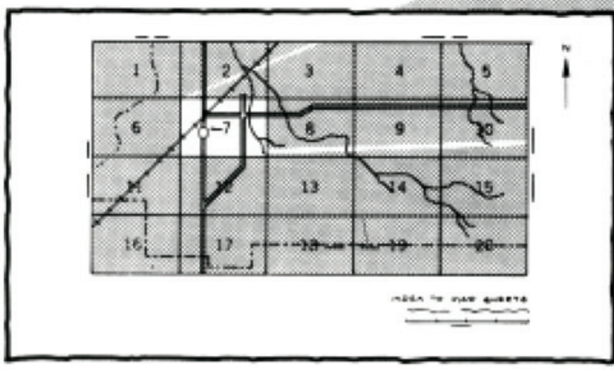
United States Department of Agriculture
Soil Conservation Service in cooperation with
North Carolina Agricultural Research Service
North Carolina Agricultural Extension Service
Greene County Board of Commissioners

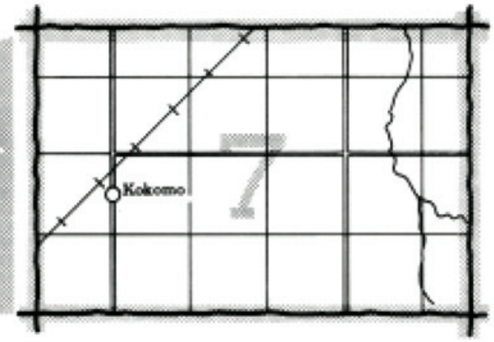
soil
survey
of

Greene County, North Carolina

HOW TO USE

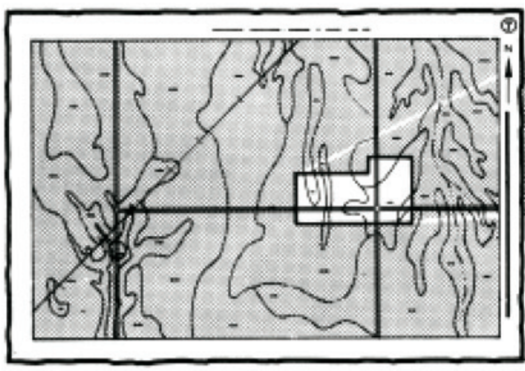
1. Locate your area of interest on the "Index to Map Sheets"

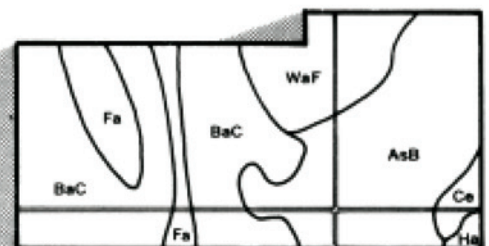




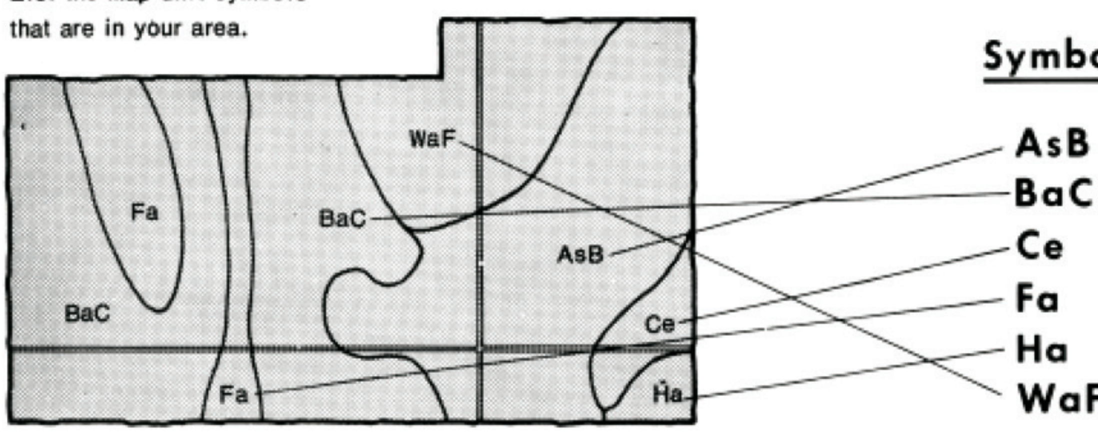
2. Note the number of the map sheet and turn to that sheet.

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



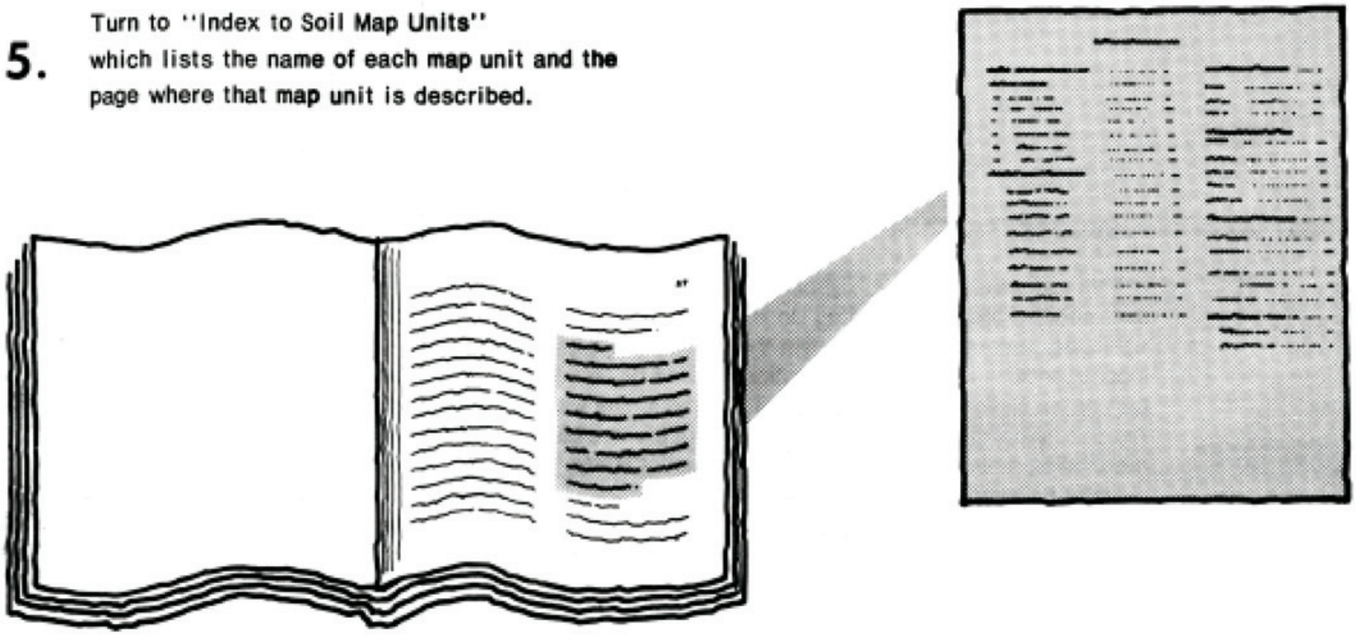


4. List the map unit symbols that are in your area.

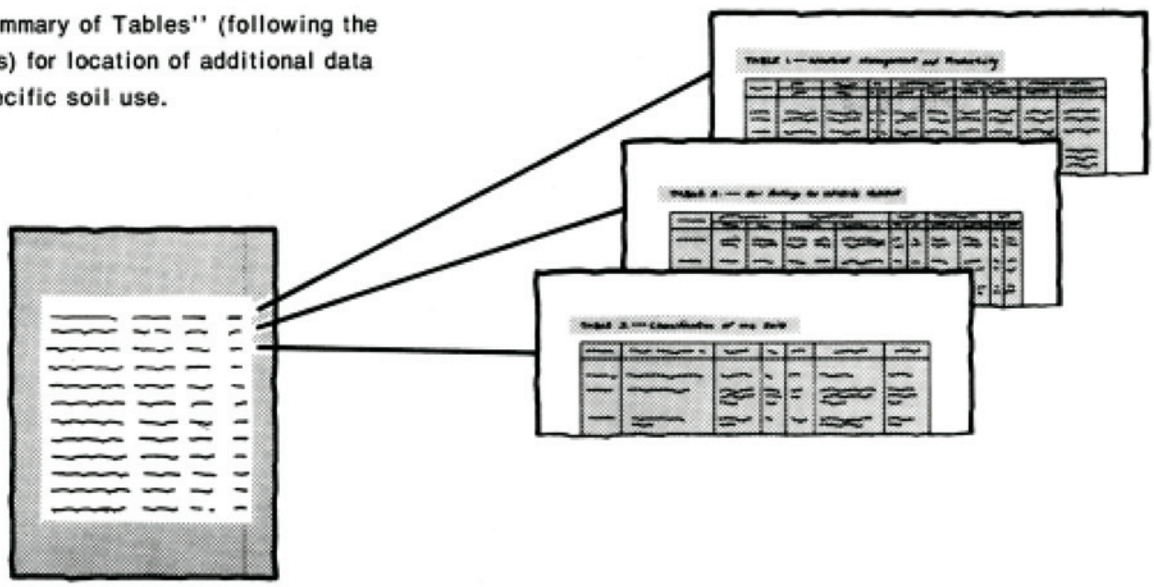


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

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

Major fieldwork for this soil survey was performed in the period 1975-77. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service and the North Carolina Agricultural Experiment Station, the North Carolina Extension Service, and the Greene County Board of Commissioners. It is part of the technical assistance furnished to the Greene Soil and Water Conservation District.

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

Cover: Tobacco, the main cash crop, on Norfolk loamy sand, 0 to 2 percent slopes.

Issued March 1980

Index to map units

Summary of tables

Summary of tables—Continued

Foreword

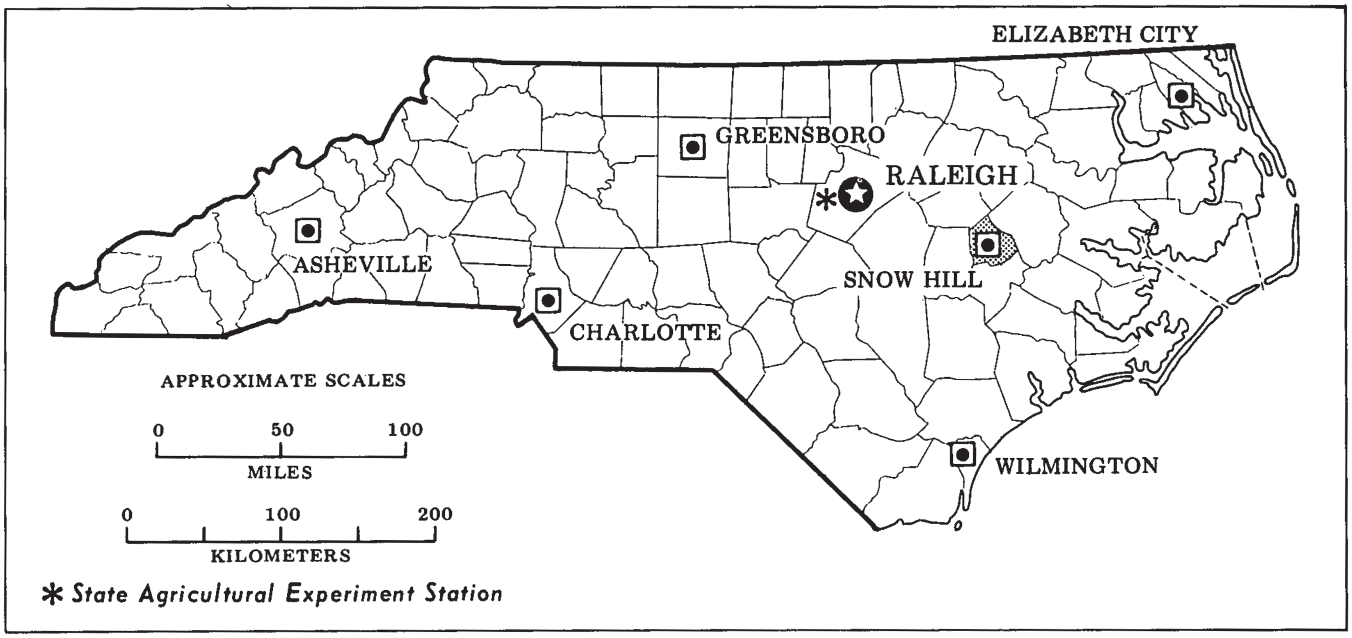
This soil survey contains information that can be used in land-planning programs in Greene County, North Carolina. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations,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

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

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

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

Jesse L. Hicks
State Conservationist
Soil Conservation Service



Location of Greene County in North Carolina.

Soil survey of

Greene County, North Carolina

By William L. Barnhill, Soil Conservation Service

Soils surveyed by William L. Barnhill and L.L. Mallard III,
Soil Conservation Service, and Mark L. Kornblau,
North Carolina State University Extension Service

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General nature of the survey area

Greene County, settled in about 1710 (*3*), was originally named Glasgow County in honor of the Secretary of State, James Glasgow (1778-1798). The county was renamed in honor of Nathaniel Greene, a hero of the southern campaign of the Revolution.

The county has been a large producer of tobacco since early times. Today, tobacco is still the leading source of farm income. In 1970, revenue from tobacco provided approximately 50 percent of all farm income. Other important sources of income are corn, soybeans, hogs, and industry.

Contentnea Creek was a major means of transportation for early settlers. Nearly 500 miles of paved roads extend into every part of the county, connecting Greene County with major centers of commerce in adjoining Pitt, Wilson, Wayne, and Lenoir Counties.

The population of Greene County was 16,741 in 1960 and 14,967 in 1970. Migration of tenant farmers has resulted in much of the population decline.

Physiography, relief, and drainage

Greene County contains two divisions of the Coastal Plain physiographic region—the Sunderland and Wicomico Terraces. Nearly continuous throughout the county, the Surry Scarp separates these divisions. It extends in a north-south direction midway in the county. The toe elevation is about 95 feet. The higher lying Sunderland terrace is in the western part of the county, west of the Surry Scarp. The lower lying Wicomico Terrace is in the eastern part of the county.

The general slope of the county is to the southeast. Elevation ranges from about 20 feet above sea level along Contentnea Creek first bottom to 120 feet in the highest place in the southwest and northwest parts of the county. Most elevations are between 75 and 110 feet.

Greene County is nearly level. Short slopes border the first bottom or terrace landforms. Small streams, throughout most of the county, dissect more of the Sunderland surface than the Wicomico surface. Divides of both surfaces are slightly convex, but the Wicomico surface becomes broader, smoother, and flatter in the interstream area. Streams are shallow near the interstream area. The flow is sluggish. Many open ditches and tile drains have been installed to facilitate drainage. Figure 1 illustrates the soil, landscape, and seasonal water table pattern.

Climate

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

Summer in Greene County is hot and generally humid because of the moist maritime air. Winter is moderately cold but short because the mountains to the west protect the area against many cold waves. Precipitation is quite evenly distributed throughout the year and is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Greenville, North Carolina in the period 1956 to 1976. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 43 degrees F, and the average daily minimum temperature is 32 degrees. The lowest temperature on record, which occurred at Greenville on December 16, 1958, is 5 degrees. In summer the average temperature is 77 degrees, and the average daily maximum temperature is 88 degrees. The highest recorded temperature, which occurred on July 1, 1959, is 103 degrees.

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

Of the the total annual precipitation, 28 inches, or 60 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 23 inches. The heaviest 1-day rainfall during the period of record was 4.23 inches at Greenville on September 19, 1955. Thunderstorms occur on about 50 days each year, and most occur in summer.

Average seasonal snowfall is 12 inches. The greatest snow depth at any one time during the period of record was 5 inches. On an average, 1 day has at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 10 miles per hour, in March.

