SOIL SURVEY OF

Appling and Jeff Davis Counties, Georgia

United States Department of Agriculture
Soil Conservation Service
In cooperation with
University of Georgia, College of Agriculture
Agricultural Experiment Stations

Major fieldwork for this soil survey was done in the period 1963 through 1968. Soil names and descriptions were approved in 1969. Unless otherwise indicated, statements in the publication refer to conditions in the counties in 1968. This survey was made cooperatively by the Soil Conservation Service and the University of Georgia, College of Agriculture, Agricultural Experiment Stations, as part of the technical assistance furnished to the Altamaha Soil and Water Conservation District.

Copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, USDA, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, or other structures; and in appraising tracts of land for agriculture, industry, or recreation.

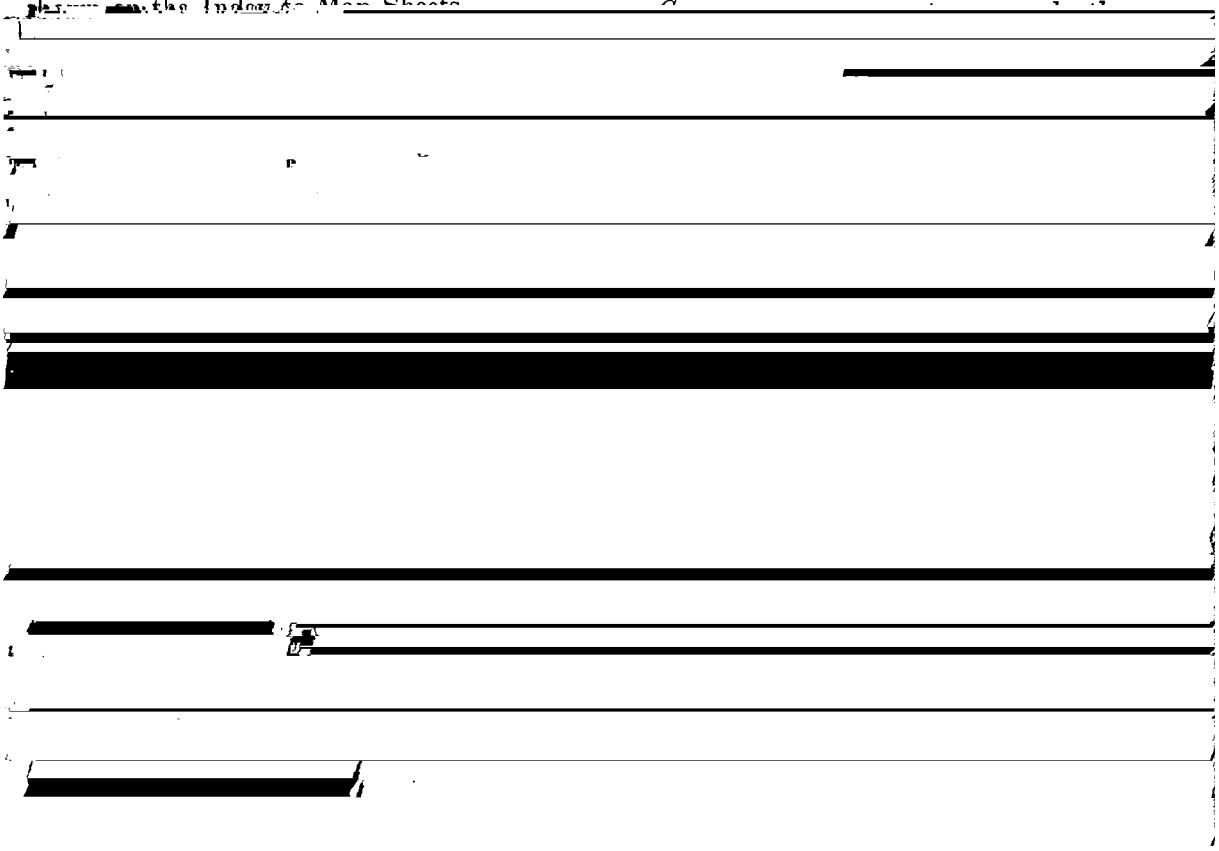
Locating Soils

All of the soils of Appling and Jeff Davis Counties are shown on the detailed map at the back of this survey. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with numbers [illegible] the Index to Map Sheets.

For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the sections that discuss management of the soils for crops, pasture, and woodland.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the counties are grouped according to their suitability for trees.



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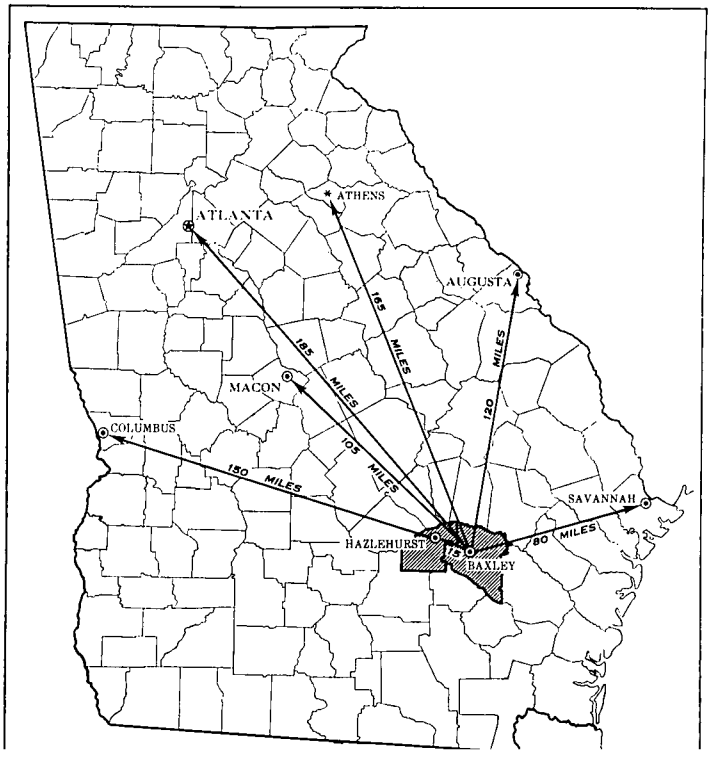
SOILS SURVEYED BY DAN D. BACON, THOMAS A. RIGDON, ERWIN E. ISELEY, AND ROBERT L. WILKES, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE, AGRICULTURAL EXPERIMENT STATIONS

APPLING AND JEFF DAVIS COUNTIES occupy 539,584 acres in the southeastern part of Georgia (fig. 1). Baxley, the county seat of Appling County, is near the center of the county along U.S. Highway 341. Hazlehurst, the county seat of Jeff Davis County, is in the northern part of the county along U.S. Highway 341. The counties are bordered on the north by the Altamaha and Ocmulgee Rivers.

Appling and Jeff Davis Counties are within the Southern Coastal Plain and Atlantic Coastal Flatwoods Major Land Resource Areas. The soils of the Southern Coastal Plain occur in the largest areas north of Baxley and Hazlehurst. These soils are chiefly well drained and deep. They are gently to strongly sloping soils on irregular ridges. They have a sandy surface layer and a sandy, fine loamy, or clayey subsoil. In the Atlantic Coastal Flatwoods, much of the area is low and flat and streams are wide and sluggish. During rainy periods, the water table rises sharply and water remains on or near the surface for long periods. The soils are moderately well drained to very poorly drained, but most of them are somewhat poorly drained. They have a sandy surface layer and generally a sandy to loamy subsoil, though some are sandy throughout.



About 70 percent of the total land area in Appling and Jeff Davis Counties is woodland made up of pines and mixed hardwoods. Pulp and paper companies hold large acreages that they manage and protect.

General farming and the production of naval stores and pulpwood are the main agricultural enterprises in the two counties, but there are a few dairy and beef cattle farms. The principal crops are tobacco, corn, cotton, and small grains.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Appling and Jeff Davis Counties, where they are located, and how they can be used. The soil scientists went into the counties knowing they likely would find many soils they had already seen, and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by

classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are

taken, as needed, for laboratory measurements and for engineering tests. Laboratory data from the same kinds

1. Kershaw-Troup association

Excessively drained to well-drained soils that are sandy to a depth of 4 to 5 feet; underlying layers are sandy to loamy; on ridgetops and side slopes

This association consists of very gently sloping to sloping soils that have slopes mainly of 2 to 8 percent. It lies mostly in narrow bands on the eastern side of Hurricane and Satilla Creeks. The association makes up about 1 percent of Appling and Jeff Davis Counties.

The Kershaw soils make up about 80 percent of this association; the Troup soils, about 15 percent; and minor soils, the rest.

The Kershaw soils are undulating and excessively

about 9 inches thick. Between depths of 59 and 80 inches is brownish-yellow sandy clay loam that is mottled with shades of red and brown.

The Wicksburg soils are well drained and occupy parts of the landscape similar to those of the Troup soils. Typically, the surface layer of Wicksburg soils is dark-gray gravelly coarse sand about 5 inches thick. It is underlain by a layer of light olive-brown coarse sand about 19 inches thick. The subsoil, to a depth of about 32 inches, is brownish-yellow coarse sandy loam and yellowish-brown sandy clay. Below this, to a depth of 60 inches, is mottled yellowish-brown, red, light-gray, and white sandy clay.

Minor soils in this association are mainly the poorly

material is very dark gray in the upper part, light gray in the middle part, and white in the lower part. The subsoil, to a depth of about 42 inches, is gray sandy loam [redacted] in the middle part, and yellowish brown mottled with shades of gray, yellow, and red in the lower part.

The Hazlehurst soils, like the Irvington soils, are on [redacted]

about 28 inches, is light yellowish-brown loamy sand that is mottled with white. Between depths of 28 and 60 inches

This association has severe limitations for uses related to

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Soils	Appling County	Jeff Davis County	Total	Extent	Soils	Appling County	Jeff Davis County	Total	Extent
	Acres	*Acres*	*Acres*	*Percent*		*Acres*	*Acres*	*Acres*	*Percent*
Albany sand	2, 700	10, 060	12, 760	2. 4	Kershaw sand, 2 to 8 percent slopes	5, 730	2, 150	7, 880	1. 5
Bayboro loam	4, 695	2, 635	7, 330	1. 4	Leefield loamy sand	22, 020	18, 630	40, 650	7. 5
Cahaba loamy sand	250	1, 730	1, 980	. 4	Leefield soils	22, 025	18, 630	40, 655	7. 5
Carnegie loamy sand, 2 to 5 percent slopes	1, 180	1, 190	2, 370	. 4	Mascotte sand	8, 060	4, 900	12, 960	2. 4
Carnegie loamy sand, 5 to 8 percent slopes	2, 430	1, 250	3, 680	. 7	Norfolk loamy sand, 0 to 2 percent slopes	1, 400	1, 470	2, 870	. 5
Cowarts loamy sand, 2 to 5 percent slopes	9, 270	9, 515	18, 785	3. 5	Norfolk loamy sand, 2 to 5 percent slopes	2, 050	1, 100	3, 150	. 6
Cowarts loamy sand, 5 to 8 percent slopes	5, 760	5, 930	11, 690	2. 2	Olustee sand	23, 955	11, 610	35, 565	6. 6
Coxville loam	0	2, 660	2, 660	. 5	Pelham loamy sand	73, 544	27, 830	101, 374	19. 0
Dunbar loamy sand, 2 to 5 percent slopes	510	800	1, 310	. 2	Sunsweet sandy loam, 5 to 12 percent slopes, eroded	300	700	1, 000	. 2
Dunbar loamy sand, 5 to 12 percent slopes	700	1, 130	1, 830	. 3	Surrency loamy sand	21, 240	4, 980	26, 220	4. 8
					Tifton loamy sand, 0 to 2 percent slopes	2, 000	400	2, 400	. 4

crops or pasture; the rest is wooded or idle. In the wooded areas, slash and longleaf pines are the chief trees

and shaping can eliminate low spots. Surface runoff is slow and creates only a slight hazard of erosion.

Mixing crop residue into the soils helps to maintain

Bayboro loam (Bf).—This very poorly drained soil typically is in oval depressions that range from 3 to 30 acres in size. Slopes are less than 2 percent.

Included with this soil in mapping were small areas of Surrency and Pelham soils.

This soil is not suited to cultivated crops, because it is flooded more than once each year for periods of 2 to 6 months. The soil can be pastured year after year if it is adequately drained and is well managed. Generally, however, drainage is not feasible.

Most of the acreage is woodland, a good use. The chief trees are pines, blackgum, and pondcypress. Capability unit Vw-1; woodland suitability group 2w9.

Cahaba Series

The Cahaba series consists of well-drained soils on stream terraces, mainly adjacent to the flood plains along the Altamaha and Ocmulgee Rivers. These soils formed in old alluvium. Slopes range from 0 to 3 percent.

In a representative profile, the surface layer is dark-brown loamy sand about 4 inches thick. It is underlain by 4 inches of dark yellowish-brown loamy sand. The subsoil is yellowish-red, dark yellowish-brown, and red sandy clay loam about 34 inches thick. The underlying material is strong-brown coarse sand that extends to a depth of 60 inches or more.

Cahaba soils are low in natural fertility and organic-matter content, and they are strongly acid to very strongly acid throughout. Permeability is moderate, and the available water capacity is medium. The root zone is deep, and tilth is good.

The Cahaba soils are not extensive in Appling and Jeff Davis Counties. Most of the acreage is woodland that consists of mixed pines and a few oaks. These soils are

The A and B horizons range from 36 to 42 inches in combined thickness. The Ap horizon dominantly is dark-brown to brown loamy sand. In some areas there is an A1 horizon of very dark gray loamy sand. The B2t horizon is yellowish-red or red sandy loam or sandy clay loam. The C horizon typically is sandy; it ranges from coarse sand to loamy sand.

The Cahaba soils occur with Johns and Coxville soils. They are better drained than the Johns soils. They are better drained and contain less clay in the subsoil than the Coxville soils.

Cahaba loamy sand (CX).—This is the only Cahaba soil mapped in the two counties. It is on stream terraces adjacent to the flood plains of the Altamaha and Ocmulgee Rivers, and it is in areas that range from 10 to 50 acres in size. Slopes range from 0 to about 3 percent.

Included with this soil in mapping were small areas of Coxville and Johns soils.

