23	5.2	12	29.0	5.3	0.6	1.4	0.0	0.4	14.1	50.4	36.7	72.0	2.8	0.0	5.5
	Cr	32-50	0.00	5.4	31	38.8	6.3	0.6	1.6	0.0	0.4	14.1	61.4	47.7	77.0	2.6	0.0	6.2
Dubach fine sandy loam:[1] (S91LA-115-7)	A	0-6	1.86	6.0	7	1.6	0.2	0.0	0.0	0.0	0.4	4.8	6.6	2.2	27.3	0.0	0.0	8.0
	E	6-14	0.79	6.3	5	1.3	0.2	0.0	0.0	0.0	0.6	1.1	2.6	2.1	57.7	0.0	0.0	6.5
	E/B	14-19	0.30	5.9	10	0.9	0.2	0.0	0.0	0.0	0.8	1.1	2.2	1.9	50.0	0.0	0.0	4.5
	Bt1	19-32	0.03	5.1	16	0.3	0.5	0.1	0.0	2.4	0.6	6.3	7.2	3.9	12.5	0.0	61.5	0.6
	Bt2	32-44	0.12	4.9	6	0.2	0.4	0.1	0.0	2.4	0.8	5.6	6.3	3.9	11.1	0.0	61.5	0.5
	Btv	44-70	0.05	5.0	13	0.7	0.4	0.1	0.0	1.0	1.2	4.8	6.0	3.4	20.0	0.0	29.4	1.8
Dubach fine sandy loam:[3] (S91LA-115-4)	A	0-5	1.69	5.5	11	2.7	0.8	0.1	0.1	0.2	1.6	4.4	8.1	5.5	45.7	1.2	3.6	3.4
	E	5-11	0.25	4.8	7	0.3	0.2	0.0	0.0	2.0	1.0	8.1	8.6	3.5	5.8	0.0	57.1	1.5
	Bt	11-26	0.04	4.8	6	0.1	0.3	0.1	0.0	4.0	0.8	9.6	10.1	5.3	5.0	0.0	75.5	0.3
	Bt/E	26-54	0.00	4.6	5	0.1	0.4	0.1	0.0	5.0	0.4	7.4	8.0	6.0	7.5	0.0	83.3	0.3
	Bt'	54-62	0.00	4.3	4	0.2	0.5	0.0	0.0	4.5	1.4	8.0	8.7	6.6	8.0	0.0	68.2	0.4
Gore very fine sandy loam:[1] (S88LA-115-17)	A	0-2	3.71	4.7	42	4.1	4.0	0.3	0.1	3.2	1.8	20.4	28.9	13.5	29.4	0.3	23.7	1.0
	E	2-4	2.28	4.9	30	2.5	3.1	0.2	0.1	3.2	1.0	17.4	23.3	10.1	25.3	0.4	31.7	0.8
	Bt	4-16	0.66	4.8	61	6.9	13.6	0.8	0.9	8.4	0.6	22.2	44.4	31.2	50.0	2.0	26.9	0.5
	Btss1	16-22	0.31	4.7	67	7.4	17.5	0.9	2.0	5.6	1.2	19.8	47.6	34.6	58.4	4.2	16.2	0.4
	Btss2	22-39	0.03	4.8	72	7.3	18.0	0.7	3.0	2.4	0.4	12.0	41.0	31.8	70.7	7.3	7.5	0.4
	Btss3	39-60	0.00	5.0	84	7.7	18.6	0.7	3.4	1.2	0.4	9.0	39.4	32.0	77.2	8.6	3.8	0.4
	C	60-87	0.00	5.4	90	7.6	17.7	0.5	3.7	0.0	0.8	9.6	39.1	30.3	75.4	9.5	0.0	0.4

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Hornbeck clay:[4] (S86LA-115-1)	A	0-7	1.43	7.4	38	0.2	0.2	0.5	0.1	---	---	4.2	5.2	---	19.2	1.9	---	1.0
	Ak	7-11	0.99	7.6	17	7.7	0.2	0.6	0.2	---	---	5.1	13.8	---	63.0	1.4	---	38.5
	Bkss1	11-18	0.19	8.0	5	7.8	0.3	0.5	0.2	---	---	5.1	13.9	---	63.3	1.4	---	26.0
	Bkss2	18-30	0.19	8.1	5	4.6	0.4	0.5	0.3	---	---	3.9	9.7	---	59.8	3.1	---	11.5
	Bkss3	30-42	0.46	7.9	5	10.3	0.8	1.1	0.6	---	---	6.6	19.4	---	66.0	3.1	---	12.9
	Bkss4	42-50	0.06	7.9	148	11.7	1.0	0.3	0.7	---	---	8.4	22.1	---	62.0	3.2	---	11.7
	Ck	50-62	0.10	7.6	240	10.8	1.1	0.3	0.6	---	---	8.4	21.2	---	60.4	2.8	---	9.8
Hornbeck clay:[5] (S86LA-115-14)	A	0-4	2.71	6.9	26	38.8	1.9	0.7	0.0	---	---	6.6	48.0	---	86.3	0.0	---	20.4
	Ak	4-14	1.83	7.7	52	44.4	1.5	0.6	0.1	---	---	3.0	49.6	---	94.0	0.2	---	29.6
	Bkss1	14-21	0.90	7.8	36	41.8	1.4	0.5	0.1	---	---	3.6	47.4	---	92.4	0.2	---	29.9
	Bkss2	21-33	0.68	8.1	6	44.8	1.7	0.5	0.1	---	---	3.0	50.1	---	94.0	0.2	---	26.4
	Bkss3	33-42	0.10	8.1	19	48.8	2.5	0.8	0.3	---	---	3.0	55.4	---	94.6	0.5	---	19.5
	Ck	42-60	0.06	7.9	100	48.9	3.0	0.8	0.5	---	---	2.4	55.6	---	95.7	0.9	---	16.3
Iuka fine sandy loam:[1] (S86LA-115-12)	A1	0-5	1.43	4.4	5	0.5	0.2	0.0	0.0	2.3	0.1	5.4	6.1	3.1	11.5	0.0	74.2	2.5
	A2	5-11	0.46	4.6	5	0.4	0.1	0.0	0.0	2.0	0.0	2.7	3.2	2.5	15.6	0.0	80.0	4.0
	C1	11-40	0.10	4.7	5	0.4	0.2	0.0	0.0	1.6	0.4	2.4	3.0	2.6	20.0	0.0	61.5	2.0
	C2	40-56	0.01	4.3	5	0.4	0.2	0.1	0.0	2.7	0.5	3.0	3.7	3.9	18.9	0.0	69.2	2.0
	C3	56-60	0.01	4.4	5	0.4	0.3	0.0	0.0	2.9	0.5	3.0	3.7	4.1	18.9	0.0	70.7	1.3
Kisatchie fine sandy loam:[1] (S88LA-115-15)	A	0-3	1.19	4.6	21	1.6	0.9	0.1	0.1	2.2	0.4	8.4	11.1	5.3	24.3	0.9	41.5	1.8
	E	3-6	0.64	4.9	26	2.2	1.4	0.1	0.2	2.8	0.6	10.8	14.7	7.3	26.5	1.4	38.4	1.6
	Bt1	6-12	0.60	4.8	44	7.5	5.0	0.3	0.9	7.8	0.2	19.8	33.5	21.7	40.9	2.7	35.9	1.5
	Bt2	12-16	0.46	5.0	46	6.7	4.5	0.2	0.9	6.0	0.6	18.6	30.9	18.9	39.8	2.9	31.7	1.5
	Bt3	16-28	0.15	4.5	39	6.8	4.6	0.2	1.0	3.4	1.0	13.8	26.4	17.0	47.7	3.8	20.0	1.5
	2Cr	28-55	0.10	4.3	50	9.3	6.2	0.2	2.1	5.4	0.6	18.0	35.9	23.9	49.9	5.8	22.6	1.5
Kolin silt loam:[1] (S91LA-115-9)	A	0-3	2.52	4.4	99	2.3	0.5	0.1	0.0	0.8	1.0	10.4	13.3	4.7	21.8	0.0	17.0	4.6
	E	3-6	0.94	4.8	7	1.1	0.5	0.0	0.0	1.4	0.8	9.6	11.2	3.8	14.3	0.0	36.8	2.2
	Bt1	6-12	0.34	5.0	7	1.4	1.4	0.1	0.1	4.6	0.8	13.3	16.3	8.4	18.4	0.6	54.8	1.0
	Bt2	12-17	0.26	5.1	8	1.3	1.6	0.1	0.1	7.2	1.0	17.6	20.9	11.3	14.8	0.5	63.7	0.8
	Bt/E	17-29	0.12	5.3	7	0.8	1.6	0.1	0.2	8.4	0.4	12.6	15.3	11.5	17.6	1.3	73.0	0.5
	2Bt1	29-42	0.10	5.6	10	1.7	3.9	0.1	0.7	10.6	0.6	17.8	24.2	17.6	26.4	2.9	60.2	0.4
	2Bt2	42-65	0.00	5.4	14	3.7	9.0	0.2	1.7	9.0	0.2	19.2	33.8	23.8	43.2	5.0	37.8	0.4