Every few years heavy snow covers the ground for a few days to a week in winter. Every few years in late summer or autumn, a tropical storm moving inland from the Atlantic Ocean causes extremely heavy rain for 1 to 3 days.

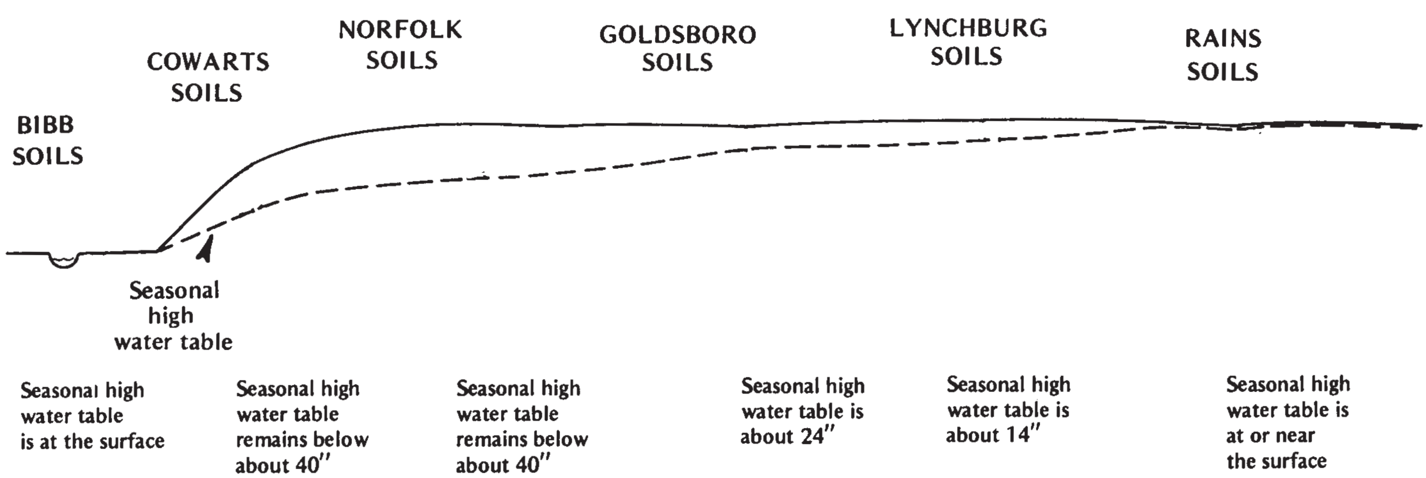

Figure 1.—Soil-landscape-seasonal high water table relationship.

How this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; and the kinds of native plants or crops. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

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

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

General soil map for broad land use planning

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

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

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

Terms assigned to soil potential classes indicate the quality of the soil for a particular use compared to that of other soils in the county. They are based on the capacity of the soil to produce, yield, or support a given structure or activity. Determining potential involves four basic steps: (1) identifying soil properties and features affecting anticipated use of each soil, (2) identifying and evaluating the measures that may be taken to overcome the limiting soil features, (3) evaluating the level of performance or yield after installation of acceptable measures, and (4) arranging the soils in order from those with the best performance level to those with the poorest.

The potential is defined as—

High if production or performance is at or above the level of local standards, practices available for overcoming soil limitations are judged locally to be economically feasible, and continuing limitations after corrective measures are taken do not detract appreciably from environmental quality or economic returns.

Medium if the soil is intermediate between those that qualify for high potential and those that qualify for low potential. Production or performance is somewhat below local standards, costs of overcoming limitations are high, or limitations continuing after corrective measures are taken detract from environmental quality or economic returns.

Low if production or performance is significantly below local standards, measures required to overcome limitations are costly, or limitations continuing after corrective measures are taken detract appreciably from environmental quality or economic returns.

Very low if production or performance is much below local standards, limitations are so severe that economically feasible measures are not available, or limitations continuing after corrective measures are taken seriously detract from environmental quality or economic returns.

Descriptions of map units

1. Norfolk-Goldsboro

Nearly level and gently sloping, well drained and moderately well drained soils that have a loamy subsoil; on uplands

Scattered areas of these soils occur throughout the county near the major drainageways. They are commonly slightly convex, oblong, and irregular in width (fig. 2).

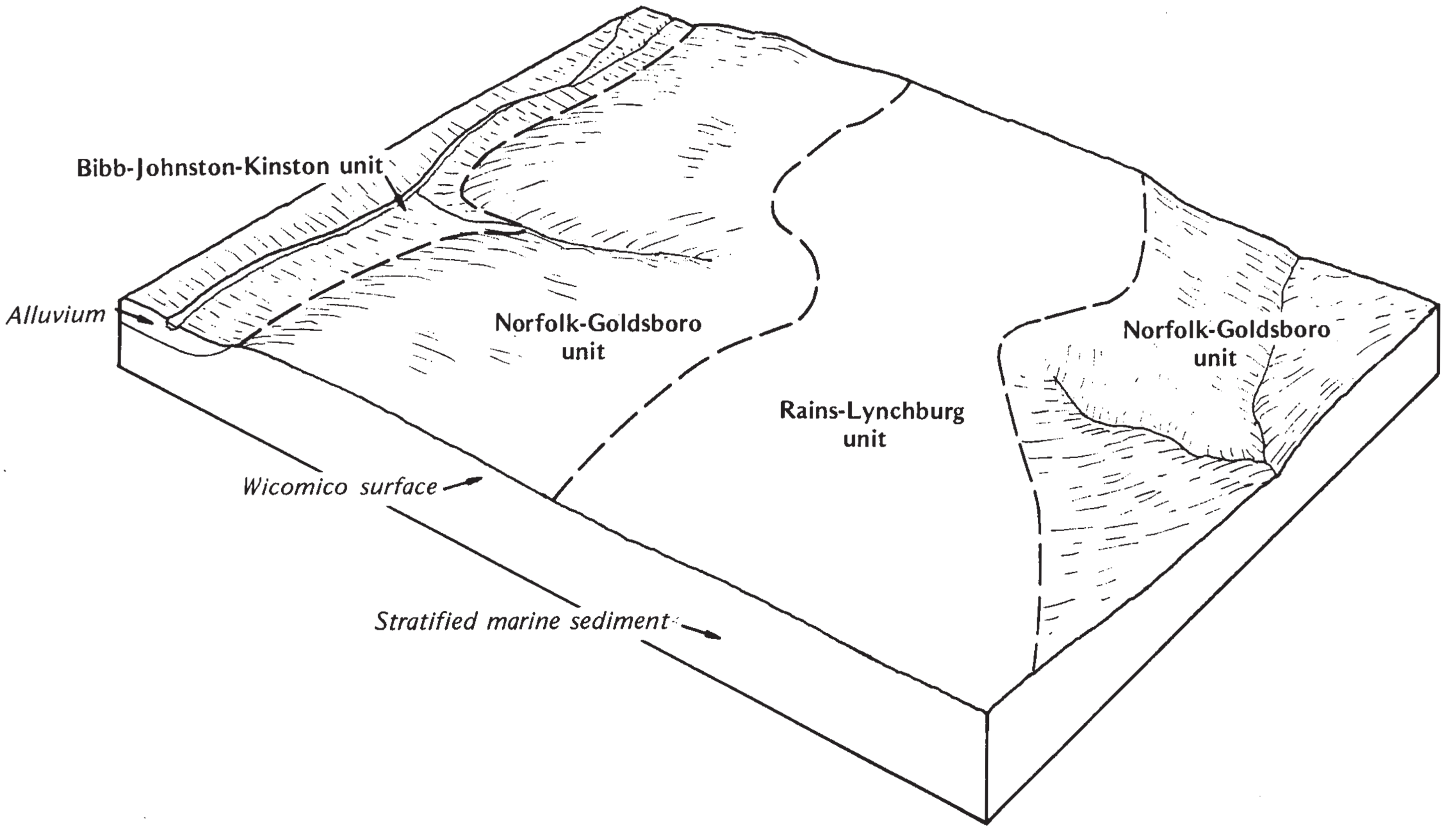

Figure 2.—The Norfolk-Goldsboro unit occupies the drier parts of the landscape. The Rains-Lynchburg unit occupies the wetter interstream areas. The Rains-Lynchburg unit occurs only on the less dissected Wicomico surface.

This unit makes up about 30 percent of the county. About 50 percent of the unit is Norfolk soils, 23 percent Goldsboro soils, and 27 percent soils of minor extent.

The nearly level and gently sloping, well drained Norfolk soils are on slightly convex parts of divides next to the drainageways. They have a loamy sand surface layer and a sandy clay loam subsoil.

The nearly level, moderately well drained Goldsboro soils are on the more nearly level parts of the divides. They have a loamy sand surface layer and a sandy clay loam subsoil.

Minor in this unit are the more sloping Cowarts and Gritney soils on short side slopes; the Wagram, Orangeburg, Autryville, and Blanton soils near the side slopes; the somewhat poorly drained Lynchburg and Stallings soils in nearly level areas; and the poorly drained Bibb soils in short narrow drainageways.

Most of the acreage has been cleared and is used for row crops. Surface runoff is a problem on the gently sloping Norfolk soils. Wetness is a limitation on Goldsboro soils. These limitations are easily overcome by practices in common use.

The potential is high for cultivated row crops and for woodland. Norfolk soils have high potential for urban uses. Goldsboro soils have medium potential because of the seasonal high water table. The potential is high for recreation and for openland and woodland wildlife habitat. Many sites are suitable for ponds.

2. Wagram-Stallings-Autryville

Nearly level and gently sloping, well drained and somewhat poorly drained soils that have a loamy subsoil; on uplands

Areas of these soils are mainly adjacent to or near the major drainageways. They are mostly undulating and oblong (fig. 3). One large broad area occurs in and around Snow Hill.

This unit makes up about 18 percent of the county. About 32 percent is Wagram soils, 27 percent Stallings soils, 23 percent Autryville soils, and 18 percent soils of minor extent.

The nearly level and gently sloping, well drained Wagram soils, near the deeper drainageways, have smooth slopes. They have a loamy sand surface layer and a sandy clay loam subsoil.

The nearly level, somewhat poorly drained Stallings soils are in shallow depressions. They have a loamy fine sand surface layer and a sandy loam subsoil.

The nearly level and gently sloping, well drained Autry-

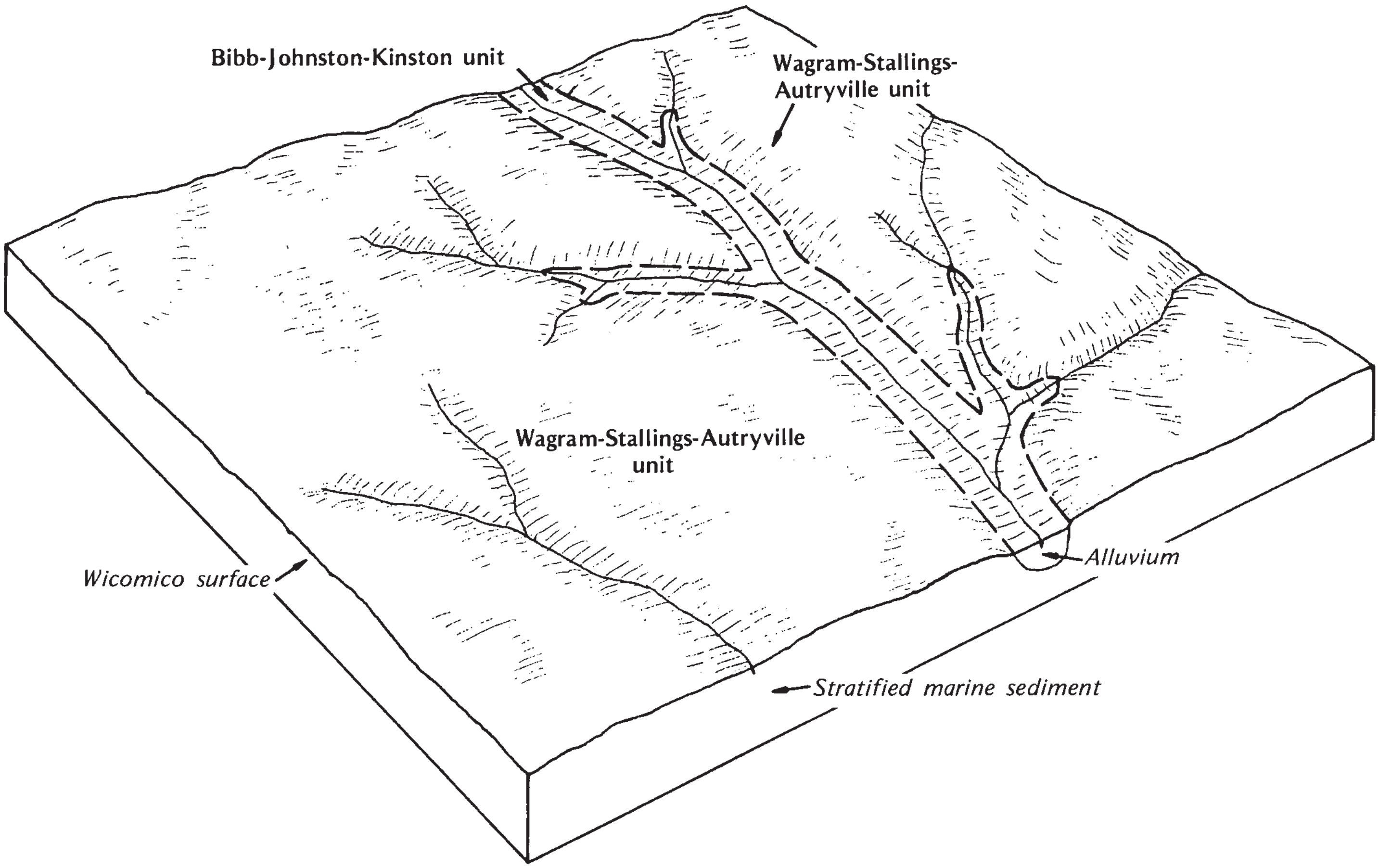

Figure 3.—The Wagram-Stallings-Autryville unit is gently undulating upland. This sandy map unit has more pronounced undulation than the less sandy units. The Bibb-Johnston-Kinston unit occurs only in the large drainageways.

ville soils, in the middle of the divide, are slightly undulating. They have a fine sand surface layer and a sandy clay loam subsoil.

Minor in this unit are the more sloping Cowarts and Gritney soils on short side slopes, Blanton soils near side slopes, poorly drained Bibb soils in the short narrow drainageways, and poorly drained Rains soils in slight depressions.

This unit is used mainly for row crops. Wind erosion is a hazard in large open fields. Droughtiness is a limitation. Wetness is an additional limitation on Stallings soils. These limitations can be overcome to some degree by practices in common use.

The potential is medium for cultivated crops and recreation and high for woodland, urban use, and openland and woodland wildlife habitat. Wetness, a limitation for urban use on Stallings soils, is also a major limitation for recreation.

3. Rains-Lynchburg

Nearly level, poorly drained and somewhat poorly drained soils that have a loamy subsoil; on uplands

These soils are in the eastern, northeastern, and southern parts of the county. Areas in the eastern part of the county are larger than those in the southern part. Typically, they are oblong and irregular in width. See fig. 2.

This unit occupies about 16 percent of the county. About 45 percent is Rains soils, 31 percent Lynchburg soils, and 24 percent soils of minor extent.

The poorly drained Rains soils, in the middle of the broad interstream area, are farther from the major drainageways than Lynchburg soils. They have a sandy loam surface layer and a sandy clay loam subsoil.

The somewhat poorly drained Lynchburg soils are commonly between Rains soils and the better drained soils near the drainageways. They have a sandy loam surface layer and a sandy clay loam subsoil.

Minor in this unit are the coarser textured Stallings soil, some very poorly drained soils in small depressions, and the moderately well drained Goldsboro soils near the shallow drainageways.