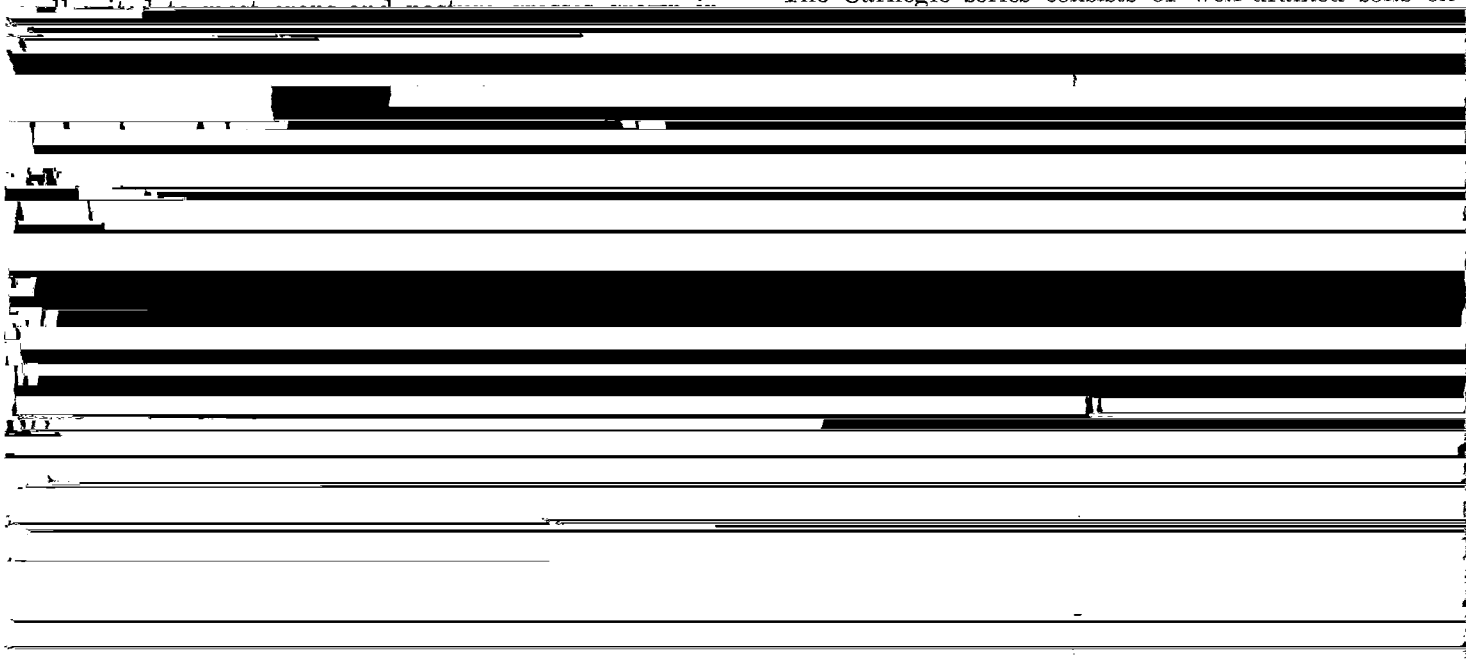
If this soil is well managed, it can be farmed intensively because it has no special limitations that affect management. It is well suited to all crops grown locally, such as corn, tobacco, cotton, soybeans, small grain, millet, Coastal bermudagrass, bahiagrass, crimson clover, and sericea lespedeza.

Erosion is not a hazard on this soil, but crop residue should be used for surface cover when the soil is not protected by plants. The return of crop residue to the soil aids in maintaining good tilth and the organic-matter content of the soil.

Row crops can be grown year after year on this soil without excessive soil loss. However, cropping systems that rotate crops and utilize crop residue generally result in the best response from crops and the least trouble from pests and disease. Capability unit I-1; woodland suitability group 2o7.

Carnegie Series

The Carnegie series consists of well-drained soils on



many fine roots; 25 percent, by volume, iron concretions 5 to 20 millimeters in size; strongly acid; abrupt, smooth boundary.

B21tcn—5 to 22 inches, strong-brown (7.5YR 5/6) sandy clay loam; common, fine, prominent, dusky-red (10R 3/3) mottles; weak, medium, subangular blocky structure; friable; few patchy clay films on some peds and around the pebbles; many fine roots; 15 to 20 percent iron concretions 5 to 20 millimeters in size; 3 percent plinthite; very strongly acid; abrupt, clear boundary.

B22tcn—22 to 26 inches, strong-brown (7.5YR 5/6) sandy clay loam; common, medium, prominent, yellowish-red (5YR 5/6) mottles and few, medium, distinct, light yellowish-brown (2.5Y 6/4) mottles; moderate, medium, subangular blocky structure; friable; few

Carnegie loamy sand, 5 to 8 percent slopes (CnC).—This soil is on uplands in areas that range from 5 to 10 acres in size. Slopes are rather short. A profile of this soil is described as representative of the Carnegie series. Small and medium-sized concretions of iron are on the surface and throughout the profile.

Included with this soil in mapping were small areas of Tifton and Sunsweet soils. Also included in a few places were gall spots and a few shallow gullies.

This soil is suited to cultivated crops, such as corn, cotton, tobacco, oats, and rye, and to hay and pasture crops.

Figure 2.—Contouring on Carnegie loamy sand, 2 to 5 percent slopes.

concretions; very strongly acid; gradual, wavy boundary.

B21t—7 to 15 inches, yellowish-brown (10YR 5/6) sandy loam; weak, fine, subangular blocky structure; very friable; sand grains coated and bridged with clay; few small concretions 5 to 15 millimeters in size; many fine roots; very strongly acid; gradual, wavy boundary.

B22t—15 to 22 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, fine and medium, subangular blocky structure; firm; sand grains coated and bridged with clay; few small iron concretions; few fine roots; very strongly acid; gradual, wavy boundary.

B23t—22 to 28 inches, yellowish-brown (10YR 5/6) sandy clay loam; common, medium, prominent, red (2.5YR 4/6) mottles; weak, medium, subangular blocky structure; friable; patchy clay films on peds; 10 percent plinthite; few fine roots; very strongly acid; gradual, wavy boundary.

B24t—28 to 42 inches, brownish-yellow (10YR 6/6) sandy clay loam; common, medium, distinct, yellowish-red (5YR 4/8) and red (2.5YR 4/8) mottles; weak, medium, subangular blocky structure; friable; few patchy clay films on peds; 12 percent pinthite; few roots; very strongly acid; gradual, wavy boundary.

B25t—42 to 54 inches, reticulately mottled weak-red (10R 4/4), light-gray (N 7/0), brownish-yellow (10YR 6/6), and yellowish-brown (10YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; slightly firm; 5 percent plinthite; pockets of sandy clay; patchy clay films on some peds; very strongly acid; gradual, wavy boundary.

depth of less than 15 inches for more than 6 months each year. It is flooded more than once each year for fairly long periods. This soil is not suited to cultivated crops unless drainage practices are used, but it is fairly well suited to pasture grasses such as bahiagrass. Most of the acreage is woodland, a good use. The chief trees are pines, [illegible]

zon is sandy clay to clay and is mottled with red, strong brown, and yellowish brown. The depth to sandstone mainly ranges from 48 to 68 inches. Sandstone, however, is not present in some places.

The Dunbar soils occur with the Duplin, Wicksburg, and Cowarts soils. They are not so well drained as the Duplin soils and are grayer in the B3t horizon. Dunbar soils lack the thick sandy A horizons of the Wicksburg soils and are

medium. Tilth is good, and the root zone generally is deep.

These soils are not well suited to most crops grown locally. The soils are not extensive, but they occur

tem is 2 years of Coastal bermudagrass and 1 year of corn that is planted and cultivated so that the bermudagrass is not destroyed.

Most of the acreage is woodland. Mixed pines are the

A2—8 to 18 inches, pale-olive (5Y 6/3) loamy sand; weak, fine, granular structure; very friable; few small iron concretions; common fine roots; very strongly acid; gradual, wavy boundary.

A3—18 to 22 inches, light yellowish-brown (2.5Y 6/4) loamy sand; weak, fine, granular structure; very friable; few small iron concretions; few fine roots; very strongly acid; gradual, wavy boundary.

B1t—22 to 34 inches, yellow (2.5Y 7/6) sandy loam; weak, fine, subangular blocky structure; very friable; few sand grains coated and bridged with clay; few fine roots; very strongly acid; gradual, wavy boundary.

B21t—34 to 40 inches, yellow (10YR 7/6) sandy clay loam; weak, fine, subangular blocky structure; friable; sand grains coated and bridged with clay; few small iron concretions; few fine roots; very strongly acid; gradual, wavy boundary.

B22t—40 to 54 inches, brownish-yellow (10YR 6/6) sandy clay loam; few, prominent, strong-brown (7.5YR 5/8) mottles; weak, fine, subangular blocky structure; friable; sand grains coated and bridged with clay; few small and medium iron concretions; few fine roots; very strongly acid; gradual, wavy boundary.

B23t—54 to 63 inches, yellow (10YR 7/6) sandy clay loam; common, medium, prominent, strong-brown (7.5YR 5/6) mottles; weak, fine, subangular blocky and weak, fine, granular structure; very friable; sand grains coated and bridged with clay; 6 percent plinthite; very strongly acid.

The A horizons range from 20 to 32 inches in combined thickness. In most places these A horizons contain few to common iron concretions. The Ap, or the A1, horizon ranges from gray to dark grayish brown. The A2 horizon ranges from pale olive to light yellowish brown. The B2t horizons range from yellow to pale yellow and yellowish brown. The B23t horizon is dominantly mottled with strong brown, light gray, yellowish brown, and yellowish red. Horizons that contain more than 5 percent plinthite begin at a depth ranging from 32 to 54 inches.

Figure 3.—A winter cover crop on Fuquay loamy sand, 0 to 5 percent slopes, provides grazing for cattle.

Hazlehurst Series

The Hazlehurst series consists of somewhat poorly drained soils that are on uplands and have a fragipan or cemented layer in the subsoil. These soils formed in thick beds of mottled, loamy material. Slopes range from 0 to 3 percent.

In a representative profile, the surface layer is dark-gray and light brownish-gray loamy sand about 8 inches thick. It is underlain by about 5 inches of light brownish-gray and dark-gray loamy sand that contains a few iron concretions. The subsoil is sandy clay loam that extends to a depth of 63 inches. It is pale yellow and mottled in the upper part, light gray mottled with

(5Y 7/1) mottles; weak, medium, subangular blocky structure; friable; 1 percent plinthite; iron concretions; very strongly acid; gradual, wavy boundary.

B22—20 to 24 inches, light-gray (10YR 7/1) sandy clay loam;

are pines, and there are a few oaks. Capability unit IIIw-2; woodland suitability group 2w8.

The A horizon ranges from 7 to 13 inches in thickness. The Ap, or A1, horizon ranges from dark gray to grayish brown. The B2cn horizon ranges from yellowish brown to light olive brown. Depth to the Bx1 horizon, or fragipan layer, ranges from 25 to 35 inches. Content of iron concretions ranges from 20 percent in the upper part of profile to none in the lower part.

The Irvington soils occur with the Tifton, Hazlehurst, and Leefield soils. They have a fragipan that is lacking in the Tifton and Leefield soils. They are less well drained than the Tifton soils but are better drained than the Leefield soils. Irvington soils are similar to Hazlehurst soils but are better drained.

Irvington loamy sand (Ij).—This moderately well drained soil has a fragipan and typically is on broad uplands. It is in areas that range from 5 to 50 acres in size. Slopes are 0 to 3 percent.

Included with this soil in mapping were small areas of Hazlehurst, Tifton, and Leefield soils.

This soil is suited to crops grown locally, such as tobacco, corn, cotton, soybeans, small grain, millet, Coastal bermudagrass, bahiagrass, and white clover. In some years, however, wetness delays planting and can cause crop damage unless drainage measures, such as tiling, ditching, or landforming, are applied. Response of high-value crops, such as tobacco, can be insured by supplemental irrigation in dry periods. Wells, ponds, or streams ordinarily are sources of water for this purpose.

Erosion is not a hazard, and cultivated crops can be grown year after year without damage to the soil. Rotation of crops, however, helps to control disease and to use fertilizer efficiently. Plant residue and aftermath [illegible]

west of Southern Railroad track and 0.3 mile south of the Altamaha River, Jeff Davis County:

A1—0 to 10 inches, brown (10YR 4/3) sandy loam; moderate, medium, granular structure; very friable; many fine roots; strongly acid; clear, smooth boundary.

A2—10 to 13 inches, yellowish-brown (10YR 5/4) sandy loam; weak, fine, granular structure; very friable; many fine roots; strongly acid; clear, smooth boundary.

B21t—13 to 18 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, fine, prominent, red (2.5YR 4/6) mottles; weak, medium, subangular blocky structure; friable; sand grains coated and bridged with clay; few fine roots; few root channels filled with soil material from A2 horizon; strongly acid; clear, smooth boundary.

B22t—18 to 24 inches, yellowish-brown (10YR 5/8) sandy clay loam; common, fine, distinct, red (2.5YR 4/6), light-gray (5Y 7/1), and strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; firm; sand grains coated and bridged with clay; few, soft, black manganese nodules; few fine roots; very strongly acid; gradual, smooth boundary.

B23t—24 to 38 inches, yellowish-brown (10YR 5/8) clay; many, fine, prominent, red (2.5YR 4/6) mottles and common, medium, distinct, light-gray (5Y 7/1) mottles; moderate, medium, subangular blocky structure; firm; few fine roots; clay films on peds; few fine mica flakes; very strongly acid; gradual, smooth boundary.

B24tg—38 to 50 inches, light-gray (10YR 7/1) sandy clay loam; many, medium, distinct, red (2.5YR 4/6) and yellowish-brown (10YR 5/6) mottles; weak, fine, subangular blocky structure; friable; few clay films on some peds; few fine mica flakes; very strongly acid; clear, smooth boundary.

B3tg—50 to 63 inches, light-gray (N 7/0) sandy loam; common, medium, distinct, red (2.5YR 4/6) and yellow-

damage to the soil. Rotation of crops, however, helps to control disease and to use fertilizer efficiently. Plant residue and aftermath should be shredded and mixed with the soil during seedbed preparation to maintain the organic-matter content and good tilth. An example of a suitable cropping system is 1 year of corn and 2 years of bahiagrass.

Almost all the acreage of this soil is in pine trees, a good use. Capability unit IIw-2; woodland suitability group 2w2.

Johnston Series

The Johnston series consists of very poorly drained series. In places, however, the Rains soil has been covered with light-gray sandy overwash 4 inches or less thick.

The soils of this unit must be extensively drained before they can be used successfully for crops and pasture. Drainage generally is not feasible for cultivated crops, because the soils are flooded for long periods in winter, in spring, and early in summer. Bahiagrass can be grown after excess water has been removed, but woodland is generally a better use.

Most of the acreage is wooded. The natural vegetation is hardwoods and a few pines. Capability unit Vw-2; Johnston part in woodland suitability group 1w9, Rains part in woodland suitability group 2w2.

Figure 4.—**The natural vegetation on Kershaw sand, 2 to 8 percent slopes, indicates that this soil is droughty.**

Included in mapping were some areas of a soil that is similar to this Kershaw soil, except that the surface layer and the upper part of the underlying layers are

Leefield Series

The Leefield series consists of somewhat poorly

brown mottled with shades of gray, yellow, and red in the lower part.

These soils are low in natural fertility and organic-matter content, and they are very strongly acid throughout. Permeability is moderately slow in the lower part of the subsoil. The available water capacity is mainly low. The root zone is deep, and tilth is good.

The Leefield soils are in areas scattered throughout Appling and Jeff Davis Counties. Slightly more than half the acreage is woodland consisting of mixed pines and a few oaks. The rest is cultivated or pastured. These soils are suited to most crops and pasture grasses grown in the two counties.

Representative profile of Leefield loamy sand, in a cultivated area, 2 miles west-southwest of Hazlehurst on

areas and drainageways. Mapped areas range from 10 to 30 acres in size. Slopes range from 0 to 3 percent. A profile of this soil is described as representative of the Leefield series.

Included with this soil in mapping were small areas of Olustee, Hazlehurst, and Pelham soils. Also included in some places were areas of similar soils that are sandy to a depth of less than 20 inches.

This soil is wet in rainy periods but is slighty droughty in dry periods. Unless the soil is drained, the seasonal high water table is at a depth of about 15 to 30 inches for 2 to 6 months each year.

Some drainage generally is needed if this soil is to be cultivated. If adequately drained, it is well suited to corn, tobacco, soybeans, small grains, pasture grasses,

Figure 5.—Tobacco on Leefield loamy sand.