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Letney loamy sand:[1]	A	0-9	0.50	6.3	67	0.9	0.2	0.1	0.0	0.0	0.4	1.5	2.7	1.6	44.4	0.0	0.0	4.5
(S91LA-115-6)	E	9-27	0.15	6.1	50	0.3	0.2	0.1	0.0	0.0	0.6	3.7	4.3	1.2	14.0	0.0	0.0	1.5
	Bt1	27-54	0.05	5.9	52	0.8	0.4	0.4	0.0	0.0	1.0	5.9	7.5	2.6	21.3	0.0	0.0	2.0
	Bt2	54-62	0.08	5.2	6	1.3	0.7	0.2	0.0	0.4	1.4	8.9	11.1	4.0	19.8	0.0	10.0	1.9
	BC	62-83	0.00	5.2	8	1.3	1.4	0.1	0.0	2.0	0.6	6.7	9.5	5.4	29.5	0.0	37.0	0.9
Malbis fine sandy loam:[1]	A	0-4	1.00	5.3	5	1.1	0.3	0.0	0.0	0.4	0.2	5.4	6.8	2.0	20.6	0.0	20.0	3.7
(S87LA-115-7)	E	4-9	0.32	5.3	5	1.1	0.4	0.0	0.0	0.4	0.2	3.0	4.5	2.1	33.3	0.0	19.0	2.8
	Bt1	9-17	0.15	5.0	5	1.3	1.3	0.0	0.0	3.6	0.0	5.4	8.0	6.2	32.5	0.0	58.1	1.0
	Bt2	17-28	0.01	5.1	5	0.7	0.9	0.0	0.0	4.1	0.1	6.6	8.2	5.8	19.5	0.0	70.7	0.8
	Btv1	28-46	0.00	5.1	5	0.4	0.6	0.0	0.0	3.8	0.2	6.0	7.0	5.0	14.3	0.0	76.0	0.7
	Btv2	46-60	0.00	4.9	5	0.4	0.6	0.0	0.0	4.1	0.3	6.0	7.0	5.4	14.3	0.0	75.9	0.7
Mayhew silt loam:[1]	Ap	0-5	1.36	4.4	14	18.4	4.4	0.5	0.3	3.0	2.4	22.9	46.5	29.0	50.8	0.6	10.3	4.2
(S91LA-115-3)	Btg	5-13	0.57	4.1	12	22.6	5.4	0.5	0.5	6.4	0.8	20.0	49.0	36.2	59.2	1.0	17.7	4.2
	Btssg1	13-27	0.35	4.1	11	22.0	5.0	0.5	0.7	5.2	0.4	19.8	48.0	33.8	58.8	1.5	15.4	4.4
	Btssg2	27-40	0.10	3.9	13	27.8	6.0	0.8	1.3	3.6	0.8	19.9	55.8	40.3	64.3	2.3	8.9	4.6
	Btssg3	40-62	0.09	4.0	11	23.8	5.2	0.6	1.0	2.6	1.6	17.6	48.2	34.8	63.5	2.1	7.5	4.6
	BCg	62-77	0.00	4.3	16	31.2	6.1	0.5	1.3	2.2	0.2	17.8	56.9	41.5	68.7	2.3	5.3	5.1
Osier loamy fine sand:[1]	A	0-5	1.54	4.7	4	0.4	0.2	0.1	0.0	0.7	0.3	4.2	4.9	1.7	14.3	0.0	41.2	2.0
(S86LA-115-9)	AC	5-19	0.74	4.6	3	0.2	0.2	0.1	0.0	0.7	0.3	2.4	2.9	1.5	17.2	0.0	46.7	1.0
	Cg1	19-30	0.21	5.0	1	0.1	0.1	0.1	0.0	0.4	0.2	3.0	3.3	0.9	9.1	0.0	44.4	1.0
	Cg2	30-46	0.01	5.4	0	0.1	0.0	0.0	0.0	0.2	0.2	2.2	2.3	0.5	4.3	0.0	40.0	0.0
	Cg3	46-60	0.01	5.4	0	0.1	0.1	0.3	0.0	0.2	0.2	2.6	3.1	0.9	16.1	0.0	22.2	1.0
Rayburn fine sandy loam:[1]	A	0-3	2.83	4.7	21	1.8	1.2	0.1	0.0	2.0	1.0	13.8	16.9	6.1	18.3	0.0	32.8	1.5
(S88LA-115-19)	E	3-7	0.66	4.7	15	1.0	1.0	0.1	0.0	1.0	1.4	8.4	10.5	4.5	20.0	0.0	22.2	1.0
	Bt1	7-15	0.55	4.6	35	4.1	8.0	0.5	0.2	15.4	1.2	31.8	44.6	29.4	28.7	0.4	52.4	0.5
	Bt2	15-22	0.33	4.7	44	4.2	8.3	0.4	0.2	14.6	0.4	30.6	43.7	28.1	30.0	0.5	52.0	0.5
	Bt3	22-32	0.18	4.4	43	4.1	8.4	0.5	0.2	16.0	0.4	28.8	42.0	29.6	31.4	0.5	54.1	0.5
	BC	32-43	0.12	4.5	46	4.0	8.3	0.5	0.3	14.0	1.4	28.2	41.3	28.5	31.7	0.7	49.1	0.5

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations						Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation		Ca/Mg
						Ca	Mg	K	Na	Al	H					Sum of cation-exchange capacity Na	Effective cation-exchange capacity Al	
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Ruston fine sandy loam:[1]																		
(S86LA-115-11)	A	0-5	0.74	4.5	8	0.4	0.2	0.1	0.0	4.7	0.9	3.6	4.3	6.3	16.3	0.0	74.6	2.0
	E	5-11	0.32	5.1	3	0.4	0.2	0.0	0.0	0.9	0.1	2.4	3.0	1.6	20.0	0.0	56.3	2.0
	Bt1	11-29	0.03	5.2	5	1.0	1.0	0.1	0.0	4.3	0.9	6.0	8.1	7.3	25.9	0.0	58.9	1.0
	Bt2	29-40	0.01	5.1	5	0.2	0.4	0.1	0.0	3.4	0.2	5.9	6.6	4.3	10.6	0.0	79.1	0.5
	B/E	40-48	0.01	5.0	3	0.1	0.3	0.1	0.0	3.2	0.8	4.8	5.3	4.5	9.4	0.0	71.1	0.3
	B't	48-70	0.01	5.0	4	0.1	0.3	0.0	0.0	4.5	0.0	6.6	7.0	4.9	5.7	0.0	91.8	0.3
Sacul fine sandy loam:[1]																		
(S89LA-115-21)	A	0-5	1.51	5.1	7	1.1	0.4	0.0	0.0	0.6	0.6	13.3	14.8	2.7	10.1	0.0	22.2	2.8
	Bt1	5-16	0.66	4.7	12	4.9	5.7	0.3	0.1	10.6	0.4	20.0	31.0	22.0	35.5	0.3	48.2	0.9
	Bt2	16-25	0.20	4.7	9	2.8	4.6	0.3	0.1	12.0	0.2	23.7	31.5	20.0	24.8	0.3	60.0	0.6
	Bt3	25-35	0.08	4.6	9	2.0	4.6	0.3	0.1	12.0	0.2	23.6	30.6	19.2	22.9	0.3	62.5	0.4
	Bt4	35-44	0.03	4.6	9	1.6	4.3	0.2	0.1	11.6	0.0	24.4	30.6	17.8	20.3	0.3	65.2	0.4
	BC	44-60	0.01	4.7	7	1.3	3.2	0.2	0.1	8.8	0.0	16.7	21.5	13.6	22.3	0.5	64.7	0.4
	C	60-80	0.00	4.7	8	1.3	2.4	0.1	0.1	5.0	1.0	9.6	13.5	9.9	28.9	0.7	50.5	0.5
Sawyer very fine sandy loam:[1]																		
(S91LA-115-1)	A	0-4	3.81	5.2	13	2.4	0.6	0.1	0.1	1.0	2.0	13.3	16.5	6.2	19.4	0.6	16.1	4.0
	E	4-7	0.51	4.8	7	0.9	0.5	0.0	0.0	3.4	0.2	12.6	14.0	5.0	10.0	0.0	68.0	1.8
	Bt1	7-12	0.26	4.7	8	0.7	0.8	0.1	0.0	5.0	0.8	14.0	15.6	7.4	10.3	0.0	67.6	0.9
	Bt2	12-21	0.13	4.8	7	0.6	1.0	0.1	0.1	7.6	0.2	14.8	16.6	9.6	10.8	0.6	79.2	0.6
	Bt3	21-27	0.11	4.8	6	0.4	1.0	0.1	0.1	8.0	0.0	14.7	16.3	9.6	9.8	0.6	83.3	0.4
	Btg	27-33	0.01	4.8	6	0.6	1.0	0.1	0.1	8.4	0.0	15.5	17.3	10.2	10.4	0.6	82.4	0.6
	2Btg1	33-56	0.04	4.8	7	1.6	2.1	0.1	0.3	8.6	0.4	22.0	26.1	13.1	15.7	1.1	65.6	0.8
	2Btg2	56-74	0.00	4.6	8	4.9	4.1	0.1	0.5	9.0	1.2	19.0	28.6	19.8	33.6	1.7	45.5	1.2
Trep loamy fine sand:[1]																		
(S90LA-115-24)	A	0-8	1.51	4.7	8	0.4	0.5	0.1	0.0	1.0	1.0	6.0	7.0	3.0	14.3	0.0	33.3	0.8
	E1	8-25	0.22	5.8	4	0.4	0.1	0.0	0.0	0.0	0.2	2.2	2.7	0.7	18.5	0.0	0.0	4.0
	Bt1	25-39	0.05	5.0	6	0.8	0.7	0.1	0.0	1.0	1.2	5.2	6.8	3.8	23.5	0.0	26.3	1.1
	Bt2	39-58	0.00	4.7	6	0.8	1.3	0.1	0.0	4.4	0.6	11.6	13.8	7.2	15.9	0.0	61.1	0.6
	Bt3	58-73	0.00	4.6	5	1.0	1.5	0.1	0.1	5.0	0.4	11.1	13.8	8.1	19.6	0.7	61.7	0.7
Trep loamy fine sand:[6]																		
(S88LA-115-21)	A	0-10	0.98	4.7	6	0.5	0.1	0.0	0.0	0.6	0.8	4.2	4.8	2.0	12.5	0.0	30.0	5.0
	E	10-22	0.18	5.2	8	0.4	0.2	0.0	0.0	0.0	1.0	1.8	2.4	1.6	25.0	0.0	0.0	2.0
	Bt1	22-39	0.16	4.9	10	0.4	0.5	0.1	0.0	1.6	0.6	2.4	3.4	3.2	29.4	0.0	50.0	0.8
	Bt2	39-52	0.01	4.8	24	0.2	1.1	0.1	0.1	5.4	0.2	9.0	10.5	7.1	14.3	1.0	76.1	0.2
	Bt3	52-62	0.01	4.6	24	0.3	1.3	0.1	0.1	5.4	1.6	9.0	10.8	8.8	16.7	0.9	61.4	0.2
	Btg	62-81	0.01	4.6	29	0.5	1.8	0.1	0.1	6.0	1.0	9.0	11.5	9.5	21.7	0.9	63.2	0.3