About two thirds of this unit is woodland, and the rest is used for row crops and pasture. Wetness is a limitation for all uses except woodland. Drainage is needed. Some wetness may persist, however, causing some of these soils to be unsuited to many other uses.

In adequately drained areas the potential is medium for farm crops, high for woodland, and medium for openland, woodland, and wetland wildlife habitat. The potential is low for recreation and urban use because wetness is difficult to overcome.

4. Bibb-Johnston-Kinston

Nearly level, poorly drained and very poorly drained loamy soils; on flood plains

Areas of these soils occur along the major streams. They are long and narrow. They are at the lowest elevation in the county (fig. 4).

This unit occupies about 11 percent of the county. About 33 percent is Bibb soils, 22 percent Johnston soils, 14 percent Kinston soils, and 31 percent soils of minor extent.

The poorly drained Bibb soils are along small streams. They have a loam surface layer. The underlying material is fine sandy loam, loamy sand, and sand.

The very poorly drained Johnston soils are along small streams. They have a loam surface layer. The underlying material is loamy sand.

The poorly drained Kinston soils are along Contentnea Creek. They have a loam surface layer. The underlying material is mainly clay loam.

Minor in this unit are narrow areas of the coarser textured Pactolus soils on banks along Contentnea Creek and areas of Johns, Lumbee, and Paxville soils on the higher flood plains.

This unit is woodland. Frequent flooding and the high water table are limitations. These limitations are so difficult to overcome that flood control structures and stream channel widening and deepening are needed.

The potential is high for woodland, but the use of equipment is limited, and seedling mortality is a limitation. The potential is low for farming, urban use, and recreation because the wetness is so difficult to overcome. The potential is high for wetland wildlife habitat.

5. Johns-Kenansville-Lumbee

Nearly level and gently sloping, well drained to poorly drained soils that have a loamy subsoil; on stream terraces

Areas of these soils are adjacent to the major streams, particularly Contentnea Creek and Little Contentnea Creek. They are long and narrow. They are much lower in elevation than the adjoining upland but are higher than the adjoining flood plains. See figure 4.

This unit occupies about 14 percent of the county. About 31 percent is Johns soils, 20 percent Kenansville soils, 15 percent Lumbee soils, and 34 percent soils of minor extent.

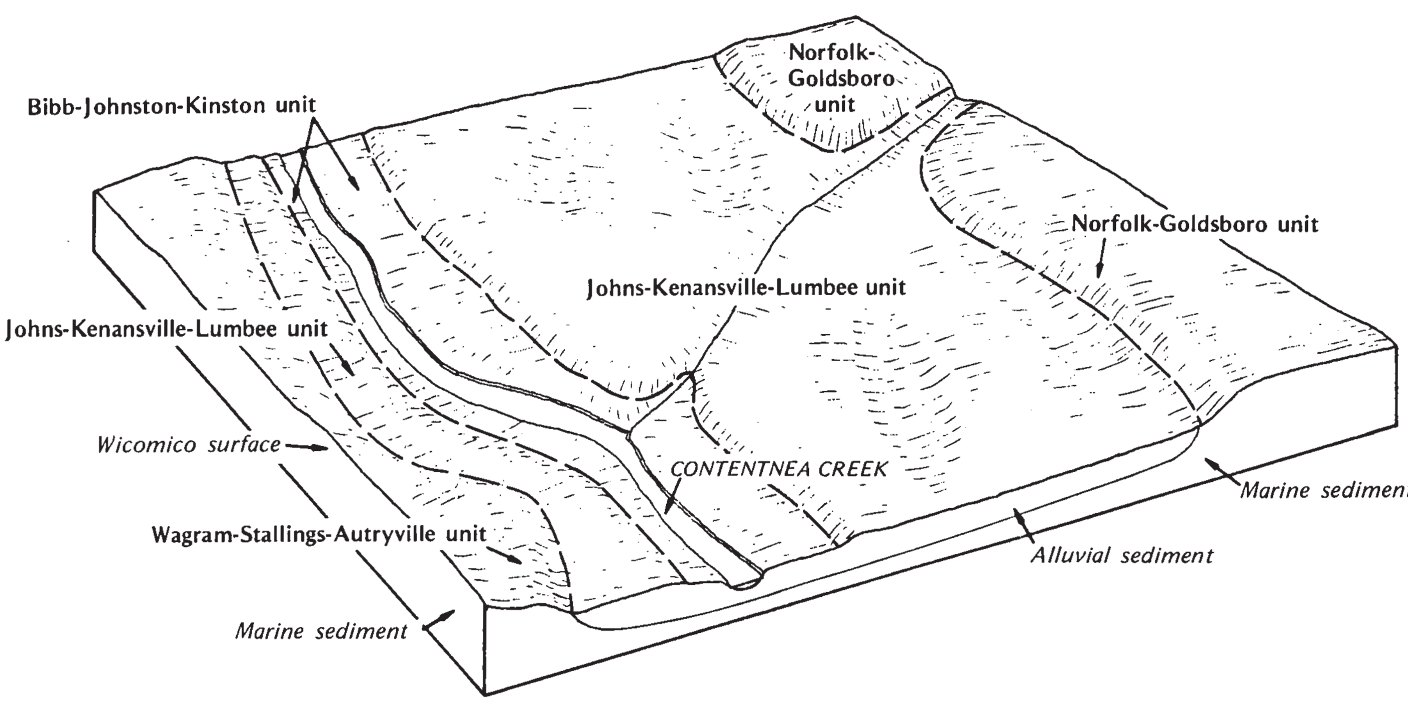

Figure 4.—The Johns-Kenansville-Lumbee unit is on terraces. It is separated from the adjacent units by short side slopes.

The nearly level, somewhat poorly drained to moderately well drained Johns soils are in smooth areas. They have a sandy loam surface layer and a sandy clay loam subsoil.

The nearly level and gently sloping, well drained Kenansville soils are on low ridges and near side slopes. They have a fine sand surface layer and a fine sandy loam subsoil.

The nearly level, poorly drained Lumbee soils are in depressions and on flats. They have a sandy loam surface layer and a sandy clay loam subsoil.

Minor in this unit are the coarser textured Alpin and Pactolus soils in undulating areas, Kalmia soils near some drainageways, and the wetter Paxville soils in low flat areas.

Most of the acreage has been cleared and is used for row crops. Wetness is a limitation on Johns and Lumbee soils. Wind erosion and droughtiness are limitations on Kenansville soils. Practices commonly used for artificial drainage, control of wind erosion, and droughtiness can overcome most of these limitations.

In the major soils of this unit the potential is medium for cultivated crops and recreation, high for woodland, and low for urban uses. Adequate drainage is needed on Johns and Lumbee soils. Windbreaks are needed in large openland areas of Kenansville soils.

6. Aycock-Exum

Nearly level and gently sloping, well drained and moderately well drained soils that have a loamy subsoil; on uplands

Areas of these soils are mainly in the western part of the county. The largest area is in the vicinity of Shines Crossroads. Three other areas are east of Contentnea Creek in the northwestern part of the county. All are smooth, slightly convex, and well dissected by small drainageways. They are about as wide as they are long (fig. 5).

This unit makes up about 11 percent of the county. About 56 percent is Aycock soils, 22 percent Exum soils, and 22 percent soils of minor extent.

The nearly level and gently sloping, well drained Aycock soils are on the sides of divides. They have a very fine sandy loam surface layer and a clay loam subsoil.

The nearly level, moderately well drained Exum soils are near the middle of broad divides. They have a very fine sandy loam surface layer and a clay loam subsoil.

Minor in this unit are the more sloping Gritney and Cowarts soils on short side slopes; the Wagram, Orangeburg, and Norfolk soils in scattered areas near side slopes; the poorly drained Grantham soils in shallow

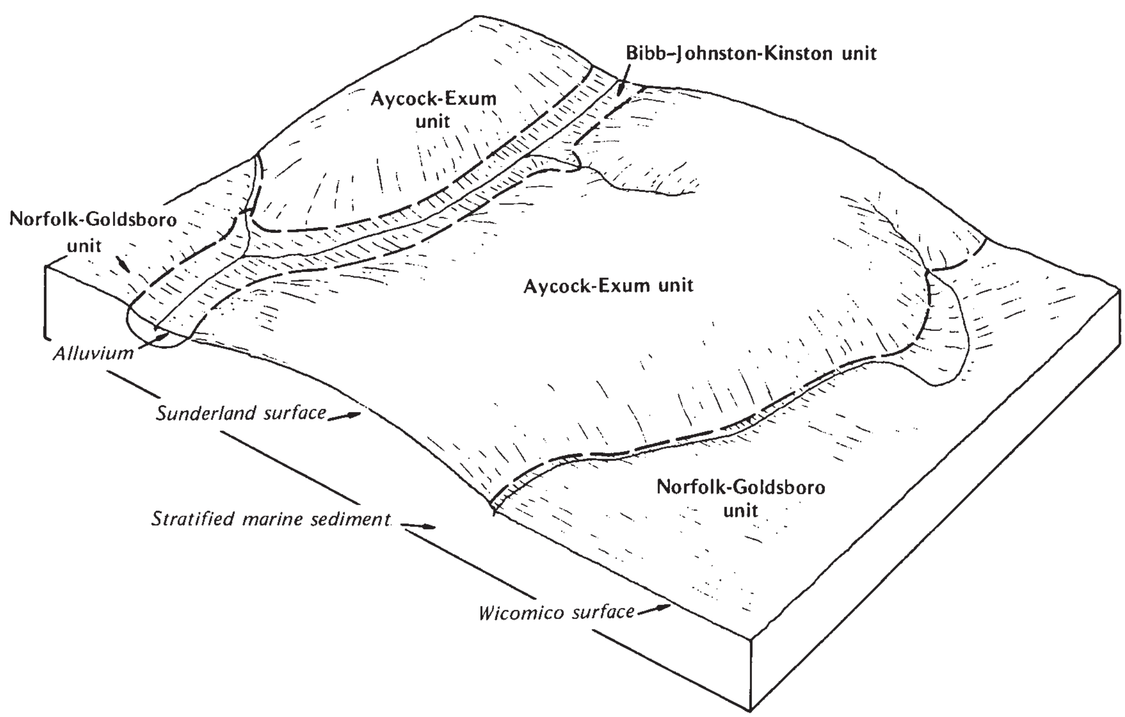

Figure 5.—The Aycock-Exum unit occurs on the more dissected Sunderland surface. The Norfolk-Goldsboro unit occurs on both the Sunderland and the less dissected Wicomico surfaces. These surfaces are separated by gentle slopes ranging from 100 to several hundred feet long.

depressions; the somewhat poorly drained Stallings soils on broad level interstream areas; and the poorly drained Bibb soils in short narrow drainageways.

Most of the acreage has been cleared and is used for row crops. Aycock soils are highly susceptible to erosion. Wetness is a moderate limitation on Exum soils. These limitations can be overcome by practices in common use.

In the major soils of this unit the potential is high for cultivated row crops and for woodland. Erosion is a hazard on the gently sloping Aycock soils, and the seasonal high water table is a limitation on the nearly level Exum soils. The potential is high for most urban and recreation uses, but the low strength and wetness are limitations for a few uses on the Exum soils. The potential is high for openland and woodland wildlife habitat. Many sites are suitable for ponds.

Soil maps for detailed planning

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

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

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil, a brief description of the soil profile, and a listing of the principal hazards and limitations to be considered in planning management.

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Norfolk loamy sand, 2 to 6 percent slopes, is one of several phases in the Norfolk series.

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Autryville-Urban land complex, 0 to 6 percent slopes, is an example.

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

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

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

Soil descriptions

AnB—Alpin fine sand, 1 to 5 percent slopes. This excessively drained soil is on stream terraces. Areas are generally about as broad as they are long and range from 5 acres to about 50 acres.

Typically, the surface layer is brown fine sand about 7 inches thick. The subsurface layer is yellow and very pale brown fine sand about 31 inches thick. The subsoil is very pale brown fine sand 34 inches thick. It has very thin layers of brownish yellow loamy fine sand (fig. 6). The underlying material to a depth of about 80 inches is light gray sand.

Included with this soil in mapping are small areas of Kenansville, Pactolus, and Bibb soils. The well drained Kenansville soils and somewhat poorly drained Pactolus soils are in narrow depressions. The poorly drained Bibb soils are in narrow wet drainageways. The included soils make up 5 to 20 percent of this unit. All have a higher potential for crops than this Alpin soil.

Infiltration is rapid, and surface runoff is slow. Organic matter content is very low in the surface layer. Permeability is very rapid, and available water capacity is very low. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is low for crops. Droughtiness, leaching of plant nutrients, and wind erosion are the main limitations. Addition of plant nutrients, minimum tillage, cover crops, crop residue management, and windbreaks help to control wind erosion and reduce leaching.

The potential is moderately high for loblolly pine. Other native trees are turkey oak, bluejack oak, blackjack oak, and sassafras. Seedling mortality is a limitation. The use of equipment is limited (fig. 7).

Figure 6.—Profile of Alpin fine sand, 1 to 5 percent slopes. The thin subsoil is about 38 inches below the surface.

The potential is high for most urban use. Lawns and shrubs are difficult to establish and maintain because of droughtiness and the leaching of plant nutrients. Irrigating, fertilizing frequently, and adding organic matter increase growth of lawns and shrubs. Seepage and ditchbanks and trench walls that tend to cave are other urban problems. The potential is low for recreation use because the soil is sandy.

The capability subclass is IVs. The woodland group is 3s.

AuB—Autryville fine sand, 0 to 6 percent slopes. This well drained soil is on broad, undulating, and slightly convex divides near large drainageways in the uplands. Areas are irregular in shape and are generally more than 50 acres. A few areas range up to about 750 acres.

Typically, the surface layer is grayish brown fine sand about 8 inches thick. The subsurface layer is pale brown fine sand about 19 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is yellowish brown sandy clay loam and brownish yellow loamy sand, the middle part is very pale brown loamy sand, and the lower part is brownish yellow and light yellowish brown sandy loam.

Included with this soil in mapping are small areas of Stallings and Bibb soils. The somewhat poorly drained Stallings soils are in small shallow depressions. The poorly drained Bibb soils are in narrow wet drainageways. The included soils make up about 10 percent of this unit.

Infiltration is rapid, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderately rapid in the upper part of the subsoil and moderate in the lower part of the subsoil. Available water capacity is low. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is medium for crops. About half the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. Leaching of plant nutrients, droughtiness, and wind erosion are the main limitations. Addition of plant nutrients, minimum tillage, cover crops, crop residue management, and windbreaks help to control wind erosion and reduce leaching.

The potential is moderately high for loblolly and longleaf pine. Other native trees are white oak, red oak, dogwood, sassafras, hickory, sweetgum, and blackgum. Seedling mortality and problems in the use of equipment are the main limitations.

The potential is high for most urban use. Lawns and shrubs are likely to be difficult to establish and maintain because of droughtiness and the leaching of plant nutrients. Irrigating, fertilizing frequently, and adding organic matter increase the growth of lawns and shrubs. Seepage and ditchbanks and trench walls that tend to cave are other urban problems. The potential is medium for recreation use because the soil is sandy.

The capability subclass is IIs. The woodland group is 3s.