In a representative profile, the surface layer is black and white sand about 3 inches thick. It is underlain by 9 inches of gray sand. The next layer is sand, about 5 inches thick, that is weakly cemented with organic matter. It is black and dark brown in the upper part and mainly very dark brown in the lower part. The next layer is mainly pale-brown and pale-yellow sand that extends to a depth of about 28 inches. The lower part

Most of the acreage is in pine trees and an understory of dwarf chlorous palmetto, runner oak, and other dwarf vegetation. These soils are not generally suitable for cultivation, mainly because they are wet. Some areas have been cultivated, but generally the results have been poor. Pine trees ordinarily are of poor quality; they have flattened tops after about 25 years of age.

Representative profile of Meggett

with organic matter; many fine roots in upper part

The Norfolk soils are not extensive but are in both

best response from crops and the least trouble from pests and disease.

More than half the acreage of this soil is used for cultivated crops or pasture, and the rest is woodland. Capability unit I–1; woodland suitability group 2o1.

Norfolk loamy sand, 2 to 5 percent slopes (NhB).—This well-drained soil is on uplands. Its profile is similar to the one described as representative for the series, but the surface layer is about 4 inches thinner.

Included with this soil in mapping were small areas of Tifton, Fuquay, and Leefield soils.

This soil is well suited to all crops grown locally.

weak, fine, granular; weakly cemented; slightly brittle; most sand grains coated with organic matter; few fine roots; few root holes filled with clean sand grains; strongly acid; abrupt, wavy boundary.

A'2—10 to 28 inches, light yellowish-brown (2.5Y 6/4) loamy sand; common, fine, distinct, white (5Y 8/2) mottles; weak, fine, granular structure; very friable; few fine roots; strongly acid; clear, wavy boundary.

B'21—28 to 44 inches, brownish-yellow (10YR 6/8) sandy loam; many, medium, distinct, white (5Y 8/2) mottles and few, medium, distinct, strong-brown (7.5YR 5/6) mottles; weak, medium, subangular blocky structure; very friable; strongly acid; clear, wavy boundary.

B'22t—44 to 60 inches, brownish-yellow (10YR 6/6) sandy

Figure 6.—**Typical ground cover under a stand of pines growing in Olustee sand.**

Pelham Series

yellowish brown and pale yellow. The lower part of the subsoil is mottled gray and yellowish brown sandy clay

Figure 7.—**Unless it is drained, Pelham loamy sand is severely limited for cultivated crops because of ponding and a seasonal high water table.**

Pelham soils are the most extensive soils in Appling and Jeff Davis Counties. They are not suited to cultivation unless they are adequately drained. Almost all the acreage is woodland, a good use. The natural vegetation is chiefly mixed pines and an understory of swamp holly and native grasses.

Representative profile of Pelham loamy sand, in a wooded area, 75 yards northwest of west city limits of Surrency and 25 yards north from U.S. Highway No. 341, Appling County:

A1—0 to 2 inches, very dark gray (5Y 3/1) loamy sand; moderate, medium, granular structure; friable; many small roots; very strongly acid; abrupt, smooth boundary.

A21—2 to 12 inches, light-gray (10YR 7/1) loamy sand; weak, fine, granular structure; very friable; common, fine, brown stains along root holes; very strongly acid; gradual, wavy boundary.

A22—12 to 26 inches, white (2.5Y 8/2) loamy sand; many, fine, faint, pale-yellow mottles and common, medium, distinct, yellowish-brown (10YR 5/8) mottles; weak, fine, granular structure; very friable; pockets of sandy loam; many fine roots; very strongly acid; gradual, wavy boundary.

B1tg—26 to 42 inches, gray (N 6/0) sandy loam; many, medium, distinct, yellowish-brown (10YR 5/8) and pale-yellow (2.5Y 7/4) mottles; weak, fine, subangular blocky structure; friable; most sand grains coated with silt and clay; pockets of white loamy sand and yellowish-brown sandy loam; sand lenses are evident; few fine roots; very strongly acid; gradual, irregular boundary.

B2tg—42 to 60 inches, reticulately mottled gray (N 6/0) and yellowish-brown (10YR 5/8) sandy clay loam; weak, fine, subangular blocky structure; friable; few fine roots; sand lenses and pockets are evident; patchy clay films on some peds; very strongly acid.

A black O1 horizon is over the A1 horizon in some places. The A horizons range from 24 to 36 inches in combined thickness. The A1 horizon ranges from gray to very dark gray. Pockets of yellowish-brown sandy loam form the matrix of the A22 horizon in some places. The Bt horizons range from sandy loam to sandy clay loam.

Pelham soils occur mainly with the Surrency, Olustee, Albany, and Leefield soils. They have less organic matter in the surface layer than Surrency soils. The Pelham soils are slightly wetter than the Olustee soils and lack the

organically stained layer of those soils. They are wetter than the Albany and Leefield soils.

Pelham loamy sand (Pl).—This poorly drained soil typically is on broad flats and depressions in areas that range from 10 to 75 acres in size. Slopes range from 0 to 3 percent.

Included in mapping were small areas of a soil that is similar to this soil but has a surface layer of sandy loam. Also included were small areas of Leefield, Rains, and Surrency soils.

Because the water table fluctuates, this soil is wet in rainy periods. Bahiagrass and similar grasses and some kinds of cultivated crops, such as corn, can be grown if drainage is adequate and other good management practices are used. An example of a cropping system that is suitable where excess water has been removed is corn year after year. Crop residue should be shredded and returned to the soil to maintain the organic-matter content.

Almost all the acreage of this soil is woodland, a good use. Suitable trees grow well in areas where water does not pond. Examples of suitable trees are slash and loblolly pines, sycamore, and sweetgum. Capability unit IVw-4; woodland suitability group 2w3.

Rains Series

The Rains series consists of poorly drained soils along drainageways. These soils are subject to stream overflow and are covered by standing water for long periods of time. They formed in loamy sediments. Slopes range

weak, medium, granular structure; very friable; brown stains in old root holes; very strongly acid; gradual, wavy boundary.

B1—15 to 31 inches, gray (10YR 6/1) sandy loam; few, medium, distinct, dark yellowish-brown (10YR 4/4) mottles and few, fine, distinct, strong-brown (7.5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; common fine pores; very strongly acid; gradual, wavy boundary.

B2tg—31 to 60 inches, gray (10YR 6/1) sandy clay loam; common, medium, distinct, strong-brown (7.5YR 5/6) and light olive-brown (2.5Y 5/4) mottles; weak to moderate, medium, subangular blocky structure; firm; very strongly acid.

The A1 horizon ranges from 3 to 6 inches in thickness and is mostly dark gray or very dark gray in color. The B1 horizon is mostly sandy loam but contains pockets of sandy clay loam. It is gray to grayish brown. The lower part of the B2tg horizon ranges from clay loam to sandy clay loam and from light gray to gray. It is mottled with strong brown, light olive brown, and yellowish brown.

The Rains soils occur mainly with the Johnston soils. They lack the thick, black surface layer of the Johnston soils, and they contain more clay in the subsoil than those soils.

Sunsweet Series

The Sunsweet series consists of well-drained, eroded soils on uplands. These soils formed in mottled clayey material. Slopes range from 5 to 12 percent.

In a representative profile, the surface layer is very dark grayish-brown sandy loam about 4 inches thick. The subsoil is yellowish-red clay in the upper 7 inches. Below this and extending to a depth of 60 inches, the subsoil is highly mottled light-gray, dark-red, dusky-red, and yellowish-brown clay and sandy clay. Small and

on some peds; few fine roots; few pebbles; 5 percent plinthite; very strongly acid; clear, wavy boundary.
B23t—24 to 60 inches, reticulately mottled light-gray (10YR 7/2), dark-red (10R 3/6), dusky-red (10R 3/4), and yellowish-brown (10YR 5/8) sandy clay; mottles are many, coarse, and prominent; strong, coarse, subangular blocky structure; firm; light-gray mottles are related to parent material; patchy clay films on some peds; 20 percent plinthite; very strongly acid.

The Ap horizon ranges from 2 to 5 inches in thickness and from dark brown to very dark grayish brown and yellowish brown in color. The amount of iron concretions ranges from 5 to 35 percent in this horizon. The thin, mottle-free B21t horizon is absent in some places. The depth to the reticulately mottled horizons ranges from 9 to 24 inches but typically is about 12 inches.

The Sunsweet soils commonly occur with the Carnegie, Tifton, and Cowarts soils. They have shorter slopes, contain more clay in the subsoil, and have a thinner mottle-free layer above plinthite than the Carnegie, Tifton, and Cowarts soils.

Sunsweet sandy loam, 5 to 12 percent slopes, eroded (ShD2).—This soil is mainly in areas having abrupt breaks and short slopes, commonly at the head of small streams in the uplands. The areas range from 5 to 10 acres in size. Iron concretions about ⅛ to 1 inch in diameter are on the surface and are typical of this soil. In most areas the subsoil is exposed and rills and shallow gullies are common (fig. 8).

Included with this soil in mapping were some areas where slopes are less than 5 percent.

This soil is not suitable for cultivation. Because of slope, the abrupt breaks, and the hazard of erosion, it is not suited to field crops but is suited to pasture. Coastal bermudagrass, bahiagrass, and sericea lespedeza are forage plants that can be grown. Overgrazing should be avoided because erosion is a constant hazard.

Figure 8.—Bare areas in the foreground are typical of Sunsweet sandy loam, 5 to 12 percent slopes, eroded.

Almost all of this soil is in pine trees, a good use. Only a small acreage is in pasture. Capability unit VIe-2; woodland suitability group 3c2.

Surrency Series

The Surrency series consists of very poorly drained soils in depressional areas and drainageways where water movement is sluggish. These soils formed in beds of unconsolidated loamy sediments. Slopes are less than 2 percent.

In a representative profile, the surface layer is black loamy sand, about 12 inches thick, that is high in organic-matter content. Underlying this layer, to a depth of 32 inches, is grayish-brown and dark grayish-brown sand. The subsoil extends to a depth of 65 inches. It is mainly light-gray sandy loam mottled with brownish yellow in the upper part and is grayish-brown sandy clay loam mottled with shades of brown in the lower part.

These soils contain much organic matter in the surface layer but are low in natural fertility. They are extremely acid to very strongly acid throughout. Permeability is rapid in the upper part of the profile but moderate in the subsoil. The available water capacity is mainly medium. Tilth generally is poor because of wetness, and the depth of the root zone depends largely on the depth of the water table during the growing season.

Surrency soils are extensive in the two counties. All of the acreage is woodland consisting mainly of pines, pondcypress, blackgum, and sweetgum. The undergrowth is titi, swamp holly, sedges, and rushes. The suitability of these soils for cultivation is severely limited by wetness.

Representative profile of Surrency loamy sand, 4.1 miles northwest of Surrency, 0.3 mile north of old Baxley-Surrency road, Appling County:

O1—1 inch to 0, layer of spongy moss.

A1—0 to 12 inches, black (N 2/0) loamy sand; weak, fine and medium, granular structure; very friable; tongues of material from A2 horizon extend into this layer; many fine and medium roots; extremely acid; clear, irregular boundary.

[illegible] inches, grayish [illegible] (2.5Y 5/2), and dark

Leefield soils at a higher elevation. Surrency soils are more poorly drained and contain more organic matter than the Pelham soils. They lack the cemented organic layer that is common in the Mascotte soils. They have a thicker sandy A horizon than the Bayboro soils. Surrency soils are wetter and have a higher content of organic matter in the surface layer than the Olustee and Leefield soils.

Surrency loamy sand (Sv).—This very poorly drained soil typically is in depressional areas and drainageways that range from 10 to 50 acres in size. Slopes range from 0 to slightly less than 2 percent.

Included with this soil in mapping were small areas of Bayboro, Pelham, Olustee, and Leefield soils. Small areas of soils that have black mucky sand in the surface layer were also included.

This soil is flooded more than once each year for periods of 1 to 6 months. The seasonal high water table is at a depth of less than 15 inches for more than 6 months each year. Because the soil is wet and is subject to flooding, it is not cultivated.

The acreage of this soil is entirely woodland, a good use. Native plants provide some forage, but pasture could be grown if the soil were adequately drained and well managed. Generally, however, extensive drainage is impractical. Capability unit Vw-2; woodland suitability group 2w9.

Tifton Series

The Tifton series consists of well-drained, nearly level to very gently sloping soils that have many iron concretions on the surface. These soils are mostly on broad, smooth ridges. They formed in thick beds of loamy to clayey materials. Slopes range from 0 to 5 percent.

In a representative profile, the surface layer is very dark grayish-brown loamy sand about 9 inches thick. The subsoil, to a depth of 34 inches, is yellowish-brown sandy loam and sandy clay loam. Below this layer, and extending to a depth of 70 inches, the subsoil is strong-brown and brownish-yellow sandy clay loam that is mottled with dark red, yellowish red, and light gray.

These soils are low in natural fertility and organic-matter content. They are very strongly acid to strongly acid throughout. The available water capacity is medium.

ture; friable; less than 5 percent plinthite; clay films on peds; 10 percent iron concretions; very strongly acid; gradual, wavy boundary.

B22t—34 to 48 inches, strong-brown (7.5YR 5/8) sandy clay loam; few, medium, prominent, dark-red (2.5YR 3/6) mottles; moderate, medium, subangular blocky structure; friable; few iron concretions; 10 percent plinthite; clay films on peds; very strongly acid; gradual, wavy boundary.

B23t—48 to 70 inches, brownish-yellow (10YR 6/8) sandy clay loam; few, medium, distinct, light-gray (2.5Y 7/2) mottles and common, prominent, yellowish-red (5YR 5/6) mottles; moderate, medium, subangular blocky structure; friable; 3 percent plinthite; common, small, clean sand grains; very strongly acid; gradual, wavy boundary.

The A horizon ranges from 6 to 16 inches in thickness. Content of small, brown concretions of iron ranges from 5 to about 20 percent in this horizon and in the upper part of the B horizon. The B2t horizons are brownish yellow to strong brown in the upper 48 inches, and they are mottled with

Surface runoff is generally rapid enough to remove soil material if fields are cultivated and not protected. Erosion can be controlled by the use of terraces, contour farming, waterways, and a supporting system of crop management. An example of a suitable cropping system, for a field that is terraced and contour cultivated and where slopes are about 4 percent, is 1 year of cotton and 1 year of small grain. Both crops should be highly fertilized, and crop residue should be shredded and left on the surface between crops (fig. 9).

Slightly less than half the acreage of this soil is used for cultivated crops or pasture. Capability unit IIe-2; woodland suitability group 2o1.