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Vaiden loam:[7]																		
(S86LA-115-3)	A	0-4	3.37	5.1	5	5.3	8.3	0.9	0.1	4.1	0.5	17.4	32.0	19.2	45.6	0.3	21.4	0.6
	Bt1	4-14	0.72	4.6	5	5.1	8.3	1.0	0.4	9.5	0.8	22.8	37.6	25.1	39.4	1.1	37.8	0.6
	Bt2	14-22	0.37	4.8	5	5.9	8.3	0.6	0.7	9.0	0.8	22.8	38.3	25.3	40.5	1.8	35.6	0.7
	Bt3	22-31	0.28	5.0	7	20.0	8.3	0.4	0.0	7.6	0.4	18.3	47.0	36.7	61.1	0.0	20.7	2.4
	C1	31-40	0.10	5.2	6	20.0	8.3	0.5	0.0	2.4	0.1	13.5	42.3	31.3	68.1	0.0	7.7	2.4
	C2	40-60	0.10	7.3	139	20.0	8.3	0.5	0.0	---	---	7.8	36.6	---	78.7	0.0	---	2.4
	C3	60-81	0.06	7.8	64	20.0	8.3	0.6	0.0	---	---	6.6	35.5	---	81.4	0.0	---	2.4
Caddo:[8]																		
(S88LA-115-20)	A	0-5	1.80	4.9	94	1.5	0.3	0.0	0.1	0.0	1.4	6.0	7.9	3.3	24.1	1.3	0.0	5.0
	Eg1	5-10	0.70	4.8	56	0.6	0.2	0.0	0.0	1.0	1.0	4.2	5.0	2.8	16.0	0.0	35.7	3.0
	Eg2	10-21	0.30	4.6	34	0.3	0.2	0.0	0.0	2.0	1.0	4.8	5.3	3.5	9.4	0.0	57.1	1.5
	B/E	21-36	0.16	4.4	43	0.2	0.1	0.0	0.1	1.8	0.2	5.4	5.8	2.4	6.9	1.7	75.0	2.0
	Btg	36-58	0.01	4.5	28	0.3	0.2	0.0	0.1	3.4	1.2	6.0	6.6	5.2	9.1	1.5	65.4	1.5
	Cg	58-86	0.01	4.7	29	0.5	0.3	0.0	0.1	5.8	0.4	9.0	9.9	7.1	9.1	1.0	81.7	1.7
Guyton:[9]																		
(S86LA-115-13)	A	0-4	3.99	4.2	5	0.7	0.5	0.1	0.5	4.5	0.5	17.4	19.2	6.8	9.4	2.6	66.2	1.4
	Eg1	4-16	0.54	4.4	5	0.4	0.3	0.0	0.3	3.2	0.2	4.2	5.2	4.4	19.2	5.8	72.7	1.3
	Eg2	16-24	0.32	4.2	5	0.4	0.4	0.0	0.5	4.5	0.3	7.8	9.1	6.1	14.3	5.5	73.8	1.0
	B/E	24-38	0.32	4.4	5	0.5	0.5	0.0	0.6	5.4	0.2	9.0	10.6	7.2	15.1	5.7	75.0	1.0
	Btg	38-45	0.10	4.4	5	0.5	0.5	0.0	0.6	5.4	0.2	7.0	8.6	7.2	18.6	7.0	75.0	1.0
	BCg	45-60	0.06	4.4	5	0.5	0.5	0.0	0.4	4.0	0.4	7.0	8.6	5.8	16.7	4.8	69.0	1.0
Sawyer:[10]																		
(S86LA-115-10)	A	0-5	1.04	5.2	6	1.0	0.2	0.2	0.0	0.5	0.3	3.6	5.0	2.2	28.0	0.0	22.7	5.0
	E	5-10	0.06	5.2	1	0.2	0.1	0.1	0.0	0.5	0.1	2.8	3.2	1.0	12.5	0.0	50.0	2.0
	Bt1	10-22	0.06	5.0	4	1.0	1.0	0.1	0.0	3.4	0.8	3.6	5.7	6.3	36.8	0.0	54.0	1.0
	Bt2	22-28	0.02	4.9	2	1.0	1.0	0.1	0.0	2.9	0.1	4.8	6.9	5.1	30.4	0.0	56.9	1.0
	Bt3	28-40	0.01	4.7	3	1.0	1.1	0.1	0.0	2.9	0.7	5.1	7.3	5.8	30.1	0.0	50.0	0.9
	Btg	40-60	0.01	4.5	9	3.1	7.0	0.2	0.1	10.1	0.7	15.6	26.0	21.2	40.0	0.4	47.6	0.4
Eastwood:[11]																		
(S86LA-115-2)	A	0-4	3.02	5.2	12	3.0	1.3	0.2	0.0	0.5	0.5	10.2	14.7	5.5	30.6	0.0	9.1	2.3
	E	4-9	0.81	4.9	5	1.1	0.9	0.1	0.0	2.2	0.3	8.4	10.5	4.6	20.0	0.0	47.8	1.2
	Bt1	9-13	0.24	4.6	5	2.4	4.7	0.4	0.1	11.1	0.3	20.7	28.3	19.0	26.9	0.4	58.4	0.5
	Bt2	13-31	0.24	4.7	5	1.9	4.8	0.5	0.1	14.5	1.0	24.9	32.2	22.8	22.7	0.3	63.6	0.4
	Bt3	31-60	0.06	4.6	5	0.6	3.8	0.3	0.1	11.9	1.1	21.0	25.8	17.8	18.6	0.4	66.9	0.2
	BC	60-73	0.01	4.3	5	0.4	6.4	0.4	0.2	15.5	1.1	24.0	31.4	24.0	23.6	0.6	64.6	0.1

See footnotes at end of table.