AxB—Autryville-Urban land complex, 0 to 6 percent slopes. This unit occurs as broad, slightly convex

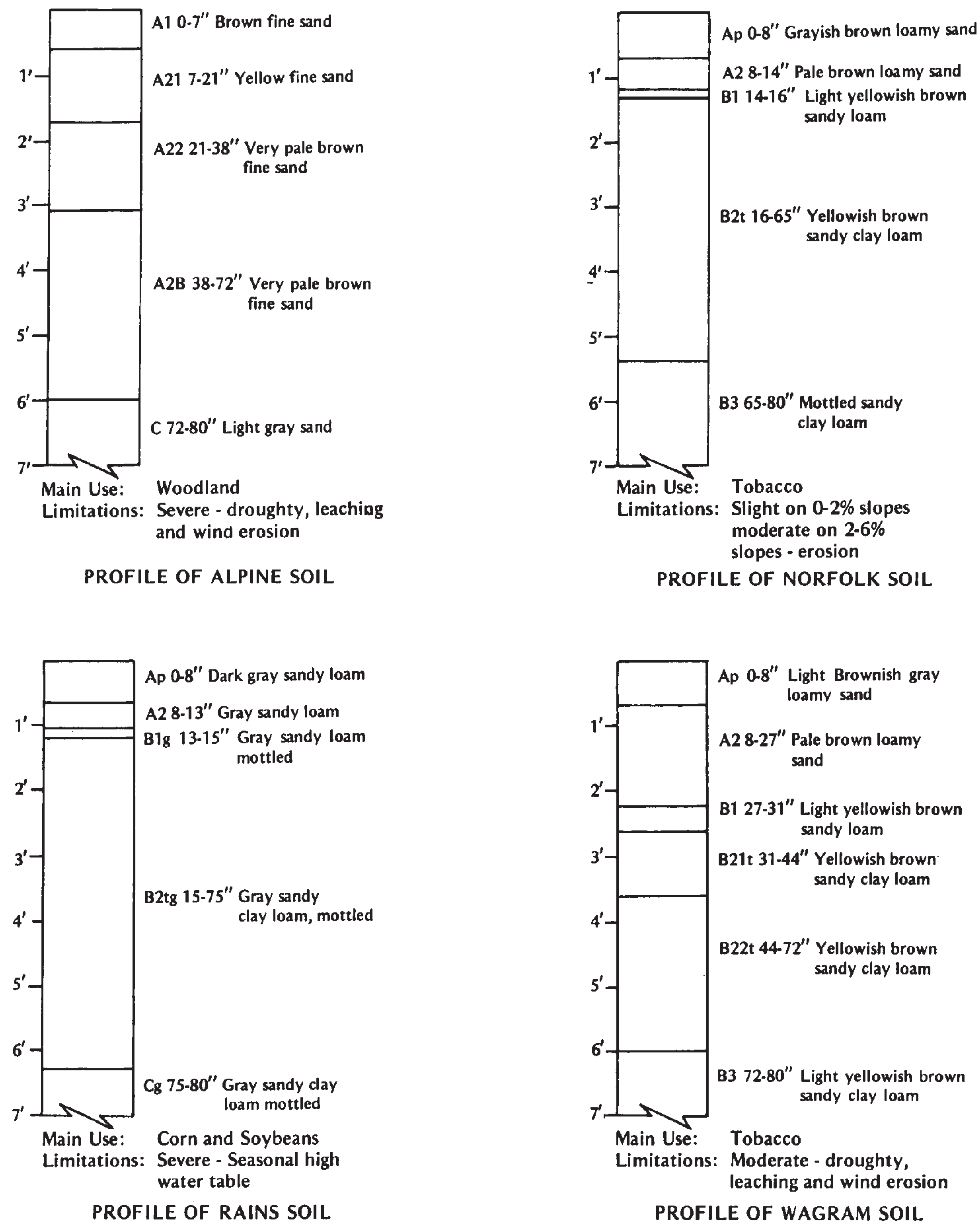

Figure 7.—Soil profile, major use, and limitations of four contrasting soils.

areas on uplands in the towns of Snow Hill and Hookerton. It is 50 to 60 percent well drained Autryville soils and 30 to 35 percent Urban land. Areas of the unit are too intricately mixed to be mapped separately.

Typically, the surface layer of the Autryville soil is grayish brown fine sand about 8 inches thick. The subsurface layer is pale brown fine sand about 19 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is yellowish brown sandy clay loam and brownish yellow loamy sand, the middle part is very pale brown loamy sand, and the lower part is brownish yellow and light yellowish brown sandy loam.

Urban land consists of areas covered with houses, streets, parking lots, driveways, small shopping centers, industrial buildings, schools, churches, and apartment complexes.

Included in this unit are small cut and fill areas where the natural soil has been altered or covered and the slope modified. These areas commonly are adjacent to areas of Urban land where extensive grading and digging is evident. Also included are small areas of Norfolk, Wagram, and Bibb soils.

In undisturbed areas the potential is high for grasses, flowers, vegetables, trees, and shrubs. In disturbed areas it is medium because the surface layer is commonly low in organic matter content and has less favorable physical properties. Erosion generally is not a major concern unless the unit is disturbed and left bare or is used as a watercourse. Surface runoff from rooftops or from paved and other impervious surfaces causes an increased hazard of flooding in low lying areas downslope.

Onsite investigation is needed before use and management is planned.

No capability subclass or woodland group is assigned.

AyB—Aycock very fine sandy loam, 1 to 4 percent slopes. This well drained soil occupies slightly convex divides on uplands. Most areas are in the east-central part of the county between Shines Crossroads and Snow Hill. Areas are irregular in shape and generally range from 5 acres to several hundred acres. One area, however, ranges to about 8,000 acres.

Typically, the surface layer is pale brown very fine sandy loam about 8 inches thick. The subsurface layer is light yellowish brown very fine sandy loam about 4 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow loam, the middle part is yellowish brown and brownish yellow clay loam, and the lower part is yellow loam.

Included with this soil in mapping are some eroded areas where the surface layer is loam and small areas where slopes are slightly more than 4 percent. Also included are small areas of Exum, Gritney, and Bibb soils. The moderately well drained Exum soils are on nearly level divides. The clayey, steeper Gritney soils are on short side slopes. The poorly drained Bibb soils are in narrow wet drainageways. The included soils make up about 25 percent of this unit. The eroded soils have poor tilth.

Infiltration is moderate, and surface runoff is medium. The soil is highly susceptible to erosion by surface runoff. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is high. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. Erosion on gentle slopes is the main limitation. Addition of plant nutrients, minimum tillage, cover crops, grasses and legumes in the cropping system, and contour tillage reduce runoff and help to control erosion.

The potential is high for slash pine and loblolly pine. Other native trees are southern red oak, holly, dogwood, cherry, white oak, and hickory.

The potential is high for most urban use. Low strength is a limitation for local roads and streets. The potential is high for recreation use.

The capability subclass is IIe. The woodland group is 2o.

BB—Bibb loam, frequently flooded. This poorly drained soil is on flood plains. Slopes are 0 to 1 percent. Areas are oblong and commonly are more than 50 acres. The composition of this unit is more variable than that of others in the survey area, but the mapping has been controlled well enough for the expected use and management of the soil.

Typically, the surface layer is 25 inches of brownish loam, fine sandy loam, or sandy loam. The underlying material to a depth of 78 inches is grayish fine sandy loam, loamy sand, or sand.

Included with this soil in mapping are small areas of Johnston soils and some areas of soils that have a thick mucky surface layer. These included soils make up about 20 percent of this unit.

Infiltration is moderate, and surface runoff is very slow. Overflow ponds in depressed areas. Organic matter content is medium in the surface layer. Permeability is moderate. Available water capacity is medium. The seasonal high water table is at or near the surface most of the year. The soil is frequently flooded for brief periods. Unless limed, it is strongly or very strongly acid throughout.

The potential is low for crops. Flooding and wetness are the main limitations. Flood control and artificial drainage to lower the seasonal high water table are needed.

Nearly all the acreage is woodland. The potential is high for loblolly pine, sweetgum, and eastern cottonwood. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, and baldcypress. The use of equipment is limited. Seedling mortality is a limitation.

The potential is very low for urban and recreation use. Wetness and flooding are the major limitations.

The capability subclass is Vw. The woodland group is 2w.

BnB—Blanton sand, 0 to 5 percent slopes. This moderately well drained soil occupies the edges of slightly convex divides on uplands. Areas are about as broad as they are long and range from about 10 acres to more than 20 acres.

Typically, the surface layer is grayish brown sand about 8 inches thick. The subsurface layer is very pale brown sand about 40 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is brownish yellow sandy loam, and the lower part is yellowish brown or light yellowish brown sandy clay loam.

Included with this soil in mapping are small areas of Autryville, Bibb, and Wagram soils. Autryville and Wagram soils are in small intermingled areas. They have a thinner surface layer than this Blanton soil. The poorly drained Bibb soils are in wet narrow drainageways. The included soils make up about 15 percent of this unit.

Infiltration is rapid, and surface runoff is slow. Organic matter content is very low in the surface layer. Permeability is rapid in the thick sandy surface layer and moderate in the subsoil. Available water capacity is very low. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet. A perched water table is at the top of the subsoil for short periods during the wet season.

The potential is low for crops. About half the acreage is in crops. Droughtiness, leaching of plant nutrients, and wind erosion are the main limitations. Addition of plant nutrients, minimum tillage, cover crops, crop residue management, and windbreaks help to control wind erosion and reduce leaching.

The potential is moderately high for loblolly pine, slash pine, and longleaf pine. Other native trees are white oak, red oak, sweetgum, blackgum, dogwood, sassafras, and hickory. The use of equipment is limited. Seedling mortality is a limitation.

The potential is high for most urban use. Seepage and trench banks that tend to cave are the main limitations. Lawns and shrubs are likely to be difficult to establish and maintain because of droughtiness and the leaching of plant nutrients. Irrigating, fertilizing frequently, and adding organic matter increase growth of lawns and shrubs. The potential is low for recreation use because the soil is sandy.

The capability subclass is IIIs. The woodland group is 3s.

CoC2—Cowarts sandy loam, 6 to 12 percent slopes, eroded. This well drained soil occupies short side slopes on uplands. Areas are long and narrow and range from 5 acres to about 25 acres.

Typically, the surface layer is yellowish brown sandy loam about 7 inches thick. The subsoil is 25 inches thick. The upper part is strong brown sandy clay loam, and the lower part is light yellowish brown sandy loam. The underlying material to a depth of 80 inches is yellowish brown sandy loam.

Included with this soil in mapping are areas where slopes are more than 12 percent, small severely eroded areas where the surface layer is sandy clay loam, and large slightly eroded areas of this Cowarts soil where the soil is thicker. Also included are areas where the surface layer is loamy fine sand and large areas of similar soils where the loamy subsoil is thicker and the underlying material is stratified. Small areas of Bibb and Gritney soils are also included. The clayey Gritney soils are in small areas intermingled with this Cowarts soil. The poorly drained Bibb soils are in narrow wet drainageways. The included soils make up from 10 to 30 percent of this unit.

Infiltration is moderate, and surface runoff is rapid. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet most of the time, but it is perched within 3.5 to 5 feet for 2 weeks to a month during wet periods.

The potential is medium for crops, but only about one-fourth the acreage is cultivated. The eroded surface, short slopes, and rapid runoff caused by the steep gradient are the main limitations. Crops that provide close groundcover are needed to control erosion and improve tilth and available water capacity.

The potential is high for loblolly, slash, and longleaf pines. Other native trees are holly, dogwood, white oak, red oak, sweetgum, and blackgum.

The potential is medium for urban use because of the slope, permeability, and downslope seepage. The slope generally can be reduced or modified by special planning, design, or maintenance. Further erosion is a hazard if groundcover is removed. The limiting effect of the moderate permeability on septic tank absorption fields generally can be reduced by modifying the field or by increasing the size of the absorption area, or both. Correcting downslope seepage is difficult in many of the narrow units. The potential is medium for most recreation use because of the slope.

The capability subclass is IVe. The woodland group is 2o.

ExA—Exum very fine sandy loam, 0 to 2 percent slopes. This moderately well drained soil is near the center of the divides on uplands. Areas are wide and irregular in shape and range from 10 acres to about 200 acres.

Typically, the surface layer is grayish brown very fine sandy loam about 8 inches thick. The subsurface layer is pale brown very fine sandy loam about 3 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is light yellowish brown loam, the middle part is light yellowish brown clay loam, and the lower part is gray clay loam.

Included with this soil in mapping are a few small areas of the well drained Aycock soils and somewhat poorly drained Stallings soils. These soils are in small intermingled areas. They make up about 15 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is high. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is 2 to 3 feet below the surface.

The potential is high for crops. Most of the acreage is cultivated, mainly to corn, soybeans, and tobacco. Seasonal wetness is the main limitation. Wetness affects aeration of the plant roots below about 2 feet. Artificial drainage is needed to lower the seasonal high water table and to improve aeration in the lower part of the root zone. Addition of plant nutrients, crop residue management, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, yellow-poplar, sweetgum, and American sycamore. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak. The use of equipment in seasonal wet periods, mainly in winter, is limited.

The potential is medium for most urban use. Seasonal wetness is the main limitation. Low strength is a limitation for local roads and streets. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is high for most recreation use.

The capability subclass is IIw. The woodland group is 2w.

GoA—Goldsboro loamy sand, 0 to 2 percent slopes. This moderately well drained soil is near shallow drainageways in the uplands. Areas are irregular in shape and range from 5 acres to about 100 acres.

Typically, the surface layer is grayish brown loamy sand about 9 inches thick. The subsurface layer is pale brown loamy sand 3 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is light yellowish brown sandy loam, the middle part is yellowish brown and brownish yellow sandy clay loam, and the lower part is light brownish gray sandy clay loam.

Included with this soil in mapping are small areas of the well drained Norfolk soils and the somewhat poorly drained Lynchburg soils. These soils are generally along the outer edge of this unit. Also included are areas where the surface layer is fine sandy loam. The included soils make up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 2 to 3 feet.

The potential is high for crops. Most of the acreage is cultivated crops, mainly corn, soybeans, and tobacco. Seasonal wetness is the main limitation. Wetness affects aeration of the plant roots below about 2 feet. Artificial drainage is needed to lower the seasonal high water table and to improve aeration in the lower part of the root zone. Addition of plant nutrients, crop residue management, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, sweetgum, southern red oak, white oak, yellow-poplar, and American sycamore. Other native species are holly, dogwood, hickory, black cherry, and persimmon. The use of equipment in seasonal wet periods, mainly in winter, is limited.

The potential is medium for most urban use because of wetness. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is high for recreation use.

The capability subclass is IIw. The woodland group is 2w.

Gr—Grantham loam. This poorly drained soil is in shallow depressional areas of the uplands. Slopes are less than 1 percent. Areas are oblong and range from 5 acres to about 10 acres.

Typically, the surface layer is dark gray loam about 9 inches thick. The subsurface layer is gray loam about 3 inches thick. The subsoil is gray loam, silty clay loam, and clay loam 56 inches thick. The underlying material to a depth of 80 inches is gray clay loam.

Included with this soil in mapping are small intermingled areas of a more clayey soil. The included soil makes up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is slow to ponded. Organic matter content is medium in the surface layer. Permeability is moderately slow, and available water capacity is high. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is at or near the surface.

In artificially drained areas, the potential is medium for crops. Only about one-third the acreage is in cultivated crops, mainly corn and soybeans. Seasonal wetness and ponding of surface water are the main limitations. A well planned and constructed drainage system is needed to lower the seasonal high water table and to control surface ponding. Addition of plant nutrients, crop residue management, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment in seasonal wet periods is limited, and seedling mortality is a limitation.

The potential is low for most urban use. Seasonal wetness and permeability are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of permeability and wetness on septic tank absorption fields generally can be overcome by artificial drainage or by increasing the size of the absorption area. The low strength is a limitation for roads and streets. The potential is low for recreation use because of wetness.

The capability subclass is IIIw. The woodland group is 2w.

GyC2—Gritney fine sandy loam, 5 to 12 percent slopes, eroded. This well drained soil occupies short side slopes on uplands. Areas are oblong and range from 5 to 20 acres.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsoil is 47 inches thick. The upper part is strong brown loam, the middle part is strong brown clay, and the lower part is mottled brownish yellow, red, strong brown, and light gray clay loam. The underlying material to a depth of 70 inches is mottled red, strong brown, light gray, and brownish yellow sandy loam.

Included with this soil in mapping are small areas where slopes are more than 12 percent and fairly large areas that are only slightly eroded. Also included are small areas of Bibb and Cowarts soils. The poorly drained Bibb soils are in narrow wet drainageways. The less clayey Cowarts soils are in small areas intermingled with this Gritney soil. The included soils make up 10 to 30 percent of this unit.