Troup Series

The Troup series consists of well-drained to somewhat

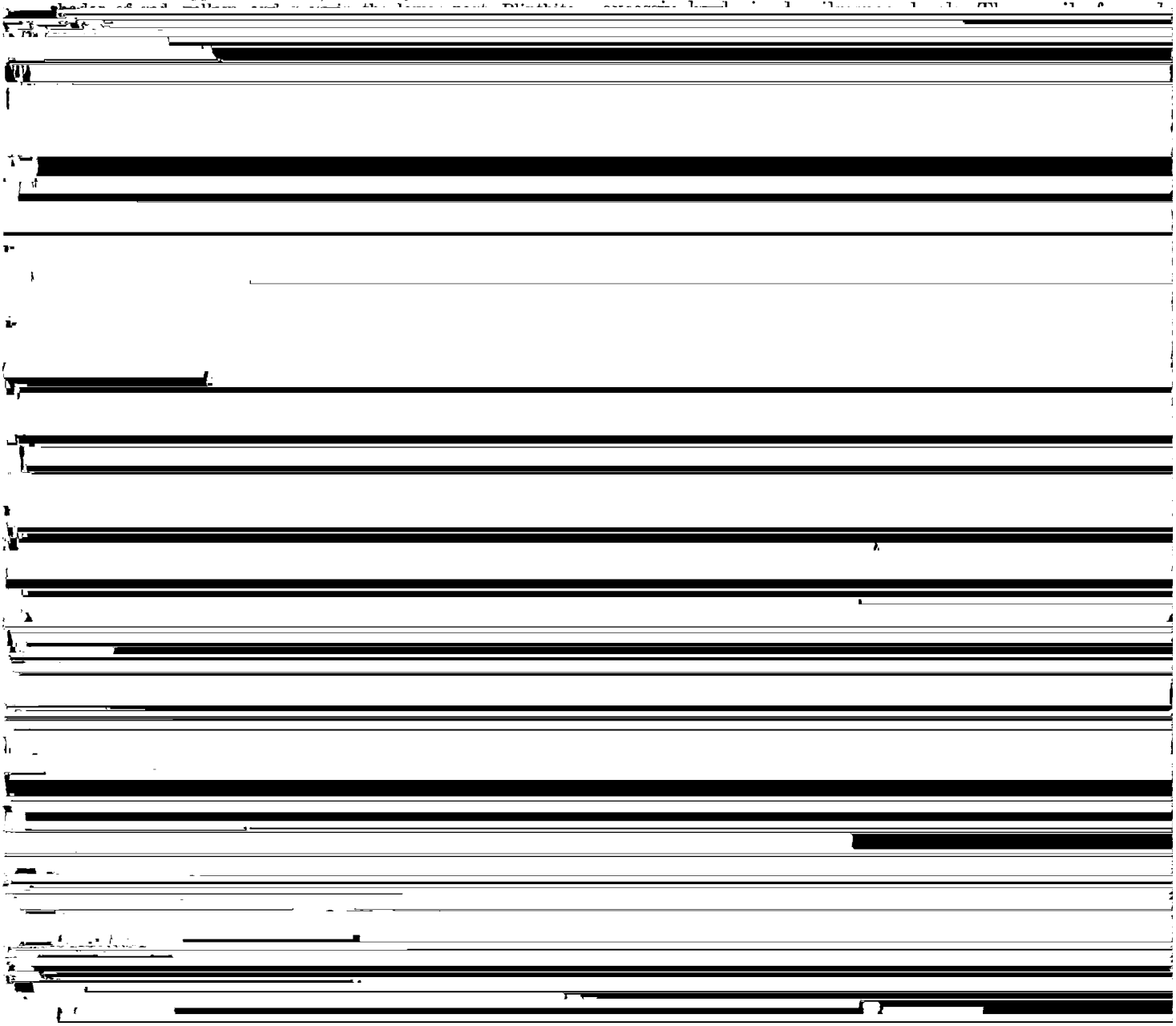


Figure 9.—**Area of Tifton loamy sand, 2 to 5 percent slopes, where cornstalks and residue from native grasses provide a cover in winter.**

ture; friable; sand grains coated and bridged with clay; very strongly acid; gradual, wavy boundary.

B23t—70 to 80 inches, brownish-yellow (10YR 6/6) sandy

Droughtiness is the most important limitation if crops are grown. Erosion ordinarily is not a hazard, but man-

the Wicksburg series, but the surface layer is not gravelly mainly silty clay loam in texture but ranges to silty clay. The B horizons generally are silty clay but in places are clay.

Figure 10.—**Floodwater from the Ocmulgee River covers an area of Wahee and Coxville soils.**

sand, 2 to 8 percent slopes, in a wooded area, 500 feet northwest of Altamaha School, Jeff Davis County:

A1—0 to 5 inches, dark-gray (10YR 4/1) gravelly coarse sand; weak, fine, granular structure; very friable; 20 percent small and medium quartz gravel; few, small, dark-brown iron concretions; many fine roots; very strongly acid; abrupt, clear boundary.

A2—5 to 24 inches, light olive-brown (2.5Y 5/4) coarse sand; single grained; loose; 10 percent small quartz gravel; 3 percent iron concretions; few fine roots; very strongly acid; clear, wavy boundary.

B1—24 to 28 inches, brownish-yellow (10YR 6/6) coarse sandy loam; weak, fine, subangular blocky structure; very friable; 5 percent gravel and iron concretions; few fine roots; very strongly acid; abrupt, smooth boundary.

B21t—28 to 32 inches, brownish-yellow (10YR 6/6) sandy clay; weak, medium, subangular blocky structure; friable; 5 percent gravel and iron concretions; sand grains bridged with clay; very strongly acid; gradual, wavy boundary.

B22t—32 to 46 inches, mottled yellowish-brown (10YR 5/6), red (2.5YR 5/8), and light-gray (10YR 7/1) sandy clay; mottles are many, coarse, and prominent; weak, medium, subangular blocky structure; friable; patchy clay films on some peds; very strongly acid; gradual, wavy boundary.

B23t—46 to 53 inches, coarsely mottled yellowish-brown (10YR 5/8), red (2.5YR 4/8), and white (10YR 8/1)

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sandy clay; moderate, medium, subangular blocky structure; firm, slightly brittle; patchy clay films on some peds; very strongly acid; gradual, wavy boundary.

B24t—53 to 60 inches, coarsely mottled yellowish-brown (10YR 5/8), red (2.5YR 4/8), and white (10YR 8/1) sandy clay; weak, medium, subangular blocky structure; friable; sand grains bridged with clay; very strongly acid.

The A horizons range from 21 to 32 inches in combined thickness and are coarse sand and gravelly coarse sand. The A1 horizon ranges from very dark gray to dark grayish brown. The B22t horizon ranges from yellowish brown to strong brown and from sandy clay to sandy clay loam. The quantity of quartz gravel on the surface and throughout the sandy A horizon ranges from 10 to 25 percent.

Wicksburg soils occur with the Troup and Cowarts soils. They have thinner A horizons and more clayey B horizons than the Troup soils. They have thicker, more sandy A horizons and more clayey B horizons than the Cowarts soils. Also, Wicksburg soils do not contain plinthite in the subsoil as do the Cowarts soils.

Wicksburg gravelly coarse sand, 2 to 8 percent slopes (WvC).—This soil is on uplands in areas that range from 5 to 25 acres in size. A profile of this soil is described as representative of the Wicksburg series.

Small areas of Troup, Cowarts, and Fuquay soils were included with this soil in mapping.

This Wicksburg soil is poorly suited to the crops grown locally, such as cotton, corn, tobacco, and small grain, and to hay and pasture plants. Coastal bermuda-

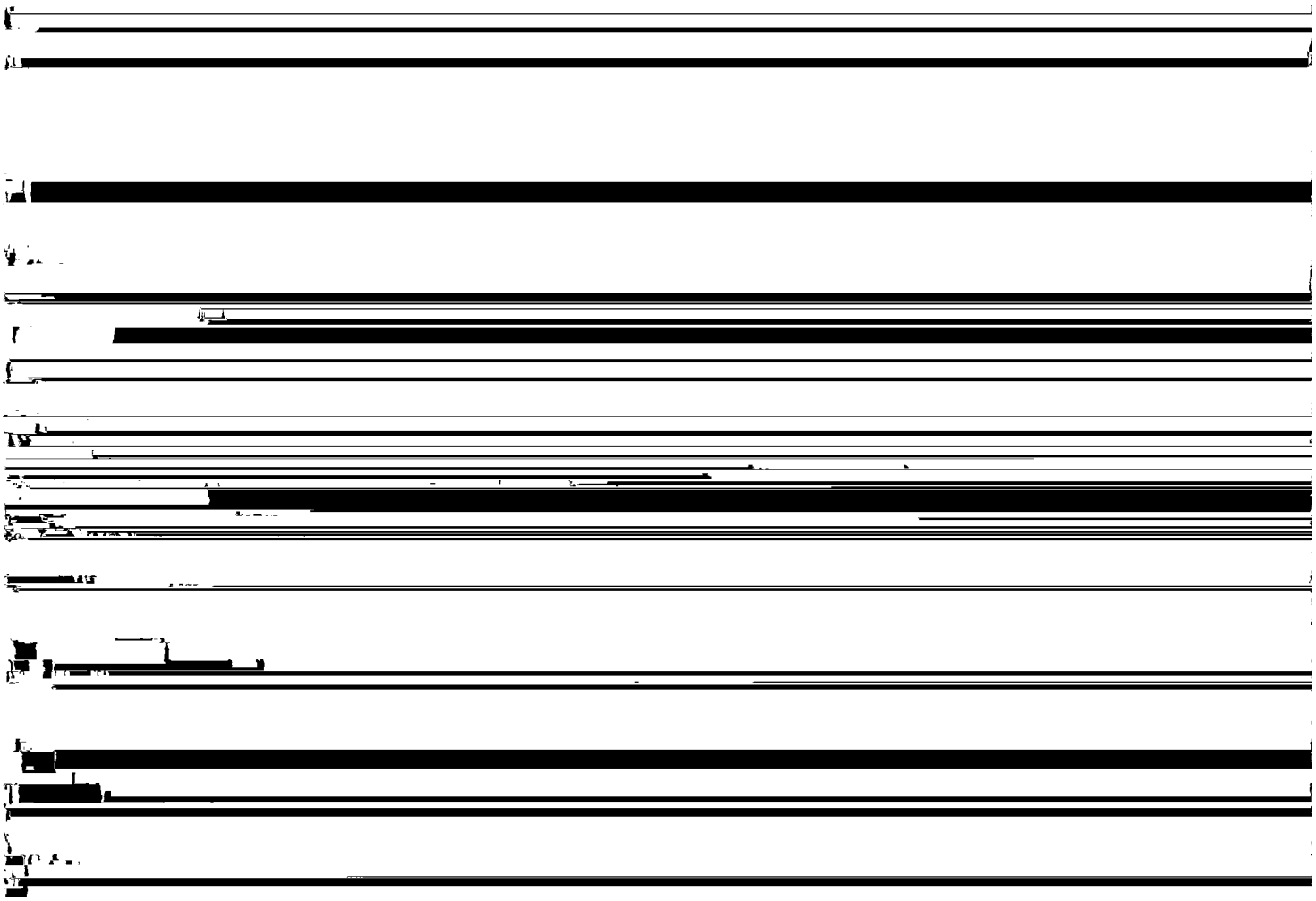
Use of the Soils for Cultivated Crops and Pasture

In this section, general practices of management are discussed, the system of capability grouping used by the Soil Conservation Service is explained, and each capability unit in the two counties is briefly described. In addition, estimated acre yields of the principal crops under a high level of management are given for the soils in the two counties, and the management required to obtain these yields is described. Suitable management practices for each soil are suggested in the discussions of the mapping units in the section "Descriptions of the Soils."

General practices of management [2]

Controlling erosion, removing excess water, and maintaining good tilth and productivity are the most common needs in the management of farmland in Appling and Jeff Davis Counties.

Many of the soils in the two counties, such as the Cowarts and Carnegie soils, are susceptible to erosion. The degree of susceptibility depends on the erodibility of the soil, the frequency and intensity of rainfall, and the steepness and length of slopes. These properties determine whether the farmer uses straight rows, contour cultivation with or without terraces, or stripcropping. The



growth and to prevent erosion at some locations at the edge of fields. Such a border is attractive and allows more efficient operation of farm equipment. Farm roads and fences should be located on the crest of the slopes, where the watershed divides, or on the contour. Fences may also be located in or adjacent to natural waterways. Farm roads and fences should permit field and row arrangement that will facilitate efficient farming operations.

Capability grouping of soils

Capability grouping shows, in a general way, the suita-

one symbol, the Roman numeral designates the capability class, or degree of limitations; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass. The capability units are not numbered consecutively, because all the units used in Georgia are not represented in these two counties.

The eight classes in the capability system and the subclasses and units in Appling and Jeff Davis Counties are described in the list that follows. The capability

Subclass IIIw. Soils that have severe limitations because of excess wetness.

Unit IIIw-1. Nearly level, somewhat poorly drained soils that are sandy to a depth of about 28 to 44 inches and have a loamy subsoil, on broad, wet plains and low ridges.

Unit IIIw-2. Nearly level, somewhat poorly drained soil that has a sandy surface layer and loamy subsoil, on uplands.

Subclass IIIs. Soils that have severe limitations mainly because of low available water capacity.

Unit IIIs-1. Nearly level to very gently sloping soil that is sandy to a depth of about 50 inches but has a loamy subsoil, on uplands.

Class IV. Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both.

Unit VIe-2. Strongly sloping soils that have a loamy or sandy surface layer and a chiefly clayey subsoil, on uplands.

Subclass VIs. Soils that are generally unsuitable for cultivation and are limited for other uses by their low available water capacity or by other physical characteristics.

Unit VIs-1. Strongly sloping, well-drained to somewhat excessively drained soils that have a sandy surface layer and a loamy to clayey subsoil, on uplands.

Class VII. Soils that have have very severe limitations that make them unsuitable for cultivation and that restrict their use largely to limited grazing, woodland, or wildlife habitat.

Subclass VIIs. Soils that are unsuitable for cultivation and are very limited for other uses by their

TABLE 2.—*Estimated average yields per acre of the principal crops under a high level of management*

[Management does not include irrigation, except

land in developing and carrying out plans for establishing and harvesting forest resources.

Originally, virgin forest covered about 95 percent of the total land area in Appling and Jeff Davis Counties. Presently, about 70 percent of the total land area is in forest. The principal commercial tree species on the better drained ridges and slight ridges are slash pine, loblolly pine, longleaf pine, red oak, and water oak. In the depressions, drainageways, bays, and swamps, the main commercial tree species are pondcypress, blackgum, sweetgum, water oak, willow oak, sycamore, red maple, and elm.

Both slash and longleaf pines are important to the naval stores industry as sources of turpentine and resin. After the extraction of crude gum, the trees are still marketable for other forest products.

Woodland suitability groups

The soils of Appling and Jeff Davis Counties have been placed in woodland suitability groups to assist

tations; and the numeral 9, soils that have one or more severe limitations.

The woodland suitability group to which each mapping unit is assigned is given in the "Guide to Mapping Units" at the end of this survey and at the end of the description of the particular mapping unit in the section "Descriptions of the Soils."

Table 3 gives a brief description of each woodland suitability group in Appling and Jeff Davis Counties. It also lists the potential productivity, tree species suitable for planting, and hazards and limitations that affect management. The information in table 3 is based on pertinent research, measurements by foresters and soil scientists, and the experience of forest land managers. Much of the soil-tree site data was obtained in a cooperative study conducted by the U.S. Forest Service and the Soil Conservation Service.

Potential productivity is expressed as site index, the height in feet of the dominant and codominant trees in

TABLE 3.—*Woodland groups and factors in management*

	Potential productivity	Species suitable for	Hazards and limitations

restocking is not expected without special management. Superior planting techniques, superior planting stock, and replanting may be required to assure adequate stands.

Use of the Soils for Wildlife[4]

Successful management of wildlife requires, among other things, that food, cover, and water be available in a suitable combination. The lack of any one of these requirements or an unfavorable balance among them may severely limit the wildlife population.

Most wildlife habitats are managed by planting suitable vegetation and by manipulating existing vegetation to increase or improve the desired plants. In addition, water areas can be created, or natural ones can be improved. Information about the soils is a valuable tool in creating, improving, or maintaining a suitable habitat for wildlife.