Table 16.--Fertility Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H2O	Extractable phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity: Na	Effective cation-exchange capacity: Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Eastwood:[12] (S88LA-115-16)	A	0-3	1.92	4.7	18	1.5	0.6	0.1	0.0	1.0	0.4	9.6	11.8	3.6	18.6	0.0	27.8	2.5
	A2	3-6	0.73	4.9	19	1.5	1.3	0.1	0.0	2.4	0.6	7.8	10.7	5.9	27.1	0.0	40.7	1.2
	Bt1	6-14	0.66	4.6	28	3.3	4.6	0.4	0.1	12.6	1.0	25.2	33.6	22.0	25.0	0.3	57.3	0.7
	Bt2	14-21	0.36	4.6	21	2.0	4.5	0.4	0.2	14.2	1.2	28.8	35.9	22.5	19.8	0.3	63.1	0.4
	Bt3	21-39	0.10	4.7	21	0.8	3.6	0.4	0.2	13.4	0.6	24.0	29.0	19.0	17.2	0.7	70.5	0.2
	Btg	39-62	0.19	4.6	20	0.5	3.5	0.3	0.3	13.0	0.8	22.2	26.8	18.4	17.2	1.1	70.7	0.1
	Cg	62-78	0.11	4.5	21	0.6	3.9	0.4	0.4	13.6	2.0	23.4	28.7	20.9	18.5	1.4	65.1	0.2

[1] This pedon is the same as the typical pedon for the series. For the description and location of the soil, see the section "Soil Series and Their Morphology."

[2] This Cahaba pedon is about 4 miles south of Pitkin near the boundary between Vernon and Allen Parishes; $SE^1/_4SE^1/_4$ sec. 13, T. 2 S., R. 6 W.

[3] This Dubach pedon is about 2 miles southeast of Rosepine; $NE^1/_4NE^1/_4$ sec. 11, T. 2 S., R. 9 W.

[4] This Hornbeck pedon is about 3 miles southeast of New Llano; $SW^1/_4SE^1/_4$ sec. 6, T. 1 N., R. 8 W.

[5] This Hornbeck pedon is about 4 miles southeast of Leesville, 3.8 miles east on Highway 467 from its intersection with Highway 171, 0.2 mile on access road; $SW^1/_4$ sec. 6, T. 1 N., R. 8 W.

[6] This Trep pedon is in an area of Trep loamy fine sand, 1 to 5 percent slopes. It is about 1.9 miles south of Kurthwood; 0.2 mile east of Highway 117; $NE^1/_4SW^1/_4$ sec. 22, T. 4 N., R. 8 W.

[7] This Vaiden pedon is about 3.5 miles east of New Llano, 0.4 mile north of Fort Polk on Highway 468, 2 miles southwest on gravel road, 150 feet northeast of gravel road; $NW^1/_4NE^1/_4$ sec. 32, T. 2 N., R. 8 W.

[8] This Caddo soil is mapped as a similar soil as Caddo silt loam in map unit CaA, Caddo silt loam, 0 to 1 percent slopes. The pedon is an Ultisols rather than an Alfisols. It is about 8 miles southeast of Pickering on Highway 10, 1.2 miles south of Highway 10; $NE^1/_4SW^1/_4$ sec. 22, T. 1 S., R. 8 W.

[9] This Guyton soil is mapped as a similar soil as Guyton silt loam in map unit GyA, Guyton-Iuka complex, frequently flooded. The pedon is an Ultisols rather than an Alfisols. It is about 5 miles north of Fullerton along Brushy Creek, 60 feet west of channel of Brushy Creek; $SW^1/_4SE^1/_4$ sec. 15, T. 1 N., R. 6 W.

[10] This Sawyer pedon is mapped as a similar soil as Sawyer very fine sandy loam in map unit SeC, Sawyer very fine sandy loam, 1 to 5 percent slopes. The pedon is an Alfisols rather than an Ultisols. It is about 6 miles north of Fullerton, 3.4 miles north on access road from intersection of Highway 399 and Lookout Road, 300 feet west of road; $SE^1/_4NW^1/_4$ sec. 10, T. 1 N., R. 6 W.

[11] This Eastwood soil is mapped as a similar soil as Eastwood silt loam in map unit EAE, Eastwood silt loam, 5 to 12 percent slopes. The pedon is an Ultisols rather than an Alfisols. It is about 2.5 miles southeast of Leesville, 0.45 mile south of Northwestern State University at Fort Polk on Highway 467, 500 feet east of Highway 467; $NE^1/_4SW^1/_4$ sec. 6, T. 1 N., R. 8 W.

[12] This Eastwood soil is mapped as a similar soil as Eastwood silt loam in map unit EAE, Eastwood silt loam, 5 to 12 percent slopes. The pedon is an Ultisols rather than an Alfisols. It is about 0.45 miles south of Northwestern State University on Highway 467, 500 feet east of Highway 167; $SE^1/_4SW^1/_4$ sec. 1, T. 1 N., R. 10 W.

Table 17.--Physical Test Data for Selected Soils

(The symbol TR means trace. Dashes indicate analyses 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 (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Fine Clay (<0.002 mm)	Water content: 1/3 bar	15 bar	Water retention	Bulk density: 1/3 bar	Oven-dry	Field moisture	COLE
		In	Pct									Pct (wt)			g/cm^3			
Cypress clay:[1]																		
(S89LA-115-26)	Ag	0-8	0.2	0.5	0.9	7.2	2.2	11.0	37.5	51.5	26.9	---	31.1	---	---	---	---	---
	Cg1	8-22	TR	0.2	0.8	15.3	3.1	19.4	32.0	48.6	28.2	---	23.9	---	---	---	---	---
	Cg2	22-53	TR	0.1	0.8	16.6	3.1	20.6	31.2	48.2	28.0	---	22.7	---	---	---	---	---
	2Ab	53-60	0.1	0.6	3.6	48.7	6.2	59.2	30.2	10.6	---	---	6.9	---	---	---	---	---
Eastwood silt loam:[1]																		
(S89LA-115-23)	A	0-2	0.1	0.4	0.8	5.7	31.2	38.2	53.4	8.4	8.4	17.2	6.3	0.16	1.45	1.49	---	0.009
	E	2-4	0.3	0.4	0.6	4.2	27.7	33.2	50.6	16.2	14.1	15.2	7.5	0.12	1.53	1.56	---	0.007
	Bt	4-10	---	0.1	0.2	0.9	10.6	11.8	36.6	51.6	44.4	34.3	22.5	0.15	1.27	1.79	---	0.121
	Btss1	10-17	---	0.1	0.1	0.6	9.0	9.8	40.6	49.6	39.1	31.6	20.7	0.15	1.35	1.83	---	0.107
	Btss2	17-27	TR	TR	0.1	0.6	10.9	11.6	40.5	47.9	34.7	30.5	20.1	0.14	1.35	1.81	---	0.103
	Btss3	27-34	---	TR	0.1	0.6	12.7	13.4	41.3	45.3	32.8	29.8	18.9	0.15	1.38	1.83	---	0.099
		34-45	TR	TR	TR	0.4	13.0	13.4	44.3	42.3	27.6	28.1	17.7	0.15	1.42	1.80	---	0.082
	Btss4	45-55	---	0.1	0.3	1.1	18.5	20.0	43.1	36.9	22.2	26.2	16.1	0.15	1.51	1.84	---	0.068
		55-67	---	TR	0.1	0.4	10.2	10.7	51.7	37.6	21.1	27.2	16.2	0.16	1.48	1.80	---	0.067
Hainesville fine sand:[1]																		
(S89LA-115-27)	A	0-5	0.1	1.2	23.9	42.8	18.4	86.4	13.0	0.6	---	8.8	3.0	0.08	1.41	1.43	---	0.005
	E1	5-17	---	1.3	23.1	42.8	19.2	86.4	13.2	0.4	---	---	1.7	---	---	---	1.58	---
	E2	17-28	0.1	1.1	21.6	44.6	18.9	86.3	13.7	---	---	7.4	1.4	0.10	1.62	1.63	1.46	0.002
	E/B	28-37	TR	1.2	21.9	45.5	17.8	86.4	13.1	0.5	---	7.9	1.4	0.10	1.61	1.63	1.43	0.004
	Bw/E	37-48	---	1.0	20.5	44.4	20.3	86.2	13.2	0.6	---	---	1.6	---	---	---	1.44	---
	Bw1	48-65	0.1	1.1	20.7	45.8	18.4	86.1	12.4	1.5	---	4.9	1.8	0.05	1.59	1.59	---	---
	Bw2	65-83	---	0.6	14.2	47.6	22.9	85.3	13.1	1.6	---	5.5	1.9	0.06	1.59	1.59	---	---
Hornbeck clay:[1]																		
(S89LA-115-25)	A1	0-7	0.5	1.1	2.1	4.8	4.0	12.5	31.9	55.6	38.5	33.4	22.8	0.13	1.22	1.76	---	0.130
	A2	7-22	0.3	1.0	3.0	5.2	3.9	13.4	29.0	57.6	25.1	37.5	22.5	0.18	1.23	1.93	---	0.162
	Bkss1	22-35	2.0	1.3	0.9	0.8	0.6	5.6	31.4	63.0	21.7	35.9	22.1	0.18	1.31	1.93	---	0.138
	Bkss2	35-50	0.7	0.6	0.4	0.3	0.3	2.3	31.1	66.6	34.2	33.3	29.2	0.06	1.37	1.91	---	0.117
	Bkss3	50-67	0.5	0.3	0.2	0.2	0.1	1.3	38.6	60.1	20.1	32.0	24.5	0.11	1.42	1.88	---	0.098
	C1	67-75	0.2	0.2	0.1	0.1	0.3	0.9	64.2	34.9	10.4	22.5	17.8	0.08	1.63	1.83	---	0.039
	C2	75-86	0.1	0.2	0.2	0.3	0.1	0.9	14.9	84.2	34.0	34.2	30.3	0.05	1.38	1.87	---	0.107

See footnotes at end of table.