Infiltration is slow, and surface runoff is rapid. The soil is highly susceptible to erosion by surface runoff. Organic matter content is low in the surface layer. Permeability is slow, and available water capacity is medium. The shrink-swell potential is high. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below 6 feet most of the time, but it is perched within 2.5 feet of the surface for brief periods.

The potential is medium for crops, but the steep gradient and short slopes limit the use of this soil for farming. Crops that provide close groundcover are needed to control erosion.

The potential is moderately high for loblolly and slash pine. Other native trees are holly, dogwood, white oak, and red oak.

The potential is low for urban use. Slow permeability, low strength, slope, and high shrink-swell potential are the major limitations. The potential is medium for most kinds of recreation because of the slope and sandy surface layer.

The capability subclass is VIe. The woodland group is 3o.

Jo—Johns sandy loam. This somewhat poorly drained to moderately well drained soil is on stream terraces. Slopes range from 0 to 2 percent. Areas are oblong and range from 20 to 80 acres.

Typically, the surface layer is dark gray sandy loam about 8 inches thick. The subsurface layer is pale brown sandy loam 7 inches thick. The subsoil is 22 inches thick. The upper part is pale brown sandy loam, the middle part is light yellowish brown sandy clay loam, and the lower part is gray sandy clay loam. The underlying material to a depth of 60 inches is light gray sand.

Included with this soil in mapping are small intermingled areas of the poorly drained Lumbee soils and the well drained Kalmia soils. The included soils make up about 15 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is 1.5 to 3 feet below the surface.

In artificially drained areas, the potential is medium for crops. Most of the acreage is in cultivated crops, mainly corn, soybeans, and tobacco. Seasonal wetness and ditchbanks that tend to cave are the main limitations. A well planned and constructed drainage system is needed to lower the seasonal high water table. Addition of plant nutrients, crop residue management, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine and slash pine. Other native trees are sweetgum, water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment in seasonal wet periods, mainly in winter, is limited.

The potential is low for most urban use. Seasonal wetness and ditchbanks and trench walls that tend to cave are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is medium for recreation use because of wetness.

The capability subclass is IIw. The woodland group is 2w.

JS—Johnston loam, frequently flooded. This very poorly drained soil is on low flood plains. Slopes are less than 1 percent. Areas are oblong and range from 10 acres to several hundred acres. The composition of this unit is more variable than that of others in the survey area, but the mapping has been controlled well enough for the expected use of the soil.

Typically, the surface layer is 25 inches of grayish or blackish loam, fine sandy loam, or mucky loam. The underlying material to a depth of 76 inches is grayish sandy loam or loamy sand.

Included with this soil in mapping are small areas of muck soils and areas of Bibb soils. The muck soils are in the flatter, ponded areas. Bibb soils are near streams. The included soils make up about 35 percent of this unit.

Infiltration is moderate, and surface runoff is ponded. Organic matter content is high in the surface layer. Permeability is moderately rapid, and available water capacity is high. The soil is very strongly acid or strongly acid throughout. It is frequently flooded, and the seasonal high water table is at or near the surface most of the year.

The potential is low for crops because of flooding and wetness. Flood control and artificial drainage to lower the seasonal high water table are needed.

Nearly all the acreage is woodland. The potential is high for baldcypress, sweetgum, green ash, water tupelo, and water oak. Other native trees are willow oak, red maple, black tupelo, and sweetbay. In drained areas, the potential is high for loblolly pine. The use of equipment is limited, and seedling mortality is a limitation.

The potential is very low for urban and recreation use. Wetness and flooding are the major limitations.

The capability subclass is VIIw. The woodland group is 1w.

KaA—Kalmia loamy sand, 0 to 3 percent slopes. This well drained soil is on slightly convex stream terraces. Areas are oblong and range from 10 to 30 acres.

Typically, the surface layer is grayish brown loamy sand about 8 inches thick. The subsurface layer is pale brown loamy sand about 4 inches thick. The subsoil is 27 inches thick. The upper part is yellowish brown sandy loam, the middle part is yellowish brown sandy clay loam, and the lower part is light yellowish brown sandy loam. The underlying material to a depth of 72 inches is very pale brown sand.

Included with this soil in mapping are small areas of Johns soils and Kenansville soils. The moderately well drained Johns soils are in long narrow depressions. The Kenansville soils are in small intermingled areas on low ridges, and they have a thicker surface layer than this Kalmia soil. Also included are areas where the surface layer is fine sandy loam. The included soils make up about 20 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly corn, tobacco, and soybeans. There are only slight limitations. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, yellow-poplar, and cherrybark oak. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The potential is high for urban use. Seepage and ditchbanks and trench walls that tend to cave are the main limitations. The potential is medium for most recreation use because the soil is sandy.

The capability class is I. The woodland group is 2o.

KeA—Kenansville fine sand, 0 to 3 percent slopes. This well drained soil is on low ridges and undulating stream terraces. Areas are generally broad and long and range from 5 acres to about 50 acres.

Typically, the surface layer is brown fine sand about 8 inches thick. The subsurface layer is light yellowish brown fine sand about 18 inches thick. The subsoil is 17 inches thick. The upper part is yellowish brown fine sandy loam, and the lower part is brownish yellow loamy fine sand. The underlying material to a depth of 80 inches is pale yellow sand.

Included with this soil in mapping are small areas of the sandier Alpin and Pactolus soils and small areas of Kalmia soils. Alpin soils are on small, slightly higher ridges. Pactolus soils are in narrow depressions. Kalmia soils have a thinner surface layer than this Kenansville soil. The included soils make up about 15 percent of this unit.

Infiltration is rapid, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderately rapid, and available water capacity is low. The soil ranges from very strongly acid to medium acid throughout unless the surface layer is limed. The seasonal high water table is below 6 feet.

The potential is medium for crops. Most of the acreage is in cultivated crops, mainly corn, soybeans, and tobacco. Droughtiness, leaching of plant nutrients, and wind erosion are the main limitations. Addition of plant nutrients, minimum tillage, crop residue management, and cover crops help to control wind erosion and reduce leaching.

The potential is moderately high for loblolly, slash, and longleaf pines. Other native trees are white oak, red oak, dogwood, sassafras, and hickory. The use of equipment is limited, and seedling mortality is a limitation.

The potential is high for most urban use. Lawns and shrubs are likely to be difficult to establish and maintain because of droughtiness and the leaching of plant nutrients. Irrigating, fertilizing frequently, and adding organic matter increase the growth of lawns and shrubs. Seepage and ditchbanks and trench walls that tend to cave are limitations in urban use. The potential is medium for recreation use because the soil is sandy.

The capability subclass is IIs. The woodland group is 3s.

KN—Kinston loam, frequently flooded. This poorly drained soil is on low flood plains of Contentnea Creek. Slopes are 0 to 1 percent. Areas are long and irregular in width. They range from 10 acres to several hundred acres. The composition of this unit is more variable than that of others in Greene County, but the mapping has been controlled well enough for the expected use of the soil.

Typically, the surface layer is grayish loam or fine sandy loam 11 inches thick. The underlying material to a depth of 80 inches is grayish clay loam or loam.

Included with this soil in mapping are small areas of Bibb and Johnston soils. The poorly drained Bibb soils are along creek banks. The very poorly drained Johnston soils are along the other edges of this unit near uplands. The included soils make up about 30 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is medium in the surface layer. Permeability is moderate, and available water capacity is high. The seasonal high water table is at or near the surface. Water ponds in low areas. The soil is strongly acid or very strongly acid throughout.

The potential is low for crops because of wetness and flooding. Flood control and artificial drainage to lower the water table are needed.

Most of the acreage is woodland. The potential is very high for loblolly pine, sweetgum, white oak, cherrybark oak, American sycamore, green ash, and eastern cottonwood. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, and baldcypress. The use of equipment is limited, and seedling mortality is a limitation.

The potential is very low for urban and recreation uses. Wetness and flooding are the major limitations.

The capability subclass is VIw. The woodland group is 1w.

Lu—Lumbee sandy loam. This poorly drained soil is in smooth flat areas on stream terraces. Slopes are less than 1 percent. Areas range from about 10 to 100 acres. The larger areas are broad, and the small areas are long and narrow.

Typically, the surface layer is dark gray sandy loam about 8 inches thick. The subsurface layer is gray sandy loam 3 inches thick. The subsoil is 26 inches thick. The upper part is grayish brown sandy clay loam, and the lower part is gray sandy clay loam. The underlying material to a depth of 80 inches is brown loamy sand.

Included with this soil in mapping are Johns and Pactolus soils, which are better drained than this Lumbee soil, and the very poorly drained Paxville soils. Johns and Pactolus soils are on narrow low ridges. Paxville soils are in small areas intermingled with this Lumbee soil. The included soils make up about 15 percent of this unit.

Infiltration is moderate, and surface runoff is slow or ponded. Organic matter content is medium in the surface layer. Permeability is moderate, and available water capacity is medium. The seasonal high water table is at or near the surface. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed.

In artificially drained areas, the potential is medium for crops. About half the acreage is in cultivated crops, mainly corn and soybeans. Seasonal wetness, ponding of surface water, and ditchbanks that tend to cave are the main limitations. A well planned and constructed drainage system is needed to lower the seasonal high water table and to control surface ponding. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, cherrybark oak, white oak, eastern cottonwood, water tupelo, and sweetgum. Other native trees are water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment is limited in seasonal wet periods, and seedling mortality is a limitation.

The potential is low for most urban use. Seasonal wetness and ponding of surface water are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields generally can be overcome by artificial drainage or by increasing the size of the absorption area. Ditchbanks and trench walls that tend to cave are other limitations in urban use. The potential is low for recreation use because of wetness.

The capability subclass is IIIw. The woodland group is 2w.

Ly—Lynchburg sandy loam. This somewhat poorly drained soil is on uplands. Slopes are less than 1 percent. Larger areas of this soil are in interstream areas and range from 50 to about 150 acres. Smaller areas are in shallow depressions of slightly convex divides and are 5 to 10 acres.

Typically, the surface layer is dark grayish brown sandy loam about 9 inches thick. The subsurface layer is pale brown sandy loam 3 inches thick. The subsoil is 54 inches thick. The upper part is light yellowish brown sandy loam, the middle part is light yellowish brown and gray sandy clay loam, and the lower part is light gray sandy clay loam. The underlying material to a depth of 80 inches is gray sandy clay loam.

Included with this soil in mapping are the moderately well drained Goldsboro soils and the poorly drained Rains soils. These soils are generally along the outer edges of this unit. They make up about 5 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil ranges from extremely acid to strongly acid throughout unless the surface layer is limed. The seasonal high water table is 0.5 foot to 1.5 feet below the surface.

In artificially drained areas, the potential is medium for crops. Most of the acreage is in cultivated crops, mainly corn and soybeans. Seasonal wetness is the main limitation. A well planned and constructed drainage system is needed to lower the seasonal high water table. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for slash pine, loblolly pine, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, white oak, redcedar, southern red oak, and yellow-poplar. The use of equipment is limited in seasonal wet periods in winter.

The potential is low for most urban use. Seasonal wetness is the main limitation. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is low for most recreation use because of wetness.

The capability subclass is IIw. The woodland group is 2w.

NoA—Norfolk loamy sand, 0 to 2 percent slopes. This well drained soil occupies slightly convex areas of divides on uplands. Areas are generally wide and irregular in shape and range from 5 acres to about 200 acres.

Typically, the surface layer is grayish brown loamy sand about 8 inches thick. The subsurface layer is pale brown loamy sand 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is light yellowish brown sandy loam, the middle part is yellowish brown sandy clay loam, and the lower part is mottled light gray, yellowish brown, and red sandy clay loam.

Included with this soil in mapping are Goldsboro soils and Wagram soils. The moderately well drained Goldsboro soils are near the more nearly level part of the divides. Wagram soils are near the gently sloping sides of the divides, and they have a thicker surface layer than this Norfolk soil. Also included are some areas where the surface layer is fine sandy loam or sandy loam. The included soils make up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 3.5 to 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. There are only slight limitations to the intensive use of the soil for row crops. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine and slash pine. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The soil has high potential for urban use but has a thin temporary perched water table during periods of high rainfall. The potential is high for most recreation use.

The capability class is I. The woodland group is 2o.

NoB—Norfolk loamy sand, 2 to 6 percent slopes. This well drained soil occupies the sides of divides on uplands. Areas are oblong and range from 5 acres to about 100 acres.

Typically, the surface layer is grayish brown loamy sand about 8 inches thick. The subsurface layer is pale brown loamy sand 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is light yellowish brown sandy loam, the middle part is yellowish brown sandy clay loam, and the lower part is mottled light gray, yellowish brown, and red sandy clay loam.

Included with this soil in mapping are a few small areas of severely eroded soils and small areas of soils that have slopes of more than 6 percent. Also included are areas where the surface layer is fine sandy loam or sandy loam. Also included are areas of Wagram soils and Bibb soils. Wagram soils are in small areas intermingled with this Norfolk soil, and they have a thicker surface layer than this soil. The poorly drained Bibb soils are in narrow, wet drainageways. The included soils make up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is medium. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 3.5 to 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. The surface runoff causes an erosion hazard in gently sloping areas that are used for row crops. Addition of plant nutrients, minimum tillage, cover crops, grasses and legumes in the cropping system, contour cultivation, and crop residue management help to reduce runoff and control erosion.

The potential is high for loblolly pine. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The soil has high potential for urban use but has a thin temporary perched water table during seasonal wet periods. The potential is high for most recreation uses.

The capability subclass is IIe. The woodland group is 2o.

OrA—Orangeburg loamy sand, 0 to 2 percent slopes. This well drained soil is on smooth divides adjacent to large streams, on slightly convex uplands. Areas are irregular in shape and range from 5 acres to about 30 acres.

Typically, the surface layer is dark yellowish brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is strong brown sandy clay loam, and the lower part is red sandy clay loam.

Included with this soil in mapping are small areas of Aycock soils, which are more yellow than this Orangeburg soil, and small areas of Wagram soils, which have a thicker surface layer than this soil. Also included are areas where the surface layer is sandy loam. The included soils make up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. The soil has only slight limitations to intensive use for row crops. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine and slash pine. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The potential is high for most urban and recreation uses.

The capability class is I. The woodland group is 2o.

OrB—Orangeburg loamy sand, 2 to 6 percent slopes. This well drained soil occupies convex divides on the uplands. Areas are oblong and range from 5 acres to about 30 acres.

Typically, the surface layer is dark yellowish brown loamy sand about 6 inches thick. The subsurface layer is yellowish brown loamy sand 6 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is strong brown sandy clay loam, and the lower part is red sandy clay loam.

Included with this soil in mapping are a few small areas of severely eroded soils and small areas where slopes are more than 6 percent. Also included are small areas of Aycock soils, which are more yellow than this Orangeburg soil, and small areas of Wagram soils, which have a thicker surface layer. Areas of these included soils are intermingled with the areas of this soil. In some areas short narrow strips of Bibb soils in wet drainageways are included. The included soils make up about 15 percent of this unit.

Infiltration is moderate, and surface runoff is medium. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is medium. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is high for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. The surface runoff causes an erosion hazard in gently sloping areas used for row crops. Addition of plant nutrients, minimum tillage, cover crops, grasses and legumes in the cropping system, contour cultivation, and crop residue management reduce runoff and help to control erosion.

The potential is high for loblolly pine and slash pine. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The potential is high for most urban and recreation uses.

The capability subclass is IIe. The woodland group is 2o.

Pa—Pactolus fine sand. This moderately well drained to somewhat poorly drained soil is on stream terraces. Slopes range from 0 to 2 percent. Areas are oblong and range from 5 to 20 acres.

Typically, the surface layer is grayish brown fine sand about 8 inches thick. The underlying material extends to a depth of 65 inches. The upper part is pale brown loamy sand, the middle part is light brownish gray sand, and the lower part is light gray sand.