Soil interpretations for wildlife habitat serve a variety of purposes. They aid in selecting the more suitable sites for various kinds of habitat, they indicate the intensity of management needed to achieve satisfactory results, and they show generally why it may not be feasible to manage a particular area for a given kind of wildlife. Soil interpretations are also helpful in the broad-scale planning of wildlife management areas, parks, and nature areas and in the acquiring of land to be used for wildlife.

Table 4 shows the suitability of each soil in Appling and Jeff Davis Counties for seven elements of wildlife habitat and for three types of wildlife. Ratings are based on limitations imposed by the characteristics or behavior of the soils. The size, shape, and location of mapped areas of a soil do not affect the rating, nor does the position of the soil in relation to other kinds of soil. Certain factors that influence habitat, such as elevation and aspect, must be appraised at the site.

The numerical ratings of 1 to 4 used in table 4 indicate the degree of suitability of the soil for a given habitat element.

A rating of 1 means well suited. Soil limitations are negligible. Generally, the intensity of management required for the creation, improvement, or maintenance of the habitat is low, and satisfactory results can be expected.

A rating of 2 means suited. Soil limitations are moderate. Fairly frequent attention and a moderate intensity of effort are required to achieve satisfactory results.

A rating of 3 means poorly suited. Soil limitations are severe. The creation, improvement, or maintenance of the designated habitat element is difficult, may be expensive, and requires intense effort to attain satisfactory results. For short-term use, however, soils rated as poorly suited may provide easy establishment of temporary habitat elements.

A rating of 4 means unsuited. Soil limitations are so extreme that it is highly impractical or impossible to create, improve, or maintain a suitable habitat.

soils are rated in table 4 are defined in the following paragraphs.

Grain and seed crops are domestic grains or seed-producing annuals planted to produce food for wildlife. Examples are corn, sorghum, wheat, oats, millet, soybeans, and proso.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are established by planting to furnish food and cover for wildlife. Examples are fescue, bromegrass, lovegrass, orchardgrass, reed canarygrass, panicgrass, bahiagrass, white clover, trefoil, alfalfa, annual lespedeza, perennial lespedeza, and shrub lespedeza.

Wild herbaceous upland plants are native or introduced perennial grasses and forbs (weeds) that provide food and cover principally for upland forms of wildlife. They are established mainly through natural processes. Examples are bluestem, wild ryegrass, oatgrass, pokeweed, strawberry, lespedeza, beggarweed, wild beans, nightshade, goldenrod, dandelion, cheat, poorjoe, and ragweed.

Hardwood woody plants are nonconiferous trees, shrubs, and woody vines that produce fruits, nuts, buds, catkins, twigs, or foliage (browse) used extensively as food by wildlife. These plants commonly are established through natural processes, but they also may be planted. Examples are oak, beech, cherry, hawthorn, dogwood, viburnum, maple, birch, poplar, grapes, honeysuckle, blueberry, briers, greenbriers, autumn-olive, and multiflora rose.

Coniferous woody plants are cone-bearing trees and shrubs that are important to wildlife mainly as cover but also may furnish food in the form of browse, seeds, or fruitlike cones. These plants commonly are established through natural processes, but they also may be planted. Examples are pine and redcedar.

Coniferous trees and shrubs that grow slowly and delay closing the canopy provide cover and food for a larger number and a greater variety of wildlife than coniferous plants that grow more rapidly. Soil properties, therefore, that promote rapid growth and canopy closure are considered limitations. In addition, these properties are considered limitations for conifers because they favor the quick establishment and growth of hardwoods. Thus, there is competition between the two kinds of plants, and frequent and intensive management is needed for the creation, improvement, or maintenance of a satisfactory coniferous habitat.

Wetland food and cover plants are annual and perennial, wild herbaceous plants on moist to wet sites, excluding submerged or floating aquatics, that produce food and cover for wetland forms of wildlife. Examples are smartweed, wild millet, bulrush, spike-sedge, rushes, sedges, burreeds, wildrice, rice cutgrass, mannagrass, and cattails.

Shallow water developments are impoundments or excavations for the control of water, generally not more than 6 feet in depth. Examples are low dikes and levees, shallow dugouts, level ditches, and water-level control devices in marshy drainageways or channels.

[redacted]

TABLE 4.—*Suitability of the soils for elements of wildlife habitat and kinds of wildlife*

[A rating of 1 means well suited; 2 means suited; 3 means poorly suited; and 4 means unsuited. See text for further explanation of ratings]

Soil series and map symbols	Elements of wildlife habitat							Kinds of wildlife		
	Grain and seed crops	Grasses and legumes	Wild herbaceous upland plants	Hardwood woody plants	Coniferous woody plants	Wetland food and cover plants	Shallow water developments	Openland	Woodland	Wetland
Albany: Ad	2	2	2	2	2	4	3	2	2	4
Bayboro: Bf	4	3	4	2	3	2	1	4	2	1
Cahaba: CX	1	1	2	1	1	4	4	1	1	4
Carnegie:										
CnB	1	1	1	2	2	4	4	1	2	4
CnC	2	1	1	2	2	4	4	1	2	4
Cowarts:										
CqB	1	1	1	2	2	4	4	1	2	4
CqC	2	1	1	2	2	4	4	1	2	4
Coxville: Cv	3	2	3	2	2	2	1	3	2	2
Dunbar:										
DvB	2	1	1	1	2	4	4	1	1	4
DvD	3	1	1	1	2	4	4	2	1	4
Duplin:										
DwB	1	1	1	1	2	4	4	1	1	4
DwC	2	1	1	1	2	4	4	1	1	4
Fuquay: FsB	2	1	1	2	2	4	4	1	2	4
Hazlehurst: Hi	2	1	1	1	1	3	3	1	1	3
Irvington: Ij	1	1	1	1	3	4	3	1	2	4
Johns: Jc	2	1	1	2	3	3	4	1	2	4
Johnston and Rains: Jd	4	3	4	2	4	1	2	4	3	2
Kershaw: KdC	4	3	3	3	3	4	4	3	3	4
Leefield: LL, Ls	2	1	1	2	2	3	3	1	2	3
Mascotte: Mn	3	3	2	3	2	3	3	3	2	3
Norfolk: NhA, NhB	1	1	1	1	1	4	4	1	1	4
Olustee: Oa	2	2	2	2	2	4	3	2	2	4
Pelham: Pl	3	2	2	2	2	2	2	2	2	2
Sunsweet: ShD2	3	2	3	3	2	4	4	3	3	4
Surrency: Sv	4	3	3	2	3	2	1	3	2	2
Tifton: TqA, TqB	1	1	1	1	1	4	4	1	1	4
Troup: TpB	3	2	3	3	2	4	4	3	2	4
Troup-Wicksburg: TWD	3	2	2	3	2	4	4	2	2	4
Wahee and Coxville: WW	3	2	3	1	3	2	1	3	2	2

mammals that normally live on cropland, pasture, meadow, lawns, and in other openland areas where grasses, herbs, and shrubby plants grow.

Woodland wildlife are woodcock, thrush, vireo, squirrel, deer, raccoon, wild turkey, and other birds and mammals that normally live in wooded areas where hardwood trees and shrubs and coniferous trees grow.

Wetland wildlife are duck, geese, rail, heron, shore birds, mink, and other birds and mammals that normally live in marshes, swamps, and other wet areas.

Use of the Soils for Engineering [5]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Some soil properties are of special importance in engineering because they affect the construction and maintenance of roads, airports, pipelines, building foundations, drainage systems, water storage facilities, erosion control structures, and sewage disposal systems. Among these soil properties are permeability to water, shear strength, compaction characteristics, soil drainage, shrink-swell potential, grain size, plasticity, and reaction. Also im-

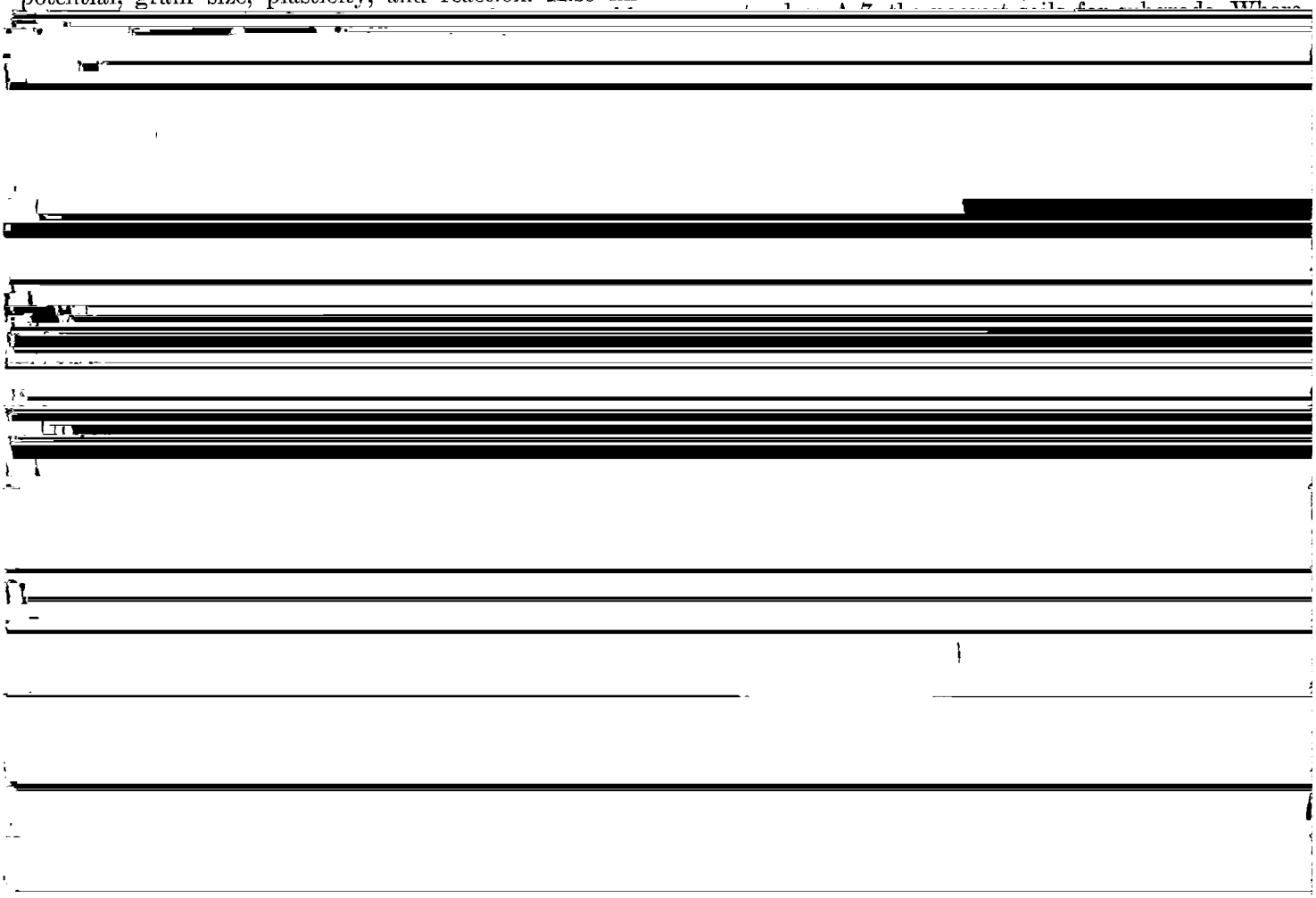
of a given soil mapping unit may contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for engineering. Even in these situations the soil survey is useful for planning more detailed investigations and for suggesting the kinds of problems that may be expected.

Some of the terms used in this soil survey have special meanings to soil scientists that are not known to all engineers. The Glossary defines many of these terms commonly used in soil science.

Engineering classification systems

The two systems most commonly used in classifying samples of soils for engineering are the AASHO system adopted by the American Association of State Highway Officials, and the Unified system used by the SCS engineers, Department of Defense, and others.

The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance (*2*). In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme are clayey soils that have low strength when wet. The best soils for subgrade are therefore classified as A-1, the next best A-2, and



volume change, grain-size distribution, liquid limit, and plasticity index.

Moisture-density data are obtained by compacting soil material several times at successively higher moisture content. Assuming that the compactive effort remains constant, the density of the compacted material increases until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed "maximum dry density." Moisture-density data are important in earthwork because, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

To get the percentages of shrinkage and swelling recorded under the heading "Volume change," samples were prepared at optimum moisture content and then subjected to drying and wetting. The sum of these two values is the "Total volume change."

The relative proportions of the different size particles in the soil samples were determined through mechanical analysis made by a combination of the sieve and hydrometer methods.

The test that determines the plastic limit and liquid limit measures the effect of water on the consistence of the soil material. As the moisture content of a clayey soil [illegible]

Permeability refers to the quality that enables a soil horizon to transmit water or air. The estimates of permeability are based on study of texture, structure, and consistence and on field observations.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is an indication of the volume change to be expected with change in moisture content; that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. It is estimated primarily on the basis of the amount and type of clay in the soil. In general, soils classified as CH are high or moderate to high in shrink-swell potential; sands and those soil materials having small amounts of nonplastic or slightly plastic fines are low; and silty clays and sandy clays that are nonplastic or slightly plastic are moderate.