Table 17.--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 (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Fine Clay (<0.002 mm)	Water content: 1/3 bar	15 bar	Water retention	Bulk density: 1/3 bar	Oven-dry	Field moisture	COLE
		In	Pct									Pct (wt)			g/cm^3			
Hornbeck clay:[2]																		
(S89LA-115-25A)	A	0-4	0.7	1.1	1.9	4.1	3.3	11.1	34.4	54.5	26.9	32.6	26.7	0.07	1.19	1.72	---	0.131
	Bkss1	4-18	1.7	2.1	1.8	1.9	1.3	8.8	34.8	56.4	15.1	34.2	23.9	0.13	1.30	1.93	---	0.141
	Bkss2	18-33	1.1	1.3	0.8	0.9	0.5	4.6	34.1	61.3	22.3	35.7	24.7	0.13	1.30	1.92	---	0.114
	Bkss3	33-52	0.8	0.7	0.4	0.4	0.3	2.6	27.6	69.8	21.4	34.0	26.9	0.10	1.35	1.87	---	0.115
	Bkss4	52-64	0.5	0.3	0.1	0.1	0.1	1.1	35.8	63.1	17.8	32.2	25.2	0.10	1.38	1.92	---	0.116
	2C	64-78	0.1	0.1	0.1	0.1	0.1	0.5	51.9	47.6	16.7	30.2	22.3	0.11	1.42	1.76	---	0.074
	2Css	78-96	0.2	0.1	0.2	0.2	0.1	0.8	17.8	81.4	19.5	33.6	30.5	0.04	1.39	2.01	---	0.131
Kirbyville fine sandy loam:[1]																		
(S89LA-115-30)	A	0-5	0.4	0.8	6.9	21.4	15.2	44.7	48.1	7.2	6.1	19.9	4.4	0.22	1.41	1.46	---	0.012
	A/E	5-9	0.5	0.8	6.2	20.9	13.0	41.4	48.0	10.6	10.3	14.5	5.2	0.15	1.62	1.64	---	0.004
	E	9-15	0.5	0.7	5.4	20.1	12.6	39.3	45.2	15.5	14.0	15.9	6.9	0.14	1.60	1.63	---	0.006
	Btv1	15-29	0.7	0.8	5.0	17.5	13.0	37.0	42.8	20.2	17.2	16.9	8.7	0.13	1.67	1.72	---	0.010
	Btv2	29-48	0.9	1.2	5.5	18.7	13.2	39.5	41.0	19.5	16.8	16.0	9.2	0.12	1.73	1.76	---	0.006
	Bt1	48-67	0.3	1.1	6.1	19.7	13.3	40.5	36.1	23.4	20.9	16.4	11.0	0.09	1.73	1.75	---	0.004
	Bt2	67-80	0.7	1.7	8.1	22.2	13.2	45.9	29.4	24.7	22.0	15.3	11.2	0.07	1.77	1.80	---	0.006
Malbis fine sandy loam:[3]																		
(S80LA-115-001)	A	0-5	0.2	0.5	2.3	22.6	39.8	65.4	30.9	3.7	2.5	6.3	2.4	0.06	1.50	1.50	---	---
	E	5-8	0.1	0.2	2.0	22.5	38.1	62.9	33.1	4.0	2.8	6.0	2.0	0.06	1.46	1.47	---	0.002
	Bw	8-15	0.1	0.3	2.0	21.0	33.0	56.4	32.3	11.3	8.5	8.9	3.8	0.08	1.56	1.60	---	0.008
	Bt1	15-26	0.2	0.3	1.3	14.7	25.1	41.6	33.2	25.2	17.5	17.2	10.9	0.11	1.69	1.74	---	0.010
	Bt2	26-35	0.1	0.3	1.2	16.8	25.5	43.9	32.2	23.9	17.4	17.6	10.3	0.12	1.68	1.75	---	0.014
	Bt3	35-44	0.1	0.2	1.4	19.7	23.2	44.6	28.2	27.2	19.1	18.2	11.2	0.12	1.70	1.73	---	0.006
	2Bt4	44-61	0.1	0.3	0.6	25.7	30.1	56.8	10.7	32.5	21.6	16.6	12.8	0.06	1.68	1.73	---	0.010
	2Bt5	61-73	0.2	0.3	1.5	27.2	28.9	58.1	12.7	29.2	17.9	21.1	10.3	0.18	1.64	1.76	---	0.024
Malbis fine sandy loam:[4]																		
(S80LA-115-002)	A	0-6	0.4	1.2	11.2	43.3	22.2	78.3	18.0	3.7	1.6	---	2.0	---	1.60	---	---	---
	Bt1	6-18	0.4	0.7	4.7	20.9	13.4	40.1	28.1	31.8	26.1	17.5	12.3	0.08	1.60	1.66	---	0.012
	Bt2	18-25	0.1	0.8	4.9	22.3	14.0	42.1	27.8	30.1	23.6	16.1	11.7	0.07	1.61	1.68	---	0.014
		25-35	0.2	0.5	4.3	22.4	14.5	41.9	24.3	33.8	24.0	19.0	12.9	0.10	1.60	1.67	---	0.014
	Bt3	35-48	0.1	0.5	3.4	21.7	13.8	39.5	18.6	41.9	23.2	20.5	16.5	0.06	1.54	1.63	---	0.019
	Bt4	48-56	0.2	0.9	4.0	26.8	13.0	44.9	16.8	38.3	23.6	19.8	15.7	0.07	1.61	1.69	---	0.016
	2Bt5	56-75	---	0.1	1.4	44.5	9.9	55.9	6.8	37.3	21.9	20.8	12.7	0.15	1.90	1.90	---	---

See footnotes at end of table.