Included with this soil in mapping are small areas of Alpin and Lumbee soils. The excessively drained Alpin soils are on low ridges. The poorly drained Lumbee soils are in small depressions. The included soils make up about 10 percent of this unit.

Infiltration is rapid, and surface runoff is slow. Organic matter content is very low in the surface layer. Permeability is rapid, and available water capacity is low. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is 1.5 to 2.5 feet below the surface.

The potential is low for crops. About half the acreage is in cultivated crops, mainly corn and soybeans. Leaching of plant nutrients, seasonal wetness, and ditchbanks that tend to cave are the main limitations. The low available water capacity is a limitation in dry seasons. Artificial drainage may be needed for some agricultural uses. Addition of plant nutrients, crop residue management, and cover crops help to reduce leaching.

The potential is moderately high for loblolly pine and slash pine. Other native trees are sweetgum, water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment is limited in seasonal wet periods in winter, and seedling mortality is a limitation.

The potential is low for urban use. Seasonal wetness and seepage are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed on building sites. The limiting effects of wetness on septic tank absorption fields can be reduced by artificial drainage or by increasing the size of the absorption area. Ditchbanks and trench walls that tend to cave are another limitation to urban use. The potential is medium for recreation uses because the soil is wet and sandy.

The capability subclass is IIIs. The woodland group is 3w.

Pm—Paxville loam. This very poorly drained soil is on smooth, flat stream terraces. Slopes are less than 1 percent. Areas are long and are irregular in width. They range from 5 to 100 acres.

Typically, the surface layer is 14 inches thick. The upper part is black loam, and the lower part is very dark gray fine sandy loam. The subsoil is 38 inches thick. The upper part is dark gray fine sandy loam, the middle part is gray sandy clay loam, and the lower part is grayish brown sandy loam. The underlying material to a depth of 80 inches is light brownish gray sand.

Included with this soil in mapping are small areas of the poorly drained Lumbee soil. The included soils make up about 20 percent of this unit.

Infiltration is moderate, and surface runoff is slow or ponded. Organic matter content is high in the surface layer. Permeability is moderate, and available water capacity is medium. The seasonal high water table is at or near the surface. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed.

In artificially drained areas, the potential is medium for crops. About one-fourth the acreage is in cultivated crops, mainly corn and soybeans. Seasonal wetness, surface ponding, and ditchbanks that tend to cave are the main limitations. A well planned and constructed drainage system is needed to lower the seasonal high water table and to control surface ponding. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is very high for loblolly pine, pond pine, slash pine, water tupelo, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, and baldcypress. The use of equipment is limited in seasonal wet periods. Seedling mortality is a limitation.

The potential is low for urban and recreation uses. Wetness, surface ponding, and ditchbanks and trench walls that tend to cave are major limitations.

The capability subclass is IIIw. The woodland group is 1w.

Pt—Pits. This unit mainly consists of borrow areas where the soil material was removed and used in the construction of roadbeds. Many of these areas are located adjacent to major highways. Most of the other areas are used for landfill and are so designated on the soil map.

Borrow pits commonly are excavated to a depth of 5 to 15 feet. The soil material on side slopes is comparable to that described for the adjacent soils. The bottom of the pit is commonly loamy, mixed gray, brown, yellow, and red stratified layers. In lower lying terraces, pits contain small areas of ponded water. In higher lying areas, water is ponded only during the seasonal wet periods. Most areas were seeded and are now covered or partly covered with vegetation.

In landfill areas the original soil has been removed and solid waste material placed in alternating layers with the original soil. Most areas have smooth surfaces and are revegetated.

The poor physical properties of the soil material and low organic matter content and moisture supplying capacity are the main limitations in establishing plant cover. Because these areas are so diverse, onsite investigation is needed before use and management are planned.

No capability subclass or woodland group is assigned.

Ra—Rains sandy loam. This poorly drained soil is on uplands. Slopes are less than 1 percent. Areas are generally as broad as they are long and range from 5 acres to several hundred acres. The larger areas are in broad, smooth interstream areas, and the smaller areas are in shallow depressions of slightly convex divides.

Typically, the surface layer is dark gray sandy loam about 8 inches thick. The subsurface layer is gray sandy loam 5 inches thick. The subsoil is 62 inches thick. The upper part is gray sandy loam, and the lower part is gray sandy clay loam. The underlying material to a depth of 80 inches is gray sandy clay loam.

Included with this soil in mapping are the somewhat poorly drained Lynchburg soils and very poorly drained soils that have a thicker, darker surface layer than this Rains soil. Lynchburg soils are along the outer edge of the soils in this map unit. The very poorly drained soils are in small areas intermingled with this Rains soil. The included soils make up about 10 percent of this unit.

Infiltration is moderate, and surface runoff is slow or ponded. Organic matter content is medium in the surface layer. Permeability is moderate, and available water capacity is medium. The seasonal high water table is at or near the surface. It is very strongly acid or strongly acid throughout unless the surface layer is limed.

In artificially drained areas, the potential is medium for crops. About half the acreage is in cultivated crops, mainly corn and soybeans. Seasonal wetness and ponding of surface water are the main limitations. A well planned and constructed drainage system is needed to lower the seasonal high water table and control surface ponding. Addition of plant nutrients, crop residue, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment is limited in seasonal wet periods, and seedling mortality is a limitation.

The potential is low for most urban use. Seasonal wetness and brief periods of surface ponding are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is low for recreation use because of wetness.

The capability subclass is IIIw. The woodland group is 2w.

St—Stallings loamy fine sand. This somewhat poorly drained soil occurs near heads of drainageways in the uplands. Slopes are 0 to 1 percent. Typically the mapped areas are irregular in shape and are less than 50 acres. Two areas range up to about 600 acres.

Typically, the surface layer is dark grayish brown loamy fine sand about 8 inches thick. The subsoil is 60 inches thick. The upper part is pale brown fine sandy loam, the middle part is pale brown and gray sandy loam, and the lower part is gray sandy loam. The underlying material to a depth of 80 inches is gray sandy loam.

Included with this soil in mapping are small areas of poorly drained and moderately well drained soils and some areas where the surface layer is fine sandy loam. The included soils make up about 25 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderately rapid, and available water capacity is medium. The soil ranges from extremely acid to strongly acid throughout unless the surface layer is limed. The seasonal high water table is 1.5 to 2.5 feet below the surface.

In artificially drained areas, potential is medium for crops. About half the acreage is cultivated, mainly corn and soybeans. Seasonal wetness is the main limitation. A well planned and constructed drainage system is needed to lower the seasonal high water table. Ditchbanks that tend to cave are a problem. Addition of plant nutrients, crop residue management, and cover crops should be considered in managing this soil.

The potential is high for loblolly pine, slash pine, yellow-poplar, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment in seasonal wet periods in winter is limited.

The potential is low for most urban use. Seasonal wetness and ditchbanks and trench walls that tend to cave are the main limitations. Surface drainage, tile drainage, and drainage land grading are needed. The limiting effects of wetness on septic tank absorption fields generally can be reduced by artificial drainage or by increasing the size of the absorption area. The potential is medium for recreation use because of wetness.

The capability subclass is IIw. The woodland group is 2w.

WaB—Wagram loamy sand, 0 to 6 percent slopes. This well drained soil occupies the edges of slightly convex divides on uplands. Areas are irregular in shape and range from 10 acres to about 50 acres.

Typically, the surface layer is light brownish gray loamy sand about 8 inches thick. The subsurface layer is pale brown loamy sand about 19 inches thick. The subsoil extends to a depth of 80 inches or more. The upper part is light yellowish brown sandy loam, the middle part is yellowish brown sandy clay loam, and the lower part is light yellowish brown sandy clay loam.

Included with this soil in mapping are small intermingled areas of Norfolk, Orangeburg, and Blanton soils. Norfolk and Orangeburg soils have a thinner surface layer than this Wagram soil. Blanton soils have a thicker and sandier surface layer. Also included in some areas are short, narrow strips of Bibb soils in wet drainageways. The included soils make up from 5 to 15 percent of this unit.

Infiltration is moderate, and surface runoff is slow. Organic matter content is low in the surface layer. Permeability is moderate, and available water capacity is low. The soil is very strongly acid or strongly acid throughout unless the surface layer is limed. The seasonal high water table is below about 6 feet.

The potential is medium for crops. Most of the acreage is in cultivated crops, mainly tobacco, corn, and soybeans. Leaching of plant nutrients, droughtiness, and wind erosion are the main limitations. Addition of plant nutrients, minimum tillage, and cover crops help to control wind erosion and reduce leaching.

The potential is moderately high for loblolly, slash, and longleaf pines. Other native trees are post oak, white oak, red oak, dogwood, sassafras, and hickory. The use of equipment is limited, and seedling mortality is a limitation.

The potential is high for most urban use. Lawns and shrubs are likely to be difficult to establish and maintain because of droughtiness and the leaching of plant nutrients. Irrigating, fertilizing frequently, and adding organic matter increase the growth of lawns and shrubs. The potential is medium for recreation use because the soil is sandy.

The capability subclass is IIw. The woodland group is 3s.

Use and management of the soils

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

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

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

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

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

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

Crops and pasture

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

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

More than 81,864 acres in the survey area was used for crops and pasture in 1976, according to the 1977 Land Utilization Survey by North Carolina Crop and Livestock Reporting Service. Of this total, 2,784 acres was permanent pasture; 78,000 acres row crops, mainly corn, tobacco, and soybeans; 497 acres close-growing crops, mainly wheat and oats double cropped with soybeans; and 300 acres rotation hay and pasture. The rest was idle.

Acreage in crops and pasture has gradually been decreasing as more land is used for urban development. In 1976 about 5,832 acres was urban and built-up land, and this figure is increasing at the rate of about 100 acres per year. The use of this soil survey in making land use decisions that will influence the future role of farming in the survey area is discussed in the section "General soil map for broad land use planning."

Soil erosion is a major concern on about one-third of the cropland and pasture in the county. If slope is more than 2 percent, erosion is a hazard on Orangeburg, Aycock, Norfolk, Cowarts, and Gritney soils.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Gritney soils. Second, soil erosion on farmland results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, recreation, and for fish and wildlife.

In many sloping fields, tilling or preparing a good seedbed is difficult in some areas because the original friable surface layer has eroded away. Such areas are on Cowarts and Gritney soils.

Erosion control practices (fig. 8) provide protective surface cover, reduce runoff, and increase infiltration. Plant cover on the soil for extended periods holds erosion

Figure 8.—Controlling wind and water erosion by small grain strips and contour farming on Wagram loamy sand, 0 to 6 percent slopes.

losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, legume and grass forage crops in the cropping system reduce erosion on the gently sloping and sloping soils, provide nitrogen, and improve tilth for the following crop.

Slopes are so short and irregular that contour tillage or terracing is not practical in most areas of the sloping Cowarts and Gritney soils. On these soils, a cropping system that provides substantial plant cover is needed to control erosion unless minimum tillage is used.

Terraces and diversions reduce the length of slopes and reduce runoff and erosion. They are practical on well drained soils that have regular slopes. Norfolk, Aycock, and Orangeburg soils are suitable for terraces. These soils make up about 24,929 acres of the county. Cowarts and Gritney soils are less suitable for terraces and diversions because of irregular slopes. They make up about 6,370 acres.

Contour tillage and contour stripcropping are widespread erosion control practices in Greene County. They are best adapted to soils that have smooth, uniform slopes, including most areas of the gently sloping Norfolk (fig. 9), Aycock, and Orangeburg soils. Large areas

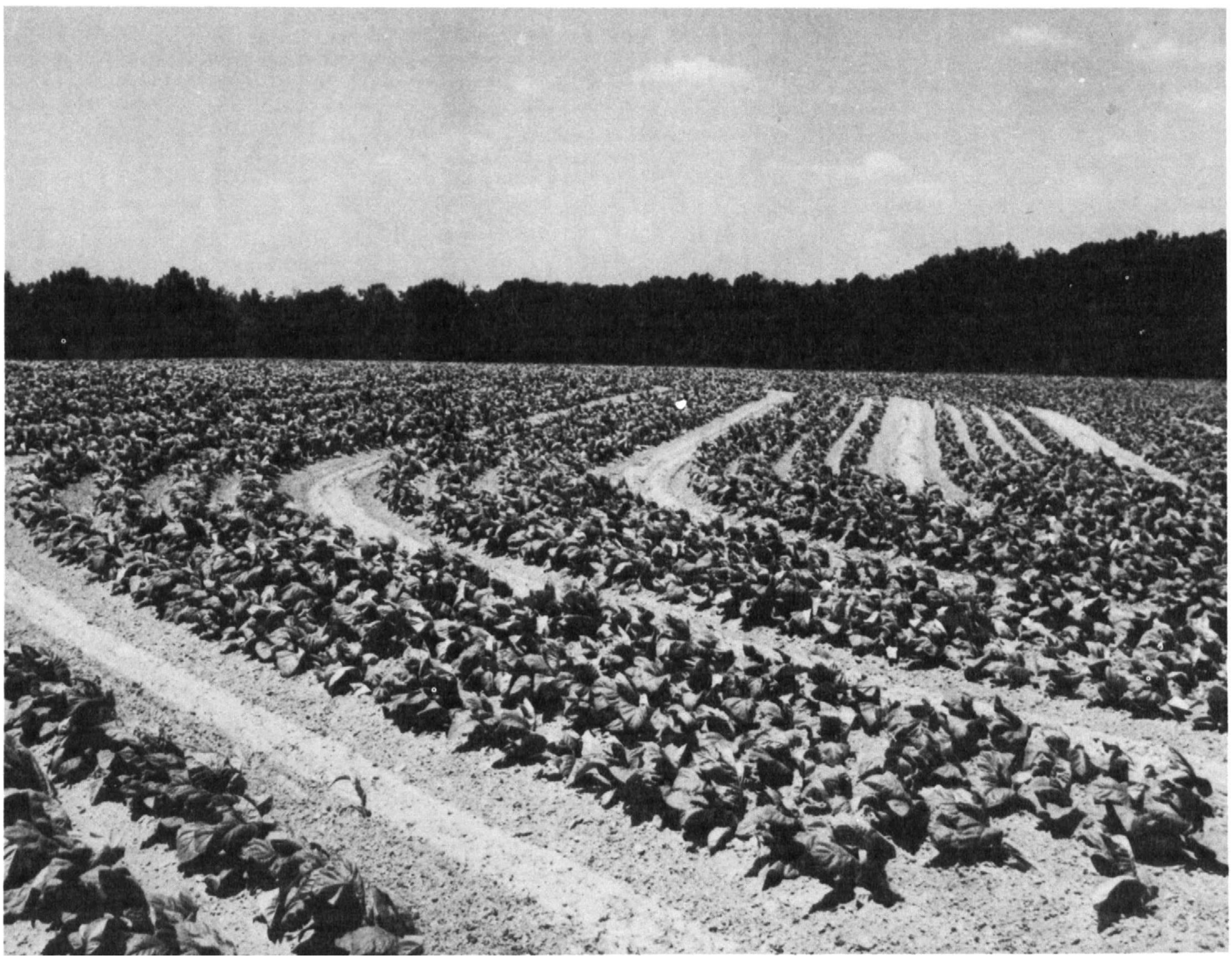

Figure 9.—Parallel broadbase terraces with contour rows on Norfolk loamy sand, 2 to 6 percent slopes. Area drains surface water slowly in grassed waterways at each end of field.

of Wagram soils where slopes are 4 to 6 percent may also need erosion control.

Soil blowing is a hazard on the sandy Wagram, Autryville, Alpin, Kenansville, and Blanton soils. These soils make up 33,396 acres. Soil blowing can damage these soils in a few hours if winds are strong and the soils are dry and bare of plant cover or surface mulch. Maintaining plant cover, surface mulch, or rough surfaces through proper tillage and using windbreak strips of rye or oats about 20 feet apart minimize soil blowing.