Engineering interpretations of the soils

In table 7, suitability of the soils as a source of topsoil and road fill is rated and the soil features that signi[illegible]

TABLE 5.—*Engineering*

[Tests performed by the State Highway Department of Georgia in cooperation with the U.S. Department of Commerce,

Soil name and location	Parent material	SCS report No.	Depth from surface	Moisture-density [1]		Volume change [2]		
				Maximum dry density	Optimum moisture	Shrinkage	Swell	Total volume change
			Inches	*Lb. per cu. ft.*	*Percent*	*Percent*	*Percent*	*Percent*
Fuquay loamy sand:								
Jeff Davis County: 1 mile north of Appling County line, 5 miles northeast of Graham, and 75 yards east of Brewer residence. (Modal)	Unconsolidated marine sands.	80-6-1	16-36	117	8	0.7	2.0	2.7
		80-6-2	36-60	115	13	6.1	1.9	8.0
Jeff Davis County: 2 miles northeast of Graham and 30 yards north of curve on county road. (Less clay in the 32- to 50-inch layer than modal)	Unconsolidated marine sands.	80-4-1	16-32	115	10	1.6	1.8	3.4
		80-4-2	32-50	119	10	1.6	4.8	6.4
Jeff Davis County: 1.25 miles southwest of Altamaha School, 200 yards north of county road, and 200 yards northwest of Bell residence. (Coarser textured in surface layer than modal)	Unconsolidated marine sands.	80-5-1	24-38	108	9	0	0	0
		80-5-2	44-54	117	13	2.9	4.8	7.7
Leefield loamy sand:								
Jeff Davis County: 2 miles west of Hazlehurst and 0.25 mile south of house on Collins farm. (Modal)	Marine deposits.	80-1-1	8-17	118	9	.7	3.9	4.6
		80-1-2	26-38	122	10	5.2	.3	5.5
		80-1-3	38-50	121	11	7.2	3.6	10.8
Appling County: 5 miles north of Baxley and 200 yards northwest of Sellars residence. (Sandy upper part of the profile is thinner than modal)	Marine deposits.	1-4-1	8-17	120	8	1.2	.6	1.8
		1-4-2	24-31	122	12	3.0	3.3	6.3
		1-4-3	34-53	118	12	1.6	1.9	3.5
Appling County: 4 miles south of Baxley, 0.8 mile north of State Highway No. 15, and 20 yards west of county road. (More fines in the 32- to 42-inch layer than modal)	Marine deposits.	1-6-1	6-15	115	10	0	0	0
		1-6-2	19-26	118	12	4.3	0	4.3
		1-6-3	32-42	109	16	9.3	2.7	12.0
Olustee sand:								
Appling County: 1.5 miles north of State Highway No. 121, 50 yards east of State Highway No. 15, and 10 yards north of county road. (Modal)	Marine sands.	1-7-1	0-6	106	12	0	4.3	4.3
		1-7-2	6-12	115	11	0	3.0	3.0
		1-7-3	15-40	118	8	1.8	3.0	4.8
Appling County: 1.5 miles east of Pine Grove on South Road cut. (More clay in the 11- to 28-inch [illegible])	Marine sands.	1-9-1	0-4	108	13	.3	1.3	1.6
		1-9-2	6-9	114	11	0	3.6	3.6
		1-9-3	11-28	118	9	.5	0	.5

test data

Bureau of Public Roads, in accordance with standard procedures of the American Association of State Highway Officials (AASHO)]

Mechanical analysis [3]										Liquid limit	Plasticity index	Classification	
Percentage passing sieve—						Percentage smaller than—						AASHO [4]	Unified [5]
¾-in.	⅜-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
		100	99	76	15	13	10	8	6	[6] NP	[6] NP	A-2-4(0)	SM
	100	99	99	75	34	31	30	27	26	30	15	A-2-6(1)	SC
			100	86	14	12	8	8	7	NP	NP	A-2-4(0)	SM
100	99	99	99	87	23	21	19	17	15	NP	NP	A-2-4(0)	SM
	100	99	99	76	9	7	7	7	5	NP	NP	A-3(0)	SP–SM
	100	99	99	80	31	27	26	24	20	26	11	A-2-6(0)	SC
		100	99	92	20	12	11	10	8	NP	NP	A-2-4(0)	SM
[7] 98	96	94	93	86	26	24	22	20	18	NP	NP	A-2-4(0)	SM
[8] 96	86	81	77	69	22	20	19	18	17	22	9	A-2-4(0)	SC
		100	99	67	17	16	14	10	8	NP	NP	A-2-4(0)	SM
	100	99	98	69	25	23	22	20	19	18	6	A-2-4(0)	SM–SC
		100	98	68	26	25	25	24	22	27	13	A-2-6(0)	SC
		100	97	71	10	10	9	8	6	NP	NP	A-3	SP–SM
		100	97	72	23	20	20	18	18	18	4	A-2-4(0)	SM–SC
		100	99	74	30	29	29	29	28	39	19	A-2-6(2)	SC
			100	79	13	12	6	3	2	NP	NP	A-2-4(0)	SM
			100	79	14	10	6	5	4	NP	NP	A-2-4(0)	SM
			100	75	15	10	6	3	2	NP	NP	A-2-4(0)	SM
		100	99	85	15	10	6	4	2	NP	NP	A-2-4(0)	SM
			100	81	14	12	8	5	4	NP	NP	A-2-4(0)	SM
			100	83	16	12	10	8	7	NP	NP	A-2-4(0)	SM

[4] Based on AASHO Designation: M 145–49 (*2*).

[5] Based on the Unified Soil Classification System (*10*). SCS and BPR have agreed to consider that all soils having plasticity indexes within two points of the A-line are to be given a borderline classification. Examples of borderline classifications obtained by this use are SP–SM and SM–SC.

[6] Nonplastic.

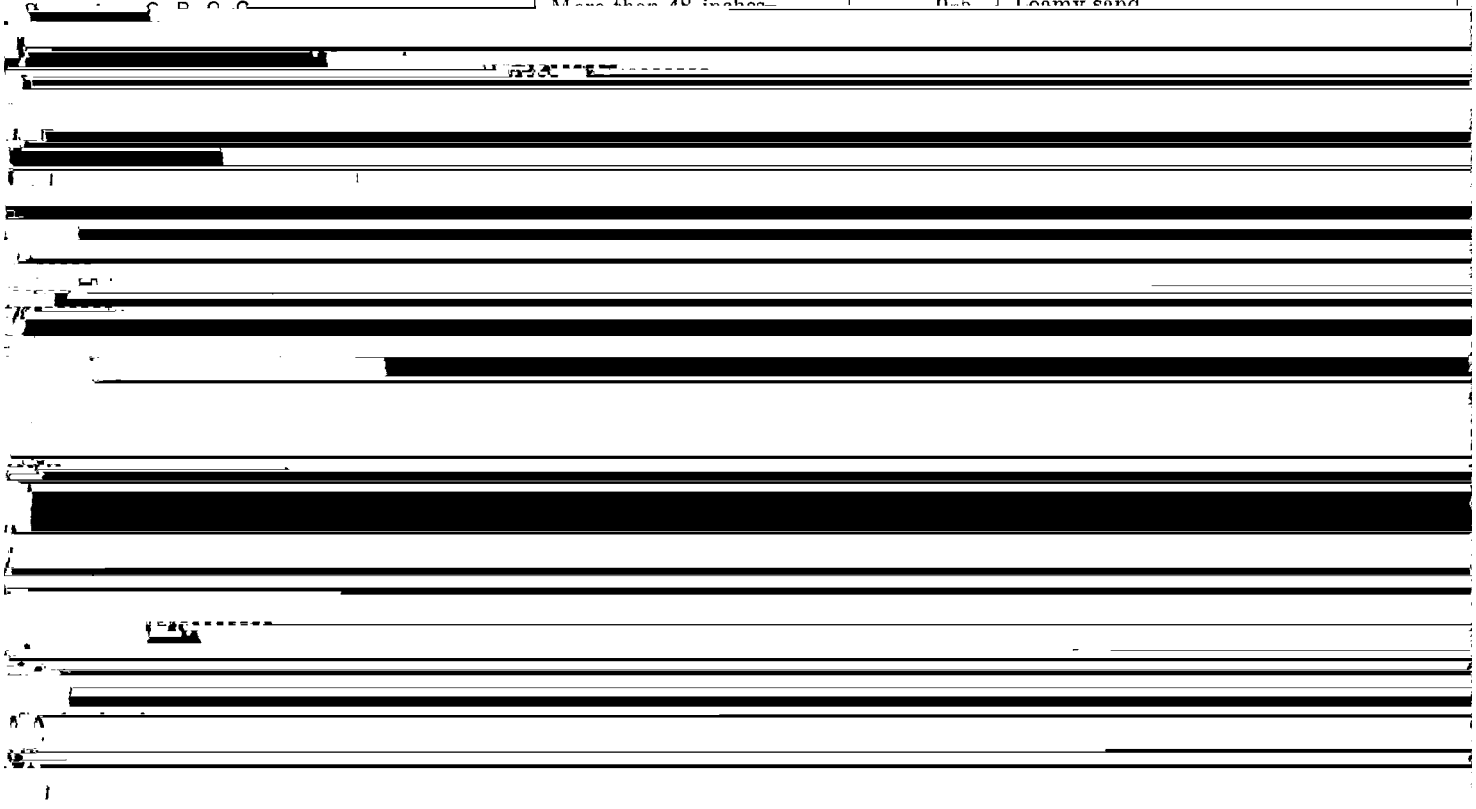
[7] 100 percent passes 1-inch sieve.

[8] 100 percent passes 1½-inch sieve; 98 percent passes 1-inch sieve.

TABLE 6.—*Estimated soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in referring to other series that appear in the first

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Dominant USDA texture
		Inches	
Albany: Ad	15 to 30 inches for 1 to 2 months or more each year.	0–44	Sand and loamy sand
		44–65	Sandy loam and sandy clay loam
Bayboro: Bf	Less than 15 inches for 2 to 6 months each year.	0–13	Loam
		13–55	Clay
Cahaba: CX	More than 48 inches.	0–12	Loamy sand and sandy loam
		12–36	Sandy clay loam
		36–42	Sandy loam
		42–60	Coarse sand
[redacted]	More than 48 inches	0–5	Loamy sand



significant to engineering

such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for column of this table. The symbol> means more than]

Classification		Percentage passing sieve [1]—				Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
							Inches per inch		

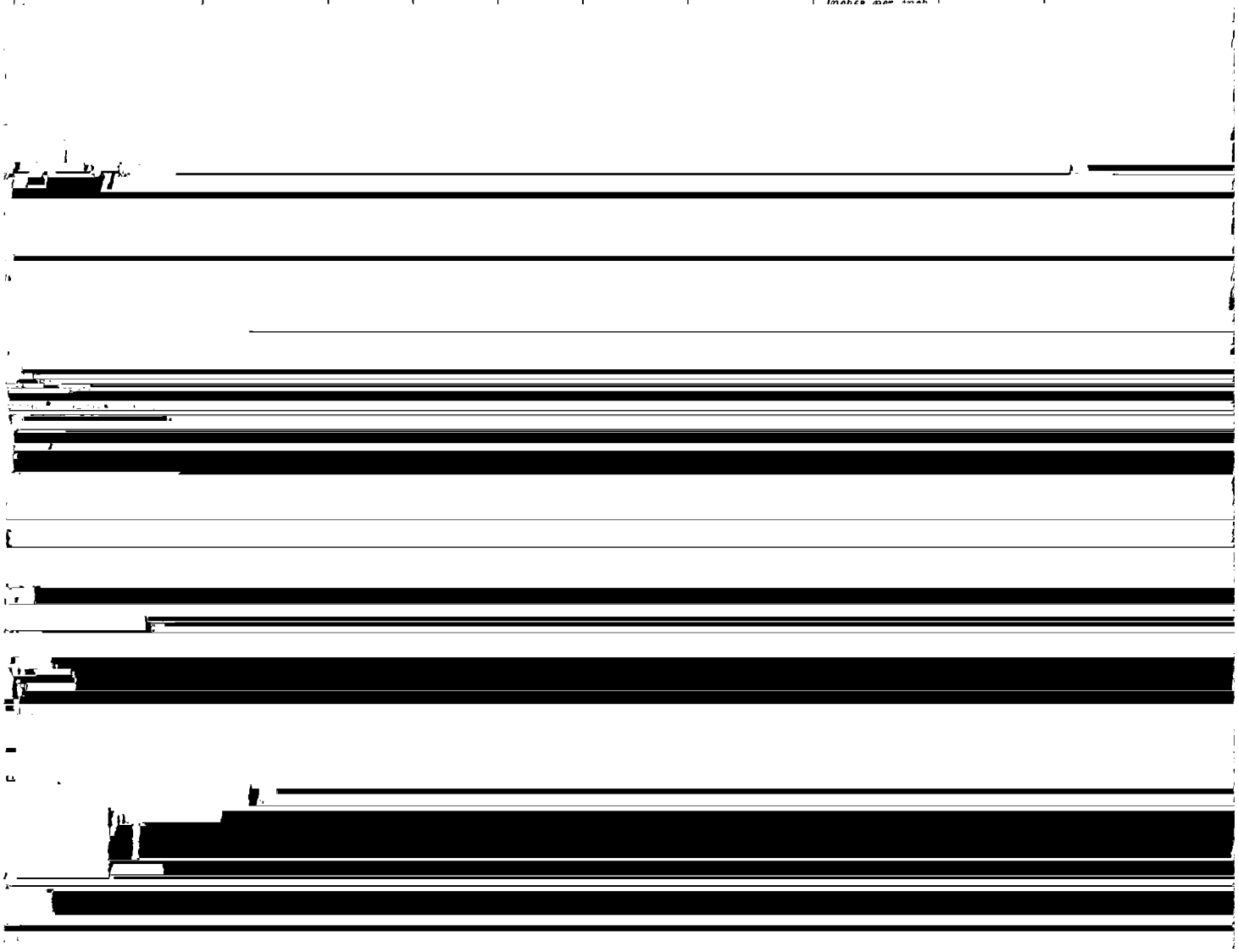
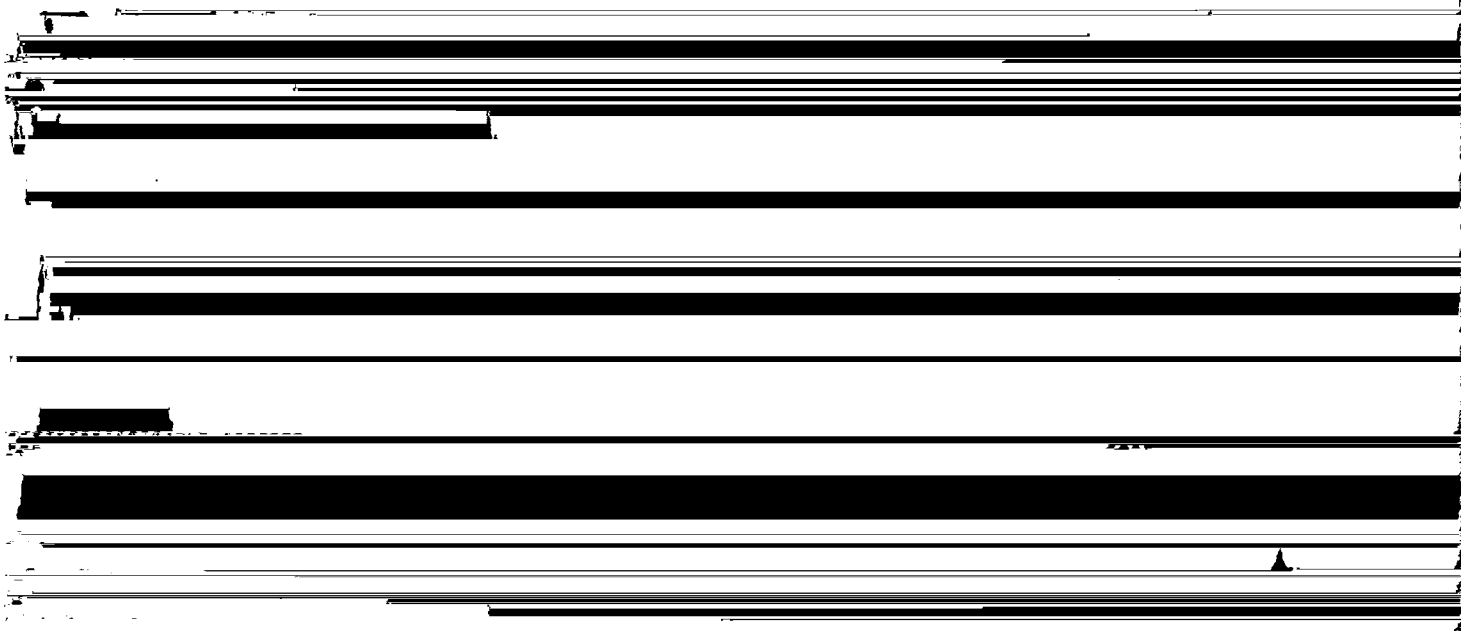