Table 17.--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 (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Fine Clay (<0.002 mm)	Water content: 1/3 bar	15 bar	Water retention	Bulk density: 1/3 bar	Oven-dry	Field moisture	COLE
		In	Pct									Pct (wt)			g/cm^3			
Merryville silt loam:[1]																		
(S90LA-115-26)	A	0-5	0.1	0.3	2.3	14.8	29.4	46.9	50.8	2.3	1.9	10.8	2.7	0.12	1.50	1.50	---	---
	Eg	5-11	TR	0.2	2.1	13.7	25.5	41.5	52.2	6.3	4.8	14.2	3.7	0.17	1.65	1.68	---	0.006
	E/B1	11-27	---	0.2	1.6	12.2	22.3	36.3	51.4	12.3	9.3	15.1	6.3	0.15	1.68	1.72	---	0.008
	E/B2	27-45	0.1	0.2	1.4	11.6	22.0	35.3	48.6	16.1	15.1	20.3	9.1	0.18	1.62	1.74	---	0.024
	Btg1	45-57	0.1	0.2	1.8	14.9	22.9	39.9	41.5	18.6	17.1	25.9	10.5	0.23	1.51	1.78	---	0.056
	Btg2	57-65	0.2	0.3	1.0	17.1	27.1	45.7	29.7	24.6	18.0	35.0	13.5	0.29	1.34	1.96	---	0.135
Niwana fine sandy loam:[1]																		
(S89LA-115-29)	A	0-4	0.4	1.1	7.8	31.3	22.1	62.7	34.1	3.2	2.8	12.6	3.3	0.12	1.27	1.28	---	0.003
	E	4-14	0.4	0.8	7.3	29.3	21.1	58.9	35.9	5.2	4.3	11.0	2.7	0.14	1.71	1.71	---	---
	B/E	14-23	0.4	0.6	6.5	26.9	22.0	56.4	35.4	8.2	6.8	12.7	3.7	0.14	1.62	1.62	---	---
	Bt	23-32	0.6	0.7	6.1	23.0	17.4	47.8	40.5	11.7	11.3	15.1	6.3	0.14	1.63	1.66	---	0.006
	Bt1/E	32-50	0.4	0.5	5.6	21.0	14.9	42.4	41.2	16.4	14.9	15.9	8.2	0.13	1.71	1.73	---	0.004
	Bt2/E	50-71	0.3	0.6	5.5	19.9	14.2	40.5	39.8	19.7	17.3	16.1	9.0	0.12	1.75	1.79	---	0.007
	Btv	71-83	0.3	1.0	7.5	22.5	13.7	45.0	32.3	22.7	20.2	14.5	10.6	0.08	2.01	2.11	---	0.013
Spurger very fine sandy loam:[1]																		
(S90LA-115-25)	A	0-3	0.7	1.8	5.4	14.0	36.8	58.7	37.0	4.3	3.2	7.9	3.4	0.07	1.48	1.49	---	0.002
	E	3-6	0.2	2.0	5.8	14.2	34.6	56.8	39.2	4.0	2.8	---	2.6	---	---	---	---	---
	Bt1	6-22	---	0.2	0.8	2.8	6.5	10.3	24.7	65.0	44.9	38.1	24.9	0.16	1.22	1.68	---	0.113
	Bt2	22-39	---	0.1	0.5	4.1	16.3	21.0	28.4	50.6	33.4	31.6	19.5	0.17	1.37	1.72	---	0.079
	Bt3	39-57	---	0.3	1.1	5.9	19.5	26.8	31.0	42.2	26.8	25.0	16.4	0.13	1.53	1.74	---	0.044
	BC	57-69	---	0.2	2.5	16.6	27.6	46.9	26.2	26.9	19.8	24.1	11.2	0.20	1.56	1.74	---	0.037
	C	69-81	TR	1.5	8.1	19.3	39.7	68.6	20.2	11.2	---	13.2	5.3	0.13	1.63	1.66	---	0.006
Urbo silty clay:[1]																		
(S89LA-115-28)	Ap	0-4	TR	0.2	0.5	0.7	0.7	2.1	55.9	42.0	23.9	35.9	22.9	0.16	1.23	1.50	---	0.068
	A	4-13	---	0.2	0.5	0.7	0.7	2.1	55.7	42.2	24.3	30.4	21.1	0.13	1.39	1.59	---	0.046
	Bg1	13-28	TR	0.3	0.5	0.5	0.5	1.8	55.6	42.6	23.7	29.7	20.5	0.13	1.41	1.62	---	0.047
	Bg2	28-37	0.1	0.4	0.5	0.5	0.6	2.1	54.4	43.5	24.3	29.3	21.2	0.11	1.40	1.60	---	0.046
	Bg3	37-48	0.1	0.4	0.6	0.6	0.6	2.3	48.1	49.6	30.9	30.3	24.0	0.09	1.40	1.67	---	0.061
	2Bg4	48-69	0.1	0.2	0.5	0.6	0.6	2.0	44.8	53.2	34.3	30.7	24.1	0.09	1.40	1.64	---	0.054
	2Bssg	69-81	0.1	0.3	0.6	0.8	0.9	2.7	42.0	55.3	35.3	32.4	26.1	0.09	1.37	1.80	---	0.095

See footnotes at end of table.

Table 17.--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 (0.25-0.10 mm)	Very fine (0.10-0.05 mm)	Total (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Fine Clay (<0.002 mm)	Water content: 1/3 bar	15 bar	Water retention	Bulk density: 1/3 bar	Oven-dry	Field moisture	COLE
		In	Pct									Pct (wt)			g/cm^3			
Vaiden loam:[1]																		
(S89LA-115-24)	A	0-3	0.4	0.4	0.7	10.2	35.9	47.6	39.0	13.4	10.3	14.6	7.2	0.11	1.53	1.60	---	0.015
	Bt	3-8	TR	0.1	0.2	2.9	14.5	17.7	33.4	48.9	40.6	30.5	20.2	0.14	1.33	1.86	---	0.118
	Btss1	8-20	TR	0.1	0.1	2.9	13.4	16.5	34.0	49.5	37.5	30.0	19.8	0.14	1.42	2.00	---	0.121
	Btss2	20-34	TR	TR	0.1	3.3	12.1	15.5	35.7	48.8	35.8	29.3	18.5	0.16	1.44	2.01	---	0.118
	Css1	34-47	0.5	0.3	0.3	2.9	8.2	12.2	35.4	52.4	29.6	30.2	18.7	0.16	1.41	2.00	---	0.124
	Css2	47-55	0.2	0.2	0.2	2.4	7.4	10.4	32.7	56.9	24.4	29.5	20.1	0.13	1.42	1.96	---	0.113
	Css3	55-73	0.3	0.2	0.1	1.6	5.3	7.5	32.0	60.5	20.5	30.2	20.7	0.13	1.40	1.88	---	0.103
Vaiden loam:[5]																		
(S89LA-115-24A)	A	0-4	0.2	0.2	0.5	8.6	33.7	43.2	47.5	9.3	6.1	14.3	4.7	0.15	1.56	1.60	---	0.008
	E	4-7	0.2	0.3	0.4	9.1	35.3	45.3	42.0	12.7	8.8	14.6	6.6	0.12	1.49	1.58	---	0.020
	Bt	7-12	0.1	0.1	0.3	3.9	19.7	24.1	32.1	43.8	36.5	31.4	18.3	0.17	1.33	1.92	---	0.130
	Btss1	12-18	---	---	0.1	3.0	13.7	16.8	32.7	50.5	40.4	29.9	19.2	0.15	1.39	1.93	---	0.116
	Btss2	18-26	TR	0.1	0.2	3.2	13.8	17.3	35.9	46.8	35.5	27.3	17.8	0.14	1.47	2.00	---	0.108
	Btss3	26-37	TR	TR	0.1	3.0	13.8	16.9	35.7	47.4	36.1	27.1	18.0	0.14	1.49	2.01	---	0.105
	Css1	37-51	TR	0.1	0.1	2.9	12.0	15.1	35.5	49.4	32.7	29.5	19.2	0.15	1.43	2.01	---	0.120
	Css2	51-80	0.2	0.1	0.2	2.5	7.4	10.4	29.7	59.9	22.4	29.5	21.2	0.12	1.43	1.93	---	0.105

1 This pedon is the same as the typical pedon for the series. For the description and location of the soil, see the section "Soil Series and Their Morphology."

2 This Hornbeck pedon is about 4 miles south of Leesville on Highway 171, 0.3 mile west on gravel road, 250 feet south in old field.

3 This Malbis pedon is about 90 feet north and 45 feet west of the southwest corner of the SE^1/$_4$ sec. 6, T. 2 S., R. 7 W.

4 This Malbis pedon is about 45 feet west of the center of sec. 1, T. 1 S., R. 7 W.

5 This Vaiden pedon is about 8 miles east of Leesville, 2 miles south of Highway 469 from its junction with Highway 28, 0.9 mile on access road, 310 feet south of road; SE^1/$_4$SE^1/$_4$ sec. 14, T. 2 N., R.8 W.

Table 18.--Chemical Test Data for Selected Soils

(The symbol TR means trace. Dashes indicate analyses not made.)