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

Soil drainage is the major management need on about two-thirds of the acreage used for crops and pasture in the county. Some soils are so wet that the production of crops common to the area is generally not possible. Examples are the poorly drained and very poorly drained Rains, Lumbee, Grantham, and Paxville soils, which make up about 22,895 acres of the county. Wet soils on flood plains are Bibb, Johnston, and Kinston soils, which make up about 13,944 acres.

Unless artificially drained, the somewhat poorly drained soils are so wet that crops are damaged during most years. Examples are the Johns, Lynchburg, Pactolus, and Stallings soils, which make up about 35,291 acres.

The moderately well drained Exum and Goldsboro soils have good natural drainage most of the year, but they tend to dry out slowly after rains in spring, fall, and winter. These soils make up about 17,388 acres. Artificial drainage is needed in some of the wetter areas for most crops.

The design of both surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most wet areas used for intensive row cropping.

Fertility is naturally low in Greene County. The soils on flood plains, such as Johnston soils formed in recent alluvium and Gritney soils formed on side slopes, are younger and have a slightly higher level of fertility than other soils in the county.

All soils in Greene County are naturally acid. The soils on uplands are strongly acid or very strongly acid in their natural state. If they have never been limed, applications of ground limestone are required to raise the pH level sufficiently for crops. Available nitrogen, phosphorus, and potash levels are naturally low in the soil. On all soils additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in Greene County have a surface layer of loamy sand, sandy loam, or very fine sandy loam that is light in color and low in content of organic matter. Generally the structure of such soils is weak. Intense rainfall causes the surface to crust on the very fine sandy loam. The crust is thin but hard when dry and nearly impervious to water. Once the crust forms, it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material help to improve soil structure of the very fine sandy loam surface layer and reduce crusting.

Fall plowing is generally not a good practice on the light colored soils that have a surface layer of very fine sandy loam because of the crust that forms during winter and spring. Many very fine sandy loams are nearly as dense and hard at planting time after fall plowing as they were before they were plowed. About one-sixth of the cropland consists of gently sloping soils that are subject to damaging erosion if they are plowed in the fall.

The dark colored Rains, Lumbee, and Paxville soils are loamy, and tilth is a concern because these soils often stay wet until late in spring. If they are wet when plowed, they tend to be cloddy when dry and good seedbeds are difficult to prepare. Fall plowing on such wet soils generally results in good tilth in the spring.

Field crops suited to the soils and climate of Greene County include many that are not now commonly grown. Corn, soybeans, and tobacco are the main row crops. Many truck crops, grain sorghum, sunflowers, peanuts, potatoes, yams, and similar crops can be grown if economic conditions are favorable. Wheat, oats, barley, rye, ryegrass, fescuegrass, and coastal bermudagrass are the common close-growing crops.

The well drained soils that have a loamy sand surface layer warm up early in spring. The potential is high for many vegetables and small fruits. In Greene County these soils are the Norfolk, Kalmia, and Orangeburg soils, totalling about 34,000 acres. The potential is also high for vegetables and small fruits on about 30,814 acres of Wagram, Autryville, Kenansville, Blanton, and Alpin soils, if irrigated. Crops can generally be planted and harvested earlier on all of these soils than on the other soils in the survey area.

Most of the well drained soils in Greene County can be used for orchards and nursery plants.

The soils in Greene County that have high potential for crops also have high potential for urban development. The data for specific soils can be used in planning future land use. Potentially productive soils should be considered for farming rather than for nonfarm development.

In some areas the potential is high for farming but low for nonfarm development. These areas are map units 3 and 5 on the general soil map at the back of this publication. In these areas the dominant soils are Rains, Lynchburg, Johns, Kenansville, and Lumbee, all of which are wet and have serious limitations for nonfarm development. Many areas of these soils, however, have been drained and are productive for crops.

On some soils the potential is only medium for farming but generally high for nonfarm development. An example is map unit 2, which is dominated by Wagram, Stallings, and Autryville soils. Good soil drainage and other soil qualities are favorable for residential and other urban areas.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

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

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

Land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account changes in the soil by extensive landforming. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

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

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

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

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

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

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is droughty.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w* or *s* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Soil maps for detailed planning."

Woodland management and productivity

Edwin J. Young, state staff forester, Soil Conservation Service, helped prepare this section.

Originally, all the area that is now Greene County was forested. Commercial forest now covers only 22 percent of the county, or 77,178 acres (*5*). Of this amount, farmers own 52,399 acres, miscellaneous private individuals 24,452 acres, and forest industries 327 acres. There is no publicly owned forest land in the county.

Forest resources contribute to the economy, the environment, and the social well-being of the people of Greene County. Forests provide wood products, scenic beauty, wildlife habitat, opportunities for outdoor recreation and nature study, protection of water quality, control of erosion and sedimentation, and control of noise pollution.

The commercial forest is made up of four forest types. The forest types are: loblolly pine (fig. 10), 14,299 acres; oak-pine, 17,466 acres; oak-hickory, 17,466 acres; and oak-gum-cypress, 27,947 acres. Needle leaf trees are on the uplands and terraces. Broad leaf species are predominantly on the bottom lands along creeks.

The extent of stand-size classes for these forest types is estimated to be 24,779 acres of sawtimber, 34,933 acres of poletimber, and 17,466 acres of sapling-seedling. Net annual growth of all species is estimated to be

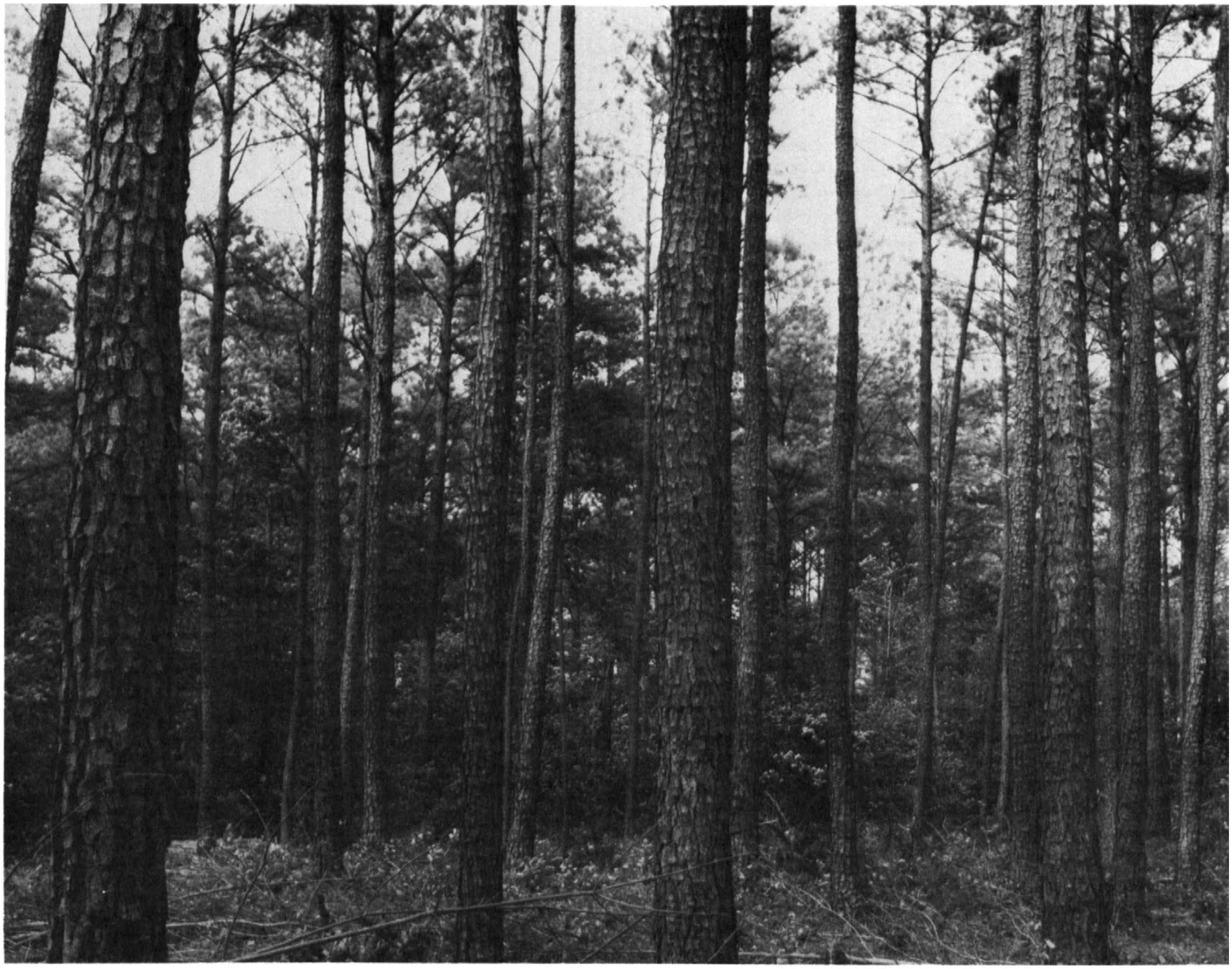

Figure 10.—Stand of loblolly pine that has been thinned on Wagram loamy sand, 0 to 6 percent slopes.

12,305,000 board feet of sawtimber and a total 3,253,000 cubic feet for all growing stock.

The present annual removal from Greene County woodland is 6,236,000 cubic feet of growing stock. Of this amount, 26,195,000 board feet is sawtimber. The rate of timber removal is twice that of annual growth.

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

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

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

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

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

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index was calculated at 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species. It applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Recreation

Rufus Croom, district conservationist, helped prepare this section.

Favorable climate, soil, and topography, abundant wildlife, and adequate water resources provide excellent opportunities for a variety of outdoor recreation developments in Greene County. Hookerton, Walstonburg, and Snow Hill are the only centers of organized recreation in the county.

Greene County has studied and recognized the need to tap its natural resources and develop more recreation facilities for use by its residents. Public and private facilities are planned and implemented according to public demand.

Because knowledge of soils is needed in planning, developing, and maintaining such facilities (fig. 11), the information in this section will be of increasing value. It relates each kind of soil in the county to its suitability for recreation use and development.

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

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

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

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm, and is not dusty when dry. Steep slopes can greatly increase the cost of constructing campsites.

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

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains, and is not dusty when dry.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than

Figure 11.—Impounded pond. The side slope of pond is Cowarts sandy loam, 6 to 12 percent slopes, eroded. The bottom is Bibb loam, frequently flooded.

once a year during the period of use. They have moderate slopes.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, are not subject to prolonged flooding during the period of use, and have moderate slopes. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife habitat

J. P. Edwards, wildlife biologist, Soil Conservation Service, helped prepare this section.

Greene County has a large variety of wildlife habitat and wildlife species. Land use practices and relatively small farms make the area ideally suited to small game species such as quail, rabbit, squirrel, and dove. The principal big game is deer, and the population is increasing. Wetland wildlife habitat is confined largely to farm ponds and Contentnea Creek. Waterfowl, mainly wood duck, and furbearers such as mink, muskrat, and raccoon are abundant throughout the county.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants (fig. 12).

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

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair*

Figure 12.—Wildlife food, bicolor lespedeza, on spoil bank in an area of Lumbee sandy loam.

indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, and clover.

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are the available water capacity and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, dogwood, hickory, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

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

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, and slope. Examples of wetland plants are smartweed, wild millet, rushes, and sedges.

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

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

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

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

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

Engineering

Billy H. Jones, civil engineer, Soil Conservation Service, helped prepare this section.

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

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building site development

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

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

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

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

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary facilities

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

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

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

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

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

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

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

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

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

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

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

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

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

Construction materials

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

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

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

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

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

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 12 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand (no known source of gravel). A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

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

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

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

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

Soils rated *poor* are very sandy or clayey or have less than 20 inches of suitable material.

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

Water management

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

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

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

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

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

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by slope, and the hazard of cutbanks caving. Availability of drainage outlets is not considered in the ratings.

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

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

Soil properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

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

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

Engineering properties and classifications

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

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

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

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

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

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

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

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

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

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

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

Physical and chemical properties

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

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

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

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

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

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

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

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

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

Soil and water features

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

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

The four hydrologic soil groups are:

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

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

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

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

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water trapped in depressions and water in swamps and marshes is not considered flooding.

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

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

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

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

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

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

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

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

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

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

Engineering test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and morphology." The soil samples were tested by the North Carolina Department of Transportation and Highway Safety, Materials and Tests Unit.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification (M-145-73); Unified classification (D-2487-69); Mechanical analysis (T88-57); Liquid limit (T89-60); Plasticity index (T90-56); Moisture density, Method A (T99 -57).

Classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*6*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

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

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, from Udic meaning not wet but in a humid climate).

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

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

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. Norfolk is a series in the fine-loamy, siliceous, thermic Typic Paleudults.

Soil series and morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*4*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Soil maps for detailed planning."

Alpin series

The Alpin series consists of excessively drained soils that formed in coarse textured sediment. These soils are on stream terraces. The slope range is 1 to 5 percent.

Typical pedon of Alpin fine sand, 1 to 5 percent slopes, 1.2 miles west of Scuffleton, 0.8 mile north of intersection of State Road 1337 and N.C. Highway 903, 10 feet east of State Road 1337:

A1—0 to 7 inches; brown (10YR 5/3) fine sand; single grained; loose; common fine roots; strongly acid; clear wavy boundary.

A21—7 to 21 inches; yellow (10YR 7/6) fine sand; single grained; loose; common fine roots, very strongly acid; gradual wavy boundary.

A22—21 to 38 inches; very pale brown (10YR 7/3) fine sand; single grained; loose; common fine roots in upper part; very strongly acid; clear wavy boundary.

A2&B—38 to 72 inches; very pale brown (10YR 7/3) fine sand; single grained; loose; common medium distinct bodies of clean sand; few of brownish yellow (10YR 6/8) loamy fine sand; discontinuous lamellae about 0.2 to 2 cm thick; very strongly acid; gradual wavy boundary.

C—72 to 80 inches; light gray (10YR 7/2) sand; common fine faint white and yellow mottles; single grained; loose; very strongly acid; gradual wavy boundary.

Alpin soils have sandy horizons 80 inches or more thick. They have lamellae between depths of 32 and 56 inches. The lamellae have a cumulative thickness of 1 to 6 inches. Unless limed, these soils are very strongly acid or strongly acid.

The Ap and A1 horizons have hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 6.

The B part of the A2&B horizon has hue of 10YR and 7.5YR, value of 5 or 7, and chroma of 6 or 8. It is loamy fine sand, loamy sand, or sandy loam. Lamellae range from 1/4 inch to 3 inches thick. They are separated by an A2 horizon 1 inch to 8 inches thick. Most of the sand grains in the B part are coated and weakly bridged with clay.

The C horizon has hue of 10YR, value of 7 to 8, and chroma of 2 or 3. It is sand or fine sand.

Autryville series

The Autryville series consists of well drained soils that formed in moderately coarse sediment. These soils are on uplands. The slope range is 0 to 6 percent.

Typical pedon of Autryville fine sand, 0 to 6 percent slopes, 2.7 miles south of Snow Hill, 0.2 mile northwest of the intersection of State Road 1002 and State Road 1149, and 0.2 mile south of State Road 1002:

Ap—0 to 8 inches; grayish brown (10YR 5/2) fine sand; weak medium granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.

A2—8 to 27 inches; pale brown (10YR 6/3) fine sand; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B2t—27 to 38 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B3—38 to 42 inches; brownish yellow (10YR 6/6) loamy sand and pockets of sandy loam; weak medium granular structure; very friable; strongly acid; clear wavy boundary.

A'2—42 to 54 inches; very pale brown (10YR 7/4) loamy sand; few medium faint light gray (10YR 7/2) mottles; weak medium granular structure; very friable; strongly acid; clear wavy boundary.