TABLE 6.—*Estimated soil properties*

Soil series and map symbols	Depth to seasonal high water table	Depth from surface	Dominant USDA texture
		Inches	
*Johnston: Jd For the Rains part of this unit, see the Rains series.	Less than 15 inches for 6 to 12 months each year.	0–40 40–60	Fine sandy loam Fine sandy loam
Kershaw: KdC	More than 100 inches.	0–72	Sand
Leefield: LL, Ls	15 to 30 inches for 2 to 6 months each year.	0–26 26–30 30–42 42–63	Loamy sand Sandy loam Sandy clay loam Sandy clay loam
Mascotte: Mn	Less than 15 inches for 1 to 2 months each year.	0–12 12–15 15–38 38–63	Sand Sand Sand Sandy loam
Norfolk: NhA, NhB	More than 48 inches.	0–12 12–22 22–63	Loamy sand Sandy loam Sandy clay loam
Olustee: Oa	Less than 15 inches for 1 to 2 months each year.	0–28 28–60	Sand and loamy sand Sandy loam



significant to engineering—Continued

Classification		Percentage passing sieve [1]—				Permeability	Available water capacity	Reaction	Shrink-swell potential
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
						Inches per hour	*Inches per inch of soil*	*pH*	
OL	A–4	100	100	60–70	50–60	2. 0–8. 0	0. 12–0. 15	4. 5–5. 0	Low.
SM	A–2	100	100	60–85	20–30	2. 0–8. 0	0. 10–0. 15	4. 5–5. 0	Low.
SP or SP–SM	A–3, A–2	100	100	60–90	4–12	>20. 0	0. 03–0. 05	4. 5–5. 0	Low.
SM or SP–SM	A–2	100	95–100	65–95	10–25	6. 0–10. 0	0. 05–0. 08	4. 5–5. 0	Low.
SM or SM–SC	A–2	95–100	95–100	65–95	20–30	2. 0–6. 0	0. 11–0. 13	4. 5–5. 0	Low.
SM or SC	A–2, A–6	80–100	75–100	70–95	20–50	0. 6–2. 0	0. 10–0. 13	4. 5–5. 0	Low.
SC or SM	A–2, A–6	95–100	75–100	70–95	20–50	0. 2–0. 6	0. 09–0. 11	4. 5–5. 0	Low.
SP	A–3	100	100	70–85	2–4	6. 0–10. 0	0. 06–0. 08	4. 5–5. 0	Low.
SM or SP–SM	A–2	100	100	70–85	12–18	0. 6–2. 0	0. 10–0. 12	4. 5–5. 0	Low.
SP or SP–SM	A–3	100	100	70–85	2–5	6. 0–10. 0	0. 04–0. 06	4. 5–5. 0	Low.
SM or SP–SM	A–2	100	100	70–85	12–25	0. 6–2. 0	0. 08–0. 12	4. 5–5. 0	Low.
SM or SP–SM	A–2	95–100	95–100	60–80	10–20	6. 0–8. 0	0. 06–0. 08	5. 1–5. 5	Low.
SM	A–2	85–100	95–100	60–85	20–30	2. 0–6. 0	0. 11–0. 13	5. 1–5. 5	Low.
SC	A–4, A–6	95–100	95–100	60–85	36–45	0. 6–2. 0	0. 13–0. 15	5. 1–5. 5	Low.

TABLE 7.—*Interpretations of engineering*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils for referring to other series that

Soil series and map symbols	Suitability as a source of—		Soil features affecting—
	Topsoil	Road fill	Highway location
Albany: Ad	Poor: loamy sand to a depth of about 44 inches.	Fair: seasonal high water table.	Seasonal high water table
Bayboro: Bf	Poor: seasonal high water table.	Poor: seasonal high water table.	Seasonal high water table; ponding.
[illegible]	[illegible]	[illegible]	Features generally favorable

morphology of the soils

TABLE 7.—*Interpretations of engineering*

Soil series and map symbols	Suitability as a source of—		Soil features affecting—
	Topsoil	Road fill	Highway location
Kershaw: KdC	Poor: sand to a depth of 72 inches.	Good	Loose sand hinders hauling operations.
Leefield: LL, Ls	Poor: loamy sand to a depth of about 26 inches.	Fair: seasonal high water table.	Seasonal high water table.
Mascotte: Mn	Poor: seasonal high water table.	Poor: seasonal high water table.	Seasonal high water table.
Norfolk: NhA, NhB	Poor to a depth of 12 inches; good to a depth of 30 inches if surface layer and upper part of subsoil are mixed.	Good	Features generally favorable.
Quatsa: Qa	Poor: seasonal high water	Poor: seasonal high water	Seasonal high water table.

properties of the soils—Continued

Soil features affecting—Continued				
Farm ponds		Drainage for crops and pasture	Sprinkler irrigation	Terraces and diversions
Reservoir areas	Embankments			
Very rapid permeability and seepage.	Sandy material; rapid seepage rate.	Excessively drained	Low productivity; very low available water capacity.	Very rapid permeability; subject to gullying.
Moderate permeability; slow to moderate seepage.	Moderate to low permeability when compacted.	Seasonal high water table; scarcity of outlets.	Features generally favorable.[1]	Nearly level.
Moderate permeability; moderate seepage.	High to moderate permeability when compacted.	Seasonal high water table; scarcity of outlets.	Seasonal high water table; low available water capacity.[1]	Nearly level.
Moderate permeability; moderate to slow seepage.	Features generally favorable.	Well drained	Features generally favorable.	NhA: nearly level. NhB: features generally favorable.
Moderate permeability and seepage.	Moderate permeability when compacted.	Seasonal high water table; scarcity of suitable outlets.	Low available water capacity; seasonal high water table.	Nearly level.
Moderate permeability; moderate to slow seepage.	Fair to good compaction characteristics.	Seasonal high water table; scarcity of suitable outlets.	Seasonal high water table.	Nearly level.
Moderate permeability; slow seepage.	Features generally favorable.	Seasonal high water table; scarcity of suitable outlets.	Seasonal high water table.	Nearly level.
Features generally favorable.	Fair to good stability and compaction characteristics.	Well drained	Moderately slow permeability; slope.	Slope; plinthite at a shallow depth.
Moderate permeability	Sandy material in the upper 32 inches of the profile is moderately permeable after compaction.	Seasonal high water table; scarcity of suitable outlets.	Seasonal high water table.	Nearly level.
Moderate permeability; moderate to slow seepage.	Features generally favorable.	Well drained	Features generally favorable.[1]	TqA: nearly level. TqB: features generally favorable.
Highly permeable material in the upper 56 inches of the profile.	Sandy material to a depth of 56 inches; rapid seepage rate.	Well drained to somewhat excessively drained.	Low available water capacity. TwD: slope.	Sand to a depth of 56 inches. TWD: slope.
Features generally favorable.	Fair to poor compaction characteristics.	Flooding; slow permeability.	Slow permeability; seasonal high water table.	Nearly level.

Drainage for crops and pasture is affected mainly by lack of suitable outlets. Other features significant in drainage are a seasonal high water table, slow permeability, and susceptibility to flooding.

Features that affect sprinkler irrigation are available water capacity, intake rate, slope, productivity, and permeability. Because of the kinds of crops grown, the practice of sprinkler irrigation is not widespread in the two counties.

Some of the soil features to be considered in constructing terraces and diversions are depth of the soil, erodibility, intake rate, kind of material below the surface layer, and permeability. Slow permeability and undesirable material in the underlying layers are the most common adverse features in these counties.

Use of the Soils for Town and Country Planning

This section was prepared chiefly for planners, developers, landscape architects, builders, zoning officials, [redacted] tions in table 8 are for houses that are without basements and are no more than three stories high. The soil properties most important in rating the soils are the ability to support loads, shrink-swell potential, depth to seasonally high water table, susceptibility to flooding, slope, and depth to hard rock (fig. 11). The kind of sewage system is not a part of the evaluation for residences.

Building sites for light industries.—These areas are used for stores, offices, and small industries. They are not more than three stories high. The soil properties important in rating the soils for this use are slope, depth to the water table and to hard rock, susceptibility to flooding, and shrink-swell potential. It is assumed that sewage disposal facilities are available, and these are not considered in the rating.

Septic tank filter fields.—A septic tank filter field (*11*) is a sewage system in which waste is collected in a central tank and the effluent from the tank is dispersed over a fairly large area of filter field lines buried in the soil. The soil properties most important in rating the [redacted]

Figure 11.—Pelham loamy sand has severe limitations for building sites because of wetness.

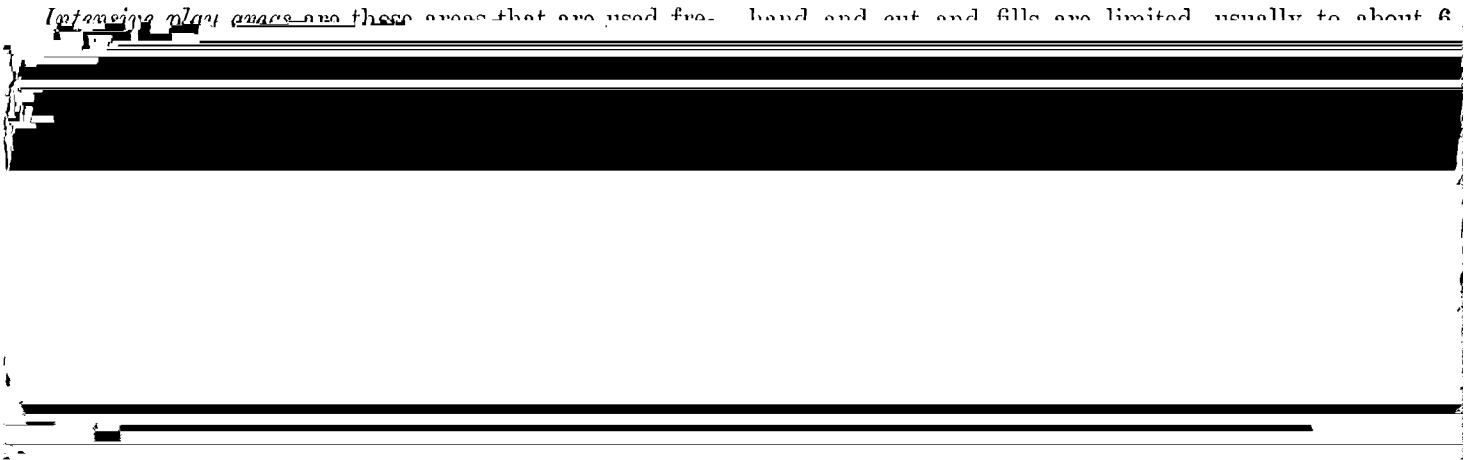
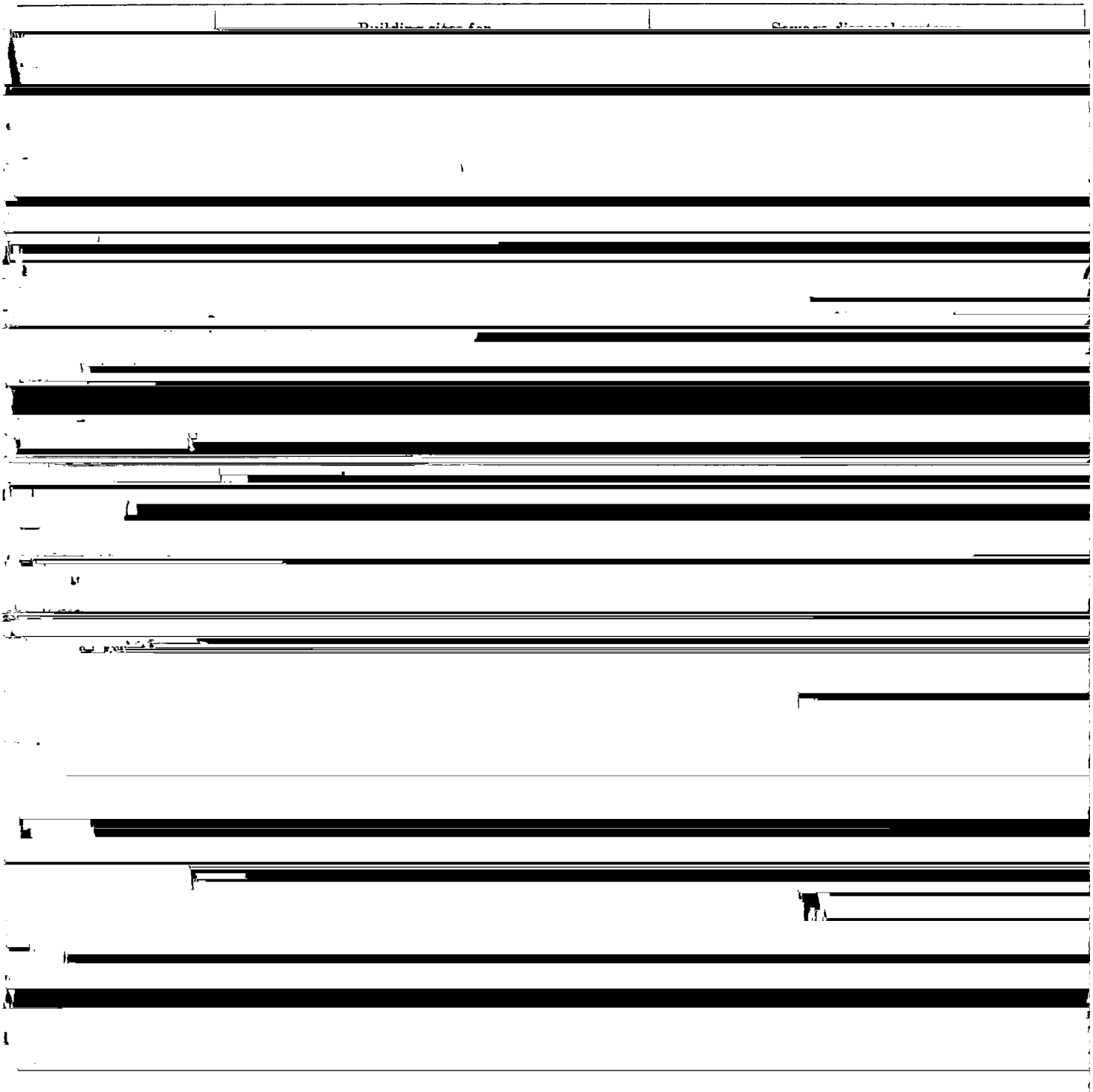


TABLE 8.—*Limitations of the soils*

An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils for referring to other series that



for town and country planning

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions appear in the first column of this table]

Recreational facilities			Trafficways
Picnic grounds	Campsites	Intensive play areas	
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Slight	Slight	Slight	Slight.
Slight	Slight	Moderate for CnB; severe for CnC: slope.	Moderate: moderate shrink-swell potential.
Slight	Slight	Moderate for CqB; severe for CqC: slope.	Slight.
Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Moderate: seasonal high water table. Moderate: slope; seasonal high water table.	Moderate: seasonal high water table. Moderate: slope; seasonal high water table.	Moderate: seasonal high water table; slope. Severe: slope; seasonal high water table.	Severe: moderate shrink-swell potential. Severe: sandstone outcrop; moderate shrink-swell potential.
Moderate: seasonal high water table.	Moderate: slow permeability	Moderate for DwB; severe for DwC: slope.	Moderate: moderate shrink-swell potential.
Moderate: upper 22 inches is loamy sand.	Moderate: upper 22 inches is loamy sand.	Moderate: upper 22 inches is loamy sand.	Slight.
Moderate: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Moderate: seasonal high water table.
Moderate: seasonal high water table.	Moderate: seasonal high water table.	Moderate: seasonal high water table.	Slight.
Moderate: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.	Moderate: seasonal high water table; flooding.
Severe: flooding; seasonal high water table.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.	Severe: seasonal high water table; flooding.
Severe: surface layer is loose sand.	Severe: surface layer is loose sand.	Severe: surface layer is loose sand; slope.	Slight.
Moderate: seasonal high water	Moderate: seasonal high water	Severe: seasonal high water	Moderate: seasonal high water

TABLE 8.—*Limitations of the soils*

Soil series and map symbols	Building sites for—		Sewage disposal systems	
	Residences	Light industries	Septic tank filter fields	Sewage lagoons
Norfolk: NhA, NhB	Slight	Slight	Slight	Moderate: moderate permeability.
Olustee: Oa	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Pelham: Pl	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Rains Mapped only in an undifferentiated group with Johnston soils.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.

for town and country planning—Continued

Recreational facilities			Trafficways
Picnic grounds	Campsites	Intensive play areas	
Slight	Slight	Slight	Slight.
Severe: seasonal high water table.	Moderate: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table.
Moderate: slope	Moderate: slope	Severe: slope	Moderate: moderate shrink-

Formation of the Soils

The principal environmental factors in soil formation are parent material, plants and animals, climate, relief, and time. The nature of the soil at any point on the earth's surface depends upon the combination of these factors. The relative importance of each factor differs from place to place. In some places one factor may dominate in the formation of the soils and determine most of the soil properties. For example, soils that formed in pure quartz sand commonly have faint horizons because quartz is highly resistant to weathering. Even in quartz sand, however, a distinct profile can form under certain types of vegetation if the relief is low and flat and the water table is high.