Soil name and sample number	Horizon	Depth	Extractable cations				Extractable acidity	Cation-exchange capacity (NH_4OAc)	Base saturation	Organic carbon	pH			Extractable iron	Extractable aluminum
			Ca	Mg	K	Na					1:1 H_2O	1:1 KCl	1:2 $CaCl_2$		
		In	Meq/100g				Pct	Pct		Pct				Pct	Meq/100g
Cypress clay:[1]															
(S89LA-115-26)	Ag	0-8	8.6	3.9	0.5	0.6	31.0	36.6	30	6.74	4.6	3.5	4.0	0.4	6.4
	Cg1	8-22	3.4	1.8	0.2	0.4	28.7	26.9	17	2.01	4.3	3.3	3.7	0.3	13.8
	Cg2	22-53	1.6	1.9	0.2	0.4	25.7	24.3	14	0.92	4.3	3.1	3.5	0.5	13.2
	2Ab	53-60	0.9	1.5	0.1	0.2	8.4	7.8	24	1.17	4.6	3.5	3.9	TR	2.3
Eastwood silt loam:[1]															
(S89LA-115-23)	A	0-2	6.2	1.7	0.2	---	9.3	12.9	47	2.20	5.1	4.0	4.5	0.6	0.2
	E	2-4	5.2	2.0	0.1	---	8.5	12.2	46	0.84	4.9	3.7	4.2	0.8	1.8
	Bt	4-10	13.4	6.3	0.4	---	21.1	34.7	49	0.58	4.7	3.5	4.1	1.7	11.3
	Btss1	10-17	12.0	5.7	0.4	---	23.4	35.2	44	0.26	4.7	3.4	3.9	1.4	15.3
	Btss2	17-27	10.8	5.1	0.4	---	24.0	34.8	40	0.16	4.4	3.3	3.9	1.3	17.1
	Btss3	27-34	10.4	4.3	0.3	TR	23.2	33.0	39	0.10	4.7	3.3	3.9	1.1	17.3
		34-45	11.7	3.9	0.3	0.1	21.2	32.2	43	0.08	4.7	3.4	3.9	1.0	16.7
	Btss4	45-55	10.9	3.7	0.3	0.1	19.7	29.7	43	0.07	4.7	3.3	3.9	0.7	14.6
		55-67	12.0	3.6	0.3	0.1	19.2	30.6	46	0.05	4.7	3.2	3.8	0.7	13.3
Hainesville sand:[1]															
(S89LA-115-27)	A	0-5	1.7	0.4	TR	0.1	5.1	3.7	30	1.17	4.9	4.2	4.6	0.2	0.4
	E1	5-17	0.6	0.2	---	0.1	1.7	1.4	35	0.15	5.3	4.4	4.8	0.2	0.4
	E2	17-28	0.5	0.2	TR	---	1.4	1.1	33	0.05	5.4	4.4	4.9	0.2	---
	E/B	28-37	0.5	0.1	TR	---	1.0	1.1	38	0.03	5.3	4.4	4.9	0.2	0.4
	Bw/E	37-48	0.6	0.1	TR	---	1.3	1.1	35	0.04	5.4	4.3	4.8	0.2	0.2
	Bw1	48-65	0.8	0.1	TR	---	1.6	1.4	36	0.03	5.4	4.2	4.7	0.3	0.1
	Bw2	65-83	0.8	0.4	TR	---	1.8	1.5	40	0.02	5.5	4.3	4.8	0.3	0.2
Hornbeck clay:[1]															
(S89LA-115-25)	A1	0-7	---	1.7	0.6	0.2	4.0	50.0	---	1.68	7.8	6.8	7.3	2.4	---
	A2	7-22	---	1.4	0.4	0.7	3.2	50.7	---	0.78	7.9	6.8	7.4	2.5	---
	Bkss1	22-35	---	1.9	0.4	1.4	---	43.1	100	0.18	8.3	7.0	7.6	1.2	---
	Bkss2	35-50	---	2.3	0.5	1.8	---	41.8	100	0.09	8.4	7.0	7.6	0.6	---
	Bkss3	50-67	---	2.4	0.5	1.7	---	39.5	100	0.06	8.1	7.0	7.6	0.6	---
	C1	67-75	---	1.8	0.4	1.1	---	25.8	100	0.03	8.3	7.1	7.7	0.1	---
	C2	75-86	---	4.1	0.9	2.2	---	55.2	100	0.04	8.3	6.9	7.6	0.3	---
Hornbeck clay:[2]															
(S89LA-115-25A)	A	0-4	---	1.9	0.7	---	---	49.0	100	2.08	7.8	6.9	7.4	0.3	---
	Bkss1	4-18	---	1.3	0.3	0.3	---	42.8	100	0.40	7.9	6.9	7.5	1.2	---
	Bkss2	18-33	---	1.7	0.3	1.1	---	42.6	100	0.22	8.0	7.0	7.6	1.1	---
	Bkss3	33-52	---	2.4	0.5	2.0	---	44.1	100	0.11	8.4	7.0	7.6	1.3	---
	Bkss4	52-64	---	2.6	0.5	1.9	---	41.2	100	0.04	8.1	7.0	7.6	1.2	---
	2C	64-78	---	2.4	0.5	1.6	---	34.2	100	0.04	8.4	7.1	7.7	0.5	---
	2Css	78-96	---	4.0	0.8	2.4	---	54.5	100	0.05	8.0	6.7	7.5	1.2	---
Kirbyville fine sandy loam:[1]															
(S89LA-115-30)	A	0-5	1.0	0.2	TR	---	5.8	5.3	17	1.47	4.8	3.9	4.3	0.4	0.7
	A/E	5-9	1.3	0.6	TR	TR	4.2	8.0	31	0.25	4.8	3.8	4.2	0.9	0.9
	E	9-15	0.4	0.3	---	---	5.6	4.9	11	0.16	4.8	3.7	4.1	1.2	1.9
	Btv1	15-29	0.4	0.5	TR	---	7.0	5.9	11	0.09	4.9	3.7	4.1	1.5	2.9
	Btv2	29-48	0.4	0.6	TR	0.1	6.6	5.7	14	0.04	4.8	3.7	4.1	1.9	2.7
	Bt1	48-67	0.4	0.9	TR	TR	6.6	6.4	16	0.03	4.9	3.6	4.1	2.4	2.7
	Bt2	67-80	0.6	1.2	TR	---	6.0	6.4	23	0.02	5.0	3.7	4.2	2.9	1.7

See footnotes at end of table.

Table 18.--Chemical Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Extractable cations Ca	Mg	K	Na	Extractable acidity	Cation-exchange capacity (NH_4OAc)	Base saturation	Organic carbon	pH 1:1 H_2O	pH 1:1 KCl	pH 1:2 $CaCl_2$	Extractable iron	Extractable aluminum
		In	Meq/100g				Pct	Pct		Pct				Pct	Meq/100g
Malbis fine sandy loam:[3] (S80LA-115-001)	A	0-5	0.7	0.2	0.1	---	4.5	5.3	18	1.55	5.1	---	4.4	0.3	0.7
	E	5-8	0.4	0.1	TR	---	1.8	1.6	22	0.25	5.2	---	4.5	0.5	0.2
	Bw	8-15	0.9	0.5	TR	---	2.4	2.8	37	0.24	5.3	---	4.5	0.9	0.3
	Bt1	15-26	0.8	0.9	TR	TR	5.2	5.6	25	0.14	5.0	---	4.2	1.5	1.9
	Bt2	26-35	0.5	0.9	TR	---	5.0	5.4	22	0.07	5.0	---	4.1	1.5	2.2
	Bt3	35-44	0.6	1.2	TR	---	5.7	6.1	24	0.07	4.9	---	4.1	1.4	2.4
	2Bt4	44-61	0.9	1.8	0.1	0.1	6.8	8.2	30	0.05	4.9	---	4.0	1.4	3.6
	2Bt5	61-73	0.5	1.4	0.1	---	6.1	7.3	25	0.04	4.9	---	4.0	1.2	4.0
Malbis fine sandy loam:[4] (S80LA-115-002)	A	0-6	0.7	0.2	TR	---	2.2	2.1	29	0.53	5.3	---	4.6	0.3	0.2
	Bt1	6-18	1.3	0.8	TR	---	6.9	7.3	23	0.23	5.0	---	4.2	1.6	2.1
	Bt2	18-25	0.7	0.6	TR	---	6.5	5.9	17	0.11	4.9	---	4.1	1.4	2.1
		25-35	0.4	0.5	TR	---	7.7	6.5	10	0.15	4.8	---	4.0	1.6	2.9
	Bt3	35-48	0.2	0.7	TR	0.1	9.7	7.7	9	0.09	4.8	---	4.1	1.6	3.9
	Bt4	48-56	0.2	0.8	TR	---	9.1	7.4	10	0.16	4.8	---	4.0	1.8	3.5
	2Bt5	56-75	0.2	1.1	TR	---	5.1	5.9	20	0.04	4.9	---	4.0	1.4	2.8
Merryville silt loam:[1] (S90LA-115-26)	A	0-5	1.1	0.4	---	---	6.3	5.6	19	1.13	4.7	3.7	4.2	0.2	1.1
	Eg	5-11	2.1	0.8	---	0.3	5.2	5.9	38	0.67	5.1	3.8	4.2	0.3	0.6
	E/B1	11-27	2.1	1.2	TR	1.3	4.0	6.6	53	0.11	4.9	3.4	3.9	0.4	1.5
	E/B2	27-45	3.3	1.7	0.1	2.2	5.2	8.8	58	0.06	4.8	3.3	3.9	0.4	1.8
	Btg1	45-57	4.5	2.5	0.1	3.1	3.4	11.3	75	0.05	5.0	3.3	4.0	0.9	0.6
	Btg2	57-65	7.0	3.7	0.2	4.0	3.7	14.8	80	0.04	5.7	3.8	4.4	0.8	0.5
Niwana fine sandy loam:[1] (S89LA-115-29)	A	0-4	0.5	0.1	TR	---	3.4	2.8	15	0.91	4.8	4.1	4.4	0.5	0.4
	E	4-14	0.1	---	---	---	2.0	1.8	5	0.22	4.8	4.0	4.3	0.5	---
	B/E	14-23	0.1	0.1	---	---	2.6	2.3	7	0.10	4.8	3.9	4.2	0.6	0.8
	Bt	23-32	0.1	0.2	TR	---	4.5	3.7	6	0.09	4.8	3.7	4.1	1.1	1.7
	Bt1/E	32-50	0.2	0.5	TR	---	5.2	4.4	12	0.05	4.9	3.7	4.2	1.5	1.4
	Bt2/E	50-71	0.3	0.9	TR	TR	5.5	5.3	18	0.03	4.9	3.6	4.2	1.8	2.0
	Btv	71-83	0.4	1.2	TR	---	6.2	5.6	21	0.02	4.9	3.6	4.2	2.2	1.6
Spurger very fine sandy loam:[1] (S90LA-115-25)	A	0-3	1.6	0.8	0.1	---	3.0	4.0	45	1.07	5.4	4.3	4.7	1.0	0.1
	E	3-6	0.8	0.5	0.1	---	2.7	3.0	34	0.59	5.1	4.1	4.4	1.1	0.4
	Bt1	6-22	1.4	5.2	0.4	TR	23.4	24.1	23	0.25	5.6	3.5	4.0	4.0	12.1
	Bt2	22-39	0.5	3.6	0.3	---	20.9	20.1	17	0.14	4.9	3.5	4.0	2.7	12.2
	Bt3	39-57	0.1	3.1	0.3	TR	18.1	17.8	16	0.11	4.8	3.5	4.0	2.0	11.5
	BC	57-69	0.1	2.1	0.1	---	12.7	12.2	15	0.06	4.7	3.5	4.0	1.2	8.3
	C	69-81	TR	0.9	TR	---	5.6	5.4	14	0.03	4.8	3.5	4.0	0.7	3.3
Urbo silty clay:[1] (S89LA-115-28)	Ap	0-4	10.2	4.6	0.4	0.1	19.2	26.3	44	2.60	4.8	3.7	4.2	1.5	3.2
	A	4-13	2.8	2.6	0.3	0.1	23.1	22.7	20	0.70	4.4	3.3	3.7	1.6	12.3
	Bg1	13-28	0.7	2.1	0.3	0.3	24.6	21.8	12	0.43	4.2	3.1	3.6	3.1	14.5
	Bg2	28-37	0.4	2.4	0.3	0.6	23.6	23.1	14	0.29	4.3	3.0	3.6	1.7	14.7
	Bg3	37-48	0.6	3.3	0.3	1.1	25.1	26.7	17	0.31	4.4	3.0	3.5	1.6	17.9
	2Bg4	48-69	1.2	4.8	0.4	1.9	24.1	28.7	26	0.22	4.5	2.9	3.5	1.6	14.8
	2Bssg	69-81	2.3	7.4	0.5	3.3	21.6	30.4	38	0.21	4.3	3.0	3.6	1.7	14.3

See footnotes at end of table.

Table 18.--Chemical Test Data for Selected Soils--Continued

Soil name and sample number	Horizon	Depth	Extractable cations Ca	Mg	K	Na	Extractable acidity	Cation-exchange capacity (NH_4OAc)	Base saturation	Organic carbon	pH 1:1 H_2O	1:1 KCl	1:2 $CaCl_2$	Extractable iron	Extractable aluminum
		In	Meq/100g				Pct	Pct	Pct	Pct				Pct	Meq/100g
Vaiden loam:[1] (S89LA-115-24)	A	0-3	7.4	1.2	TR	TR	5.1	10.7	63	1.15	4.5	4.0	4.5	0.6	0.6
	Bt	3-8	22.2	3.7	0.2	0.3	7.6	28.0	78	0.59	5.2	3.9	4.6	1.0	1.0
	Btss1	8-20	25.5	4.0	0.3	0.4	4.8	30.6	86	0.21	5.4	4.3	5.0	0.7	0.4
	Btss2	20-34	28.7	4.2	0.3	0.4	3.0	30.7	92	0.13	7.3	6.1	6.8	0.6	---
	Css1	34-47	---	5.1	0.4	0.6	0.6	36.1	---	0.07	8.1	6.8	7.5	0.1	---
	Css2	47-55	---	5.6	0.4	0.7	---	38.4	100	0.06	7.9	7.0	7.6	0.3	---
	Css3	55-73	---	6.0	0.5	0.6	---	41.3	100	0.03	8.0	7.0	7.6	0.4	---
Vaiden loam:[5] (S89LA-115-24A)	A	0-4	7.7	1.1	0.2	TR	5.5	10.5	62	1.34	5.1	4.4	4.8	0.4	---
	E	4-7	8.7	1.2	TR	TR	4.6	10.6	68	0.88	5.6	4.5	5.2	0.5	---
	Bt	7-12	19.9	3.3	0.1	0.2	8.0	25.7	75	0.56	5.3	3.9	4.7	1.1	0.5
	Btss1	12-18	22.7	3.8	0.1	0.2	7.0	28.7	79	0.26	5.5	4.0	4.8	1.1	0.2
	Btss2	18-26	22.2	3.6	0.2	0.2	5.0	26.7	84	0.14	5.5	4.2	5.0	0.8	0.2
	Btss3	26-37	25.5	4.0	0.2	0.2	3.0	28.7	91	0.08	6.4	5.7	6.4	1.0	---
	Css1	37-51	---	4.9	0.3	0.3	---	34.8	100	0.06	8.0	6.8	7.4	1.0	---
	Css2	51-80	---	6.1	0.6	0.4	---	41.2	100	0.02	8.1	6.9	7.6	0.5	---

1 This pedon is the same as the typical pedon for the series. For the description and the location of the soil, see the section "Soil Series and Their Morphology."

2 This Hornbeck pedon is about 4 miles south of Leesville on Highway 171, 0.3 mile west on gravel road, 250 feet south in old field.

3 This Malbis pedon is about 90 feet north and 45 feet west of the southwest corner of the $SE^1/_4$ sec. 6, T. 2 S., R. 7 W.

4 This Malbis pedon is about 45 feet west of the center of sec. 1, T. 1 S., R. 7 W.

5 This Vaiden pedon is about 8 miles east of Leesville, 2 miles south of Highway 469 from its junction with Highway 28, 0.9 mile on access road, 310 feet south of road; $SE^1/_4SE^1/_4$ sec. 14, T. 2 N., R. 8 W.

Table 19.--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
Angie	Clayey, mixed, thermic Aquic Paleudults
Beauregard	Fine-silty, siliceous, thermic Plinthaquic Paleudults
Besner	Coarse-loamy, siliceous, thermic Glossic Paleudalfs
Betis	Sandy, siliceous, thermic Psammentic Paleudults
Bienville	Sandy, siliceous, thermic Psammentic Paleudalfs
Bowie	Fine-loamy, siliceous, thermic Plinthic Paleudults
Boykin	Loamy, siliceous, thermic Arenic Paleudults
Briley	Loamy, siliceous, thermic Arenic Paleudults
Caddo	Fine-silty, siliceous, thermic Typic Glossaqualfs
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Corrigan	Fine, smectitic, thermic Albaquic Hapludalfs
*Cypress	Fine, mixed, acid, thermic Typic Fluvaquents
Dubach	Fine-loamy, siliceous, thermic Typic Paleudults
Eastwood	Fine, smectitic, thermic Vertic Hapludalfs
Glenmora	Fine-silty, siliceous, thermic Glossaquic Paleudalfs
Gore	Fine, mixed, thermic Vertic Paleudalfs
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Hainesville	Thermic, coated Argic Quartzipsamments
Hornbeck	Fine, smectitic, thermic Aquic Hapluderts
Iuka	Coarse-loamy, siliceous, acid, thermic Aquic Udifluvents
Kirbyville	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Kisatchie	Fine, smectitic, thermic Typic Hapludalfs
Kolin	Fine-silty, siliceous, thermic Haplic Glossudalfs
Letney	Loamy, siliceous, thermic Arenic Paleudults
Malbis	Fine-loamy, siliceous, thermic Plinthic Paleudults
Mayhew	Fine, smectitic, thermic Vertic Ochraqualfs
*Merryville	Coarse-silty, siliceous, thermic Typic Glossaqualfs
Messer	Coarse-silty, siliceous, thermic Haplic Glossudalfs
Niwana	Coarse-loamy, siliceous, thermic Typic Paleudults
Osier	Siliceous, thermic Typic Psammaquents
Rayburn	Fine, smectitic, thermic Vertic Hapludalfs
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Sacul	Clayey, mixed, thermic Aquic Hapludults
Sawyer	Fine-silty, siliceous, thermic Aquic Paleudults
*Spurger	Fine, mixed, thermic Albaquultic Hapludalfs
Trep	Loamy, siliceous, thermic Arenic Paleudults
*Urbo	Fine, mixed, acid, thermic Aeric Haplaquepts
*Vaiden	Very-fine, smectitic, thermic Vertic Hapludalfs