B'2t—54 to 64 inches; brownish yellow (10YR 6/6) sandy loam; few fine faint yellowish brown mottles; weak medium subangular blocky structure; very friable; sand grains are coated and bridged with clay; very strongly acid; gradual wavy boundary.

B'3—64 to 80 inches; light yellowish brown (10YR 6/4) sandy loam; common coarse distinct pale brown (10YR 6/3) and dark brown (7.5YR 4/2) mottles and few medium distinct white (N 8/0) mottles; weak medium subangular blocky structure; very friable; very strongly acid.

Autryville soils have bisequal sandy and loamy horizons more than 60 inches thick. Unless limed, they are very strongly acid or strongly acid throughout.

The Ap or A1 horizon has hue of 10YR, value of 5, and chroma of 1 to 3. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam or sandy loam. The B3 horizon is similar in color to the Bt horizon, but it is loamy sand or sandy loam.

The A'2 horizon has hue of 10YR or 2.5Y, value of 6 to 8, and chroma of 2 to 4. It is loamy sand or sand.

The B't horizon has hue of 10YR or 7.5YR, value of 6 to 8, and chroma of 2 to 8. It ranges from sandy loam to sandy clay loam.

Aycock series

The Aycock series consists of well drained soils that formed in medium textured sediment. These soils are on uplands. The slope range is 1 to 4 percent.

Typical pedon of Aycock very fine sandy loam, 1 to 4 percent slopes, 8 miles west of Snow Hill, 0.1 mile north of intersection of U.S. Highway 13 and State Road 1200, 50 feet west of State Road 1200:

Ap—0 to 8 inches; pale brown (10YR 6/3) very fine sandy loam; weak medium granular structure; very friable; many fine roots; many fine pores; slightly acid; clear smooth boundary.

A2—8 to 12 inches; light yellowish brown (10YR 6/4) very fine sandy loam; weak medium granular structure; very friable; many fine roots; many fine pores; few pores filled with grayish brown very fine sandy loam; slightly acid; clear wavy boundary.

B1—12 to 15 inches; brownish yellow (10YR 6/6) loam; few fine faint pale brown mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine roots; many fine pores; few pores filled with grayish brown very fine sandy loam; slightly acid; clear wavy boundary.

B21t—15 to 35 inches; yellowish brown (10YR 5/8) clay loam; weak fine subangular blocky structure; friable, sticky and slightly plastic; many fine roots; common fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—35 to 50 inches; yellowish brown (10YR 5/8) clay loam, few fine faint strong brown and few medium faint very pale brown (10YR 7/4) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; common fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—50 to 65 inches; brownish yellow (10YR 6/6) clay loam; few medium distinct light gray (10YR 7/1) and few medium prominent red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3—65 to 80 inches; yellow (10YR 7/6) loam and few thin strata of clay loam; common medium distinct light gray (10YR 7/1) and few fine prominent red mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid.

Aycock soils have fine-silty horizons 65 inches to more than 80 inches thick over stratified sediment. Unless limed, they are very strongly acid throughout.

The A1 or Ap horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. Some pedons have an A2 horizon. This horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 6. These horizons are clay loam or loam.

Bibb series

The Bibb series consists of poorly drained soils that formed in moderately coarse textured recent alluvium. These soils are on flood plains. The slope range is 0 to 1 percent.

Typical pedon of Bibb loam in an area of Bibb loam, frequently flooded, 1.9 miles northwest of Fourway, 0.1 mile east of intersection of State Road 1401 and State Road 1404, and 100 feet north of bridge on State Road 1401:

A11—0 to 6 inches; grayish brown (10YR 5/2) loam; weak medium granular structure; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

A12g—6 to 25 inches; grayish brown (10YR 5/2) fine sandy loam; few medium faint dark gray (10YR 4/1) mottles; weak medium granular structure; very friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

C1g—25 to 35 inches; gray (10YR 5/1) fine sandy loam; few fine faint dark yellowish brown mottles; massive; friable; strongly acid; gradual wavy boundary.

C2g—35 to 60 inches; gray (10YR 6/1) loamy sand thinly stratified with sandy loam; few medium faint light gray (10YR 7/1) and yellowish brown (10YR 5/8) mottles; single grained; very friable; strongly acid; clear wavy boundary.

C3g—60 to 78 inches; gray (10YR 6/1) sand thinly stratified with sandy clay loam; single grained; very friable; strongly acid.

Bibb soils are very strongly acid or strongly acid in the 10- to 40-inch control section.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The C horizon has hue of 10YR, value of 3 to 7, and chroma of 1 or 2. It is fine sandy loam, sand, loamy sand, or loam and thin coarser or finer textured layers.

Blanton series

The Blanton series consists of moderately well drained soils that formed in moderately coarse textured sediment. These soils are on uplands. The slope range is 0 to 5 percent.

Typical pedon of Blanton sand, 0 to 5 percent slopes, 7.5 miles northwest of Snow Hill, 0.1 mile southeast of intersection of State Road 1058 and State Road 1252, 50 feet west of State Road 1252:

Ap—0 to 8 inches; grayish brown (10YR 5/2) sand; single grained; loose; few fine roots; medium acid; abrupt smooth boundary.
A2—8 to 48 inches; very pale brown (10YR 7/3) sand; single grained; loose; few fine roots in upper part; strongly acid; gradual wavy boundary.
B1—48 to 51 inches; brownish yellow (10YR 6/6) sandy loam; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; strongly acid; clear wavy boundary.
B21t—51 to 60 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium faint strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B22t—60 to 80 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct light gray (10YR 6/1) and yellowish red (5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; few soft plinthite nodules; very strongly acid.

Blanton soils have sandy horizons 40 to 66 inches thick over a loamy textured Bt horizon. Unless limed, they are very strongly acid or strongly acid.

The A1 or Ap horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 6 to 8, and chroma of 2 to 6.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8. It is sandy loam or sandy clay loam.

Cowarts series

The Cowarts series consists of well drained soils that formed in moderately fine textured sediment. These soils are on uplands. The slope range is 6 to 12 percent.

Typical pedon of Cowarts sandy loam, 6 to 12 percent slopes, eroded, 0.8 mile south of Maury, 1.0 mile east of the intersection of N.C. Highway 123 and State Road 1402, in a roadcut on the south side of the road:

Ap—0 to 7 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; very friable; common fine roots; many fine and medium pores; medium acid; clear smooth boundary.
B21t—7 to 12 inches; strong brown (7.5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; many fine and medium pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.
B22t—12 to 20 inches; strong brown (7.5YR 5/8) sandy clay loam; few medium distinct pale brown (10YR 6/3) and red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; many fine and medium pores; thin clay films on faces of peds; strongly acid; gradual wavy boundary.
B3—20 to 32 inches; light yellowish brown (10YR 6/4) sandy loam; few medium distinct very pale brown (10YR 7/3), common medium distinct red (2.5YR 4/8), and few medium faint strong brown (7.5YR 5/8) mottles; weak medium angular blocky structure; friable, slightly sticky and slightly plastic; thin clay films on faces of peds; very strongly acid; gradual wavy boundary.
C—32 to 80 inches; yellowish brown (10YR 5/6) sandy loam stratified with loamy sand; common coarse prominent light gray (10YR 6/1) and red (2.5YR 4/8) and common medium distinct strong brown (7.5YR 5/8) mottles; massive; friable, slightly sticky and slightly plastic; thick clay coatings in cracks; very strongly acid.

Cowarts soils have loamy horizons 30 to 40 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The B3 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. These horizons are sandy loam, sandy clay loam, or loamy sand.

The C horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 1 to 8. It is sandy loam, loamy sand, sandy clay loam, or clay loam.

Exum series

The Exum series consists of moderately well drained soils that formed in medium textured sediment. These soils are on uplands. The slope range is 0 to 2 percent.

Typical pedon of Exum very fine sandy loam, 0 to 2 percent slopes, 0.7 mile north of Shine, 0.2 mile northeast of intersection of State Road 1210 and State Road 1209, 50 feet south of State Road 1209:

Ap—0 to 8 inches; grayish brown (10YR 5/2) very fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.
A2—8 to 11 inches; pale brown (10YR 6/3) very fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.
B1—11 to 14 inches; light yellowish brown (10YR 6/4) loam; weak fine subangular blocky structure; friable; common fine roots; many fine pores; slightly acid; clear wavy boundary.

B21t—14 to 24 inches; light yellowish brown (10YR 6/4) clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; many fine pores; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—24 to 50 inches; light yellowish brown (10YR 6/4) clay loam; common medium distinct strong brown (7.5YR 5/6) and few medium distinct light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B33g—50 to 80 inches; gray (10YR 6/1) clay loam with few lenses of loam; common coarse distinct yellowish brown (10YR 5/8) and few medium prominent red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid.

Exum soils have fine-silty horizons 66 inches to more than 80 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap and A1 horizons have hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 8. Gray mottles are within 30 inches of the surface. Some pedons have a B3 horizon. This horizon has hue of 10YR, value of 6 or 7, and chroma of 1 to 3. The B horizon is loam or clay loam.

Goldsboro series

The Goldsboro series consists of moderately well drained soils that formed in moderately fine textured sediment. These soils are on uplands. The slope range is 0 to 2 percent.

Typical pedon of Goldsboro loamy sand, 0 to 2 percent slopes, 1 mile southwest of Hookerton, 50 feet southwest of intersection of N.C. Highway 123 and State Road 1434:

Ap—0 to 9 inches; grayish brown (10YR 5/2) loamy sand; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt wavy boundary.

A2—9 to 12 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

B1—12 to 15 inches; light yellowish brown (10YR 6/4) sandy loam; few medium faint yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; very friable; many fine roots; many fine pores; very strongly acid; clear wavy boundary.

B21t—15 to 23 inches; yellowish brown (10YR 5/8) sandy clay loam; few fine faint strong brown mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t—23 to 40 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct gray (10YR 6/1) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

B23t—40 to 62 inches; brownish yellow (10YR 6/6) sandy clay loam and sandy clay pockets; common fine prominent red (2.5YR 5/8), common coarse distinct strong brown (7.5YR 5/8), and many coarse distinct gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—62 to 80 inches; light brownish gray (10YR 6/2) sandy clay loam; common fine faint brownish yellow mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid.

Goldsboro soils have a sandy Ap horizon and a fine-loamy Bt horizon 62 inches to more than 80 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. Gray mottles are within 20 to 30 inches of the surface. The Bt horizon is sandy clay loam or sandy loam. The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

Grantham series

The Grantham series consists of poorly drained soils that formed in medium textured sediment. These soils are on uplands. Slopes are less than 1 percent.

Typical pedon of Grantham loam, 1.3 miles northeast of Shine, 0.2 mile north of the intersection of State Road 1204 and State Road 1208, 180 feet east of State Road 1208:

Ap—0 to 9 inches; dark gray (10YR 4/1) loam; weak medium granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

A2—9 to 12 inches; gray (10YR 6/1) loam; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

Blg—12 to 18 inches; gray (10YR 6/1) loam; few medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; common fine roots; many fine pores; very strongly acid; gradual wavy boundary.

B21tg—18 to 35 inches; gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—35 to 49 inches; gray (10YR 6/1) clay loam; few medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—49 to 68 inches; gray (10YR 6/1) clay loam; common medium distinct yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) and common medium faint light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—68 to 80 inches; gray (10YR 6/1) clay loam stratified with loam; few medium distinct reddish gray (5YR 5/2), yellowish red (5YR 4/8), and strong brown (7.5YR 5/8) mottles; massive; firm, slightly sticky and slightly plastic; very strongly acid.

Grantham soils have fine-silty horizons 60 inches to more than 80 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The B horizon is loam, clay loam, or silty clay loam.

The C horizon is similar in color to the B horizon. It is stratified loam and clay loam.

Gritney series

The Gritney series consists of well drained soils that formed in fine textured sediment. These soils are on uplands. The slope range is 5 to 12 percent.

Typical pedon of Gritney fine sandy loam, 5 to 12 percent slopes, 3.7 miles southwest of Appie, 0.5 mile north of the intersection of State Road 1232 and State Road 1231, in a roadcut on the west side of State Road 1231:

Ap—0 to 6 inches; brown (10YR 5/3) fine sandy loam; weak medium granular structure; very friable; common fine roots; very strongly acid; abrupt clear boundary.

B1—6 to 12 inches; strong brown (7.5YR 5/6) loam; weak fine subangular blocky structure; very friable; common fine roots; very strongly acid; gradual wavy boundary.

B21t—12 to 20 inches; strong brown (7.5YR 5/6) clay; common fine distinct pale brown, few medium distinct reddish yellow (5YR 6/8), and few medium prominent red (10R 4/8) mottles; moderate fine angular blocky structure; firm, sticky and plastic; few fine roots; thick clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—20 to 53 inches; mottled brownish yellow (10YR 6/6), red (10R 4/8), strong brown (7.5YR 5/6), and light gray (N 7/0) clay loam; weak fine angular blocky structure; firm, sticky and plastic; thick clay films in cracks; very strongly acid; gradual wavy boundary.

C—53 to 70 inches; mottled red (2.5YR 5/8), strong brown (7.5YR 5/6), light gray (N 7/0), and brownish yellow (10YR 6/6) sandy loam stratified with sandy clay loam and loamy sand; massive; friable; very strongly acid.

Gritney soils have a loamy Ap horizon and a clayey Bt horizon 40 to 53 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3.

The B2t horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The B3 horizon is similar in color to the B2t horizon or is mottled in shades of gray, brown, or red. The B horizon is clay loam or clay.

The C horizon is mottled in shades of red, brown, gray, or yellow. It is sandy loam stratified with sandy clay loam and loamy sand.

Johns series

The Johns series consists of moderately well drained or somewhat poorly drained soils that formed in moderately fine textured sediment. These soils are on stream terraces. The slope range is 0 to 2 percent.

Typical pedon of Johns sandy loam, 2.6 miles north of Hookerton, 0.l mile northeast of intersection of State Road 1400 and State Road 1417, 50 feet west of State Road 1417:

Ap—0 to 8 inches; dark gray (10YR 4/1) sandy loam; weak medium granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

A2—8 to 15 inches; pale brown (10YR 6/3) sandy loam; weak medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.

B1—15 to 20 inches; pale brown (10YR 6/3) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; very strongly acid; gradual wavy boundary.

B2t—20 to 28 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct gray (10YR 6/1) and yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—28 to 37 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid; gradual wavy boundary.

IICg—37 to 60 inches; light gray (10YR 7/2) sand; single grained; loose; pockets of light brownish gray loamy sand; strongly acid.

Johns soils have loamy horizons 35 to 40 inches thick over sandy stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. The B horizon is sandy clay loam or sandy loam.

The IIC horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. It is sand or loamy sand.

Johnston series

The Johnston series consists of very poorly drained soils that formed in moderately coarse textured recent alluvium. These soils are on low flood plains. Slopes are less than 1 percent.

Typical pedon of Johnston loam, frequently flooded, 4 miles north of Shine, 0.6 mile east of intersection of State Road 1201 and State Road 1058, 230 feet south of State Road 1058 on south side of stream:

A11—0 to 7 inches; very dark gray (10YR 3/1) loam; weak and moderate medium granular structure; friable; many roots; many fine pores; very strongly acid; clear smooth boundary.

A12—7 to 25 inches; black (10YR 2/1) loam; weak medium granular structure; friable; many roots; few fine pores; very strongly acid; gradual irregular boundary.

AC—25 to 44 inches; dark gray (10YR 4/1) sandy loam; massive; very friable, slightly sticky and slightly plastic; very strongly acid; clear wavy boundary.

Cg—44 to 76 inches; gray (10YR 6/1) loamy sand and lenses of clean sand thinly stratified with very dark gray (10YR 3/1) loamy sand; single grained; loose; very strongly acid.

The Johnston soils are very strongly acid or strongly acid throughout.

The A horizon is 8 to 20 percent organic matter. It has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The AC horizon has hue of 10YR, value of 4, and chroma