The five factors that affect soil formation are described in the following paragraphs.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It largely determines the chemical and mineralogical composition of a soil. The parent material of most of the soils in Appling and Jeff Davis Counties is unconsolidated, fragmentary material that was deposited

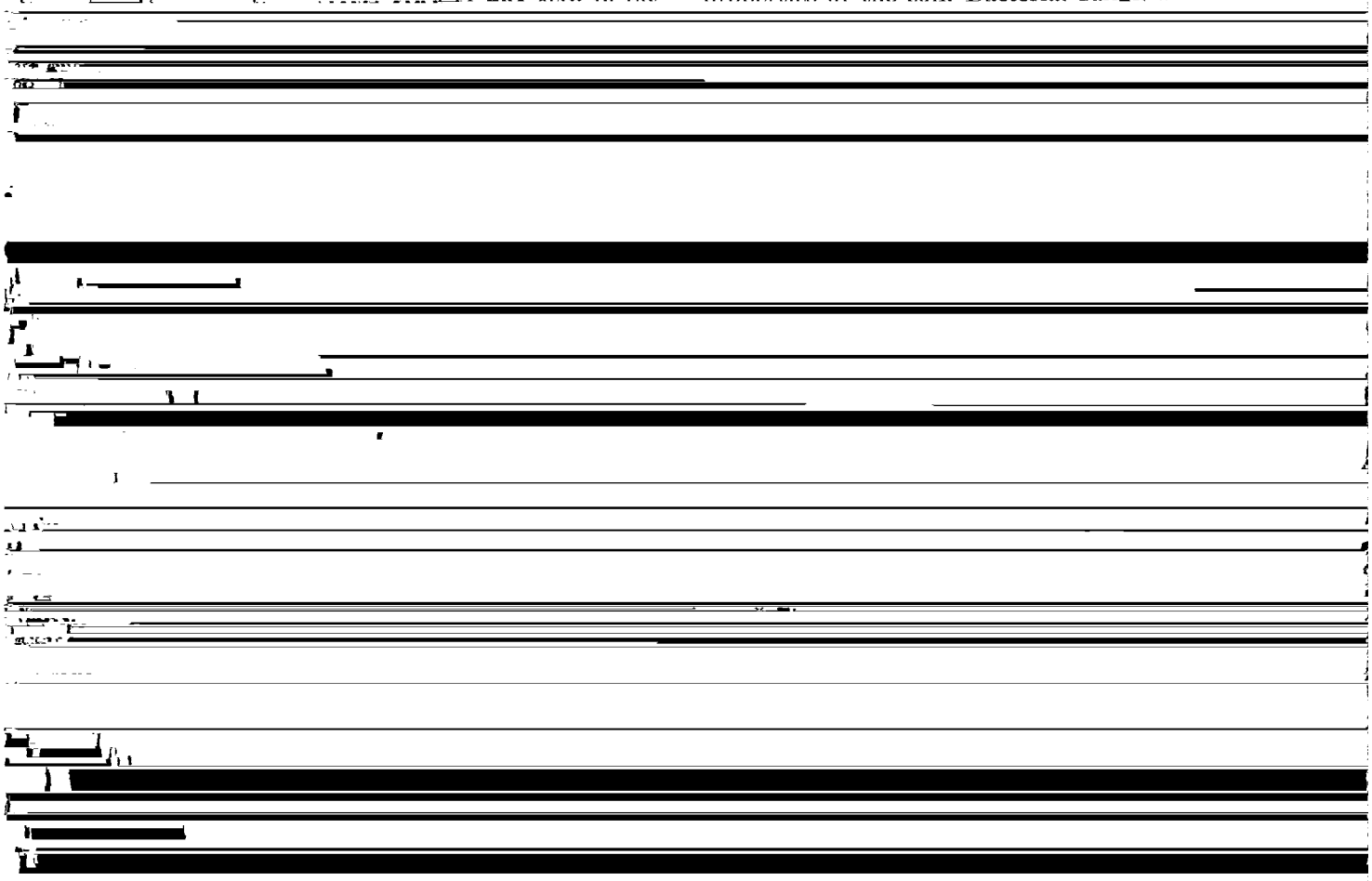
Plants and animals

Plants, animals, bacteria, and other organisms are active in the soil-forming processes. Each kind of living organism brings about particular changes in the soil material. The kinds and numbers of plants and animals that live on and in the soil depend, in large part, on climate and, in varying degrees, on parent material, relief, wetness, and the age of the soil.

Large plants are responsible for supplying most of the organic matter to the soil. They also transfer elements from the subsoil to the surface soil by assimilating these elements into their tissue and then depositing this tissue on the surface in the form of fallen fruit, leaves, or stems. The uprooting of trees by wind influences the formation of soils by mixing the soil layers and loosening the underlying material.

In Appling and Jeff Davis Counties, the native vegetation was chiefly pine and oak on uplands and sweetgum, blackgum, pondcypress, and water-tolerant oaks in the low, swampy areas. These trees returned large amounts of organic material to the soils over a long period.

Micro-organisms, insects, small plants, and small animals exert a continual effect on the physical and chemical properties of the soil. Bacteria, fungi, and other micro-



and Jeff Davis Counties are level or nearly level, soil [redacted] classes in successively higher categories so that informa-

TABLE 9.—*Classification of soil series according to the comprehensive system, 7th approximation*

Series	Family	Subgroup	Order
Albany	Loamy, siliceous, thermic	Grossarenic Paleudults	Ultisols.
Bayboro	Clayey, mixed, thermic	Umbric Paleaquults	Ultisols.
Cahaba	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
Carnegie	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Cowarts	Fine-loamy, siliceous, thermic	Plinthic Paleudults	Ultisols.
Coxville	Clayey, kaolinitic, thermic	Typic Paleaquults	Ultisols.
Dunbar	Clayey, kaolinitic, thermic	Aeric Paleaquults	Ultisols.
Duplin	Clayey, kaolinitic, thermic	Aquic Paleudults	Ultisols.
[illegible]	[illegible]	Arenic Plinthic Paleudults	Ultisols.

Climate [6]

Appling and Jeff Davis Counties are located on the Lower Coastal Plain of Georgia, 50 to 75 miles from the Atlantic Ocean. This subtropical location results in long summers that are warm and humid, winters that are short and mild, and rainfall that is adequate for farming in most years. Data on temperature and precipitation are given in table 10, and the probabilities of freezing temperatures on specified dates in spring and fall are given in table 11.

Summer temperatures are consistently warm and vary little from day to day. Early morning temperatures in summer average near 70° F. High temperatures in the afternoon reach or exceed 90° on about two-thirds of the days from June through August and on almost a third of the days in May and September. Because of the moderating effect of the ocean, however, periods of extremely high temperatures are rare. Usually there are only about 3 days per year having a temperature of 100° or higher. The highest temperature of record was 106° in June 1959. The relative humidity is moderately high in summer. The average is above 90 percent from 2 to 7 a.m., but it drops [redacted]

weather. The freeze-free period averages about 260 days and extends from around March 10 to November 24. The relative humidity is generally lower in winter than in summer for most hours of the day, and the largest differences are early in the morning.

Spring and fall are transitional seasons. They are usually mild, but there is gradual warming in spring and cooling in fall. Mean temperatures in spring range from 59° in March to 73° in May. Mean temperatures in fall range from 76° in September to 58° in November. There is more sunshine and less wind and rain in fall than in spring. The long periods of mild, sunny weather that are typical of autumn are ideal for harvesting operations.

Average annual rainfall for the area is between 45 and 50 inches. The wettest season is summer, when moisture requirements for farming are greatest. Most warm-season rainfall comes as thundershowers that are usually of short duration and cause a minimum of interruption of normal activities. Winter rainfall is more frequently associated with cyclonic storms that move from southwest to northeast through or near the area. Rainy periods in winter may last for several hours or even 2 or 3 days. Occasionally a tropical cyclone moves near enough to bring

[redacted]

TABLE 11.—*Probabilities of last freezing temperatures in spring and first freezing temperatures in fall*

Probability	Dates for given probability and temperature		
	24° F. or lower	28° F. or lower	32° F. or lower
Spring:			
[redacted]	February 20	March 14	March 30

Figure 12.—**The Altamaha River at about normal flow.**

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 and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepen-

ing of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

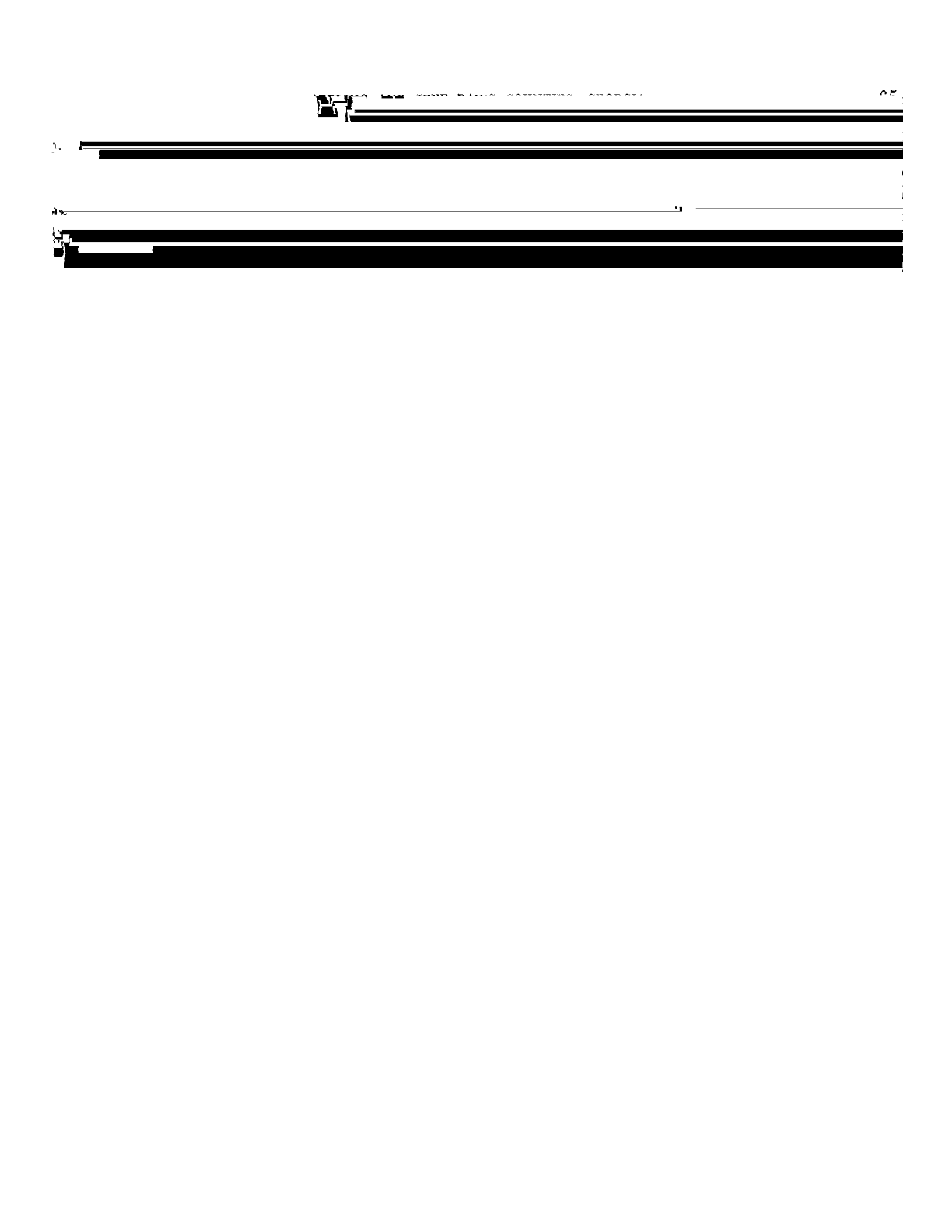
Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uni-

5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium*, ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse*, more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Organic matter. A general term for plant and animal material, in or on the soil, in all stages of decomposition. Readily decomposed organic matter is often distinguished from the more stable forms that are past the stage of rapid decomposition.

Permeability. The quality that enables the soil to transmit water



ing unit, read both the description of the mapping unit and the description of apping unit belongs. The suitability of the soils for use as cropland is ions. The capability classification is discussed on pages 33 and 34. For in- ils for woodland, see the section beginning on page 35, including table 3 on given in tables as follows:

, table 1, page 6.
table 2, page 35.
page 39.

Use of the soils for engineering, tables 5, 6, and 7, pages 42 through 51.
Town and country planning, table 8, page 54.

Mapping unit	Page	Capability unit	Woodland suitability group
		Symbol	Number
----------	7	IIIw-1	3w2
----------	8	Vw-1	2w9
o 5 percent slopes----------	9	IIe-4	2o1
o 8 percent slopes----------	9	IVe-4	2o1
5 percent slopes----------	11	IIe-4	2o1
8 percent slopes----------	11	IVe-4	2o1
----------	11	Vw-1	2w9
----------	8	I-1	2o7
5 percent slopes----------	12	IIe-3	2w8
12 percent slopes----------	12	VIe-2	2w8
5 percent slopes----------	13	IIe-3	2w8
8 percent slopes----------	13	IIIe-3	2w8
5 percent slopes----------	14	IIs-1	3s2
----------	15	IIIw-2	2w8
----------	16	IIw-2	2o7
----------	16	IIw-2	2w2
----------	17	Vw-2	---
----------	--	----	1w9
----------	--	----	2w3
cent slopes----------	17	VIIs-1	5s3
----------	19	IIw-2	3w2
----------	19	IIw-2	3w2
----------	21	Vw-4	3w2
2 percent slopes----------	21	I-1	2o1
5 percent slopes----------	22	IIe-1	2o1
----------	22	IIIw-1	3w2
----------	25	IVw-4	2w3
o 12 percent slopes, eroded----------	26	VIe-2	3c2
----------	27	Vw-2	2w9
nt slopes----------	29	IIIs-1	3s2
2 percent slopes----------	28	I-2	2o1
5 percent slopes----------	28	IIe-2	2o1
8 to 12 percent slopes----------	29	VIs-1	3s2
e sand, 2 to 8 percent slopes----------	32	IVs-1	3s2
----------	30	IVw-4	2w8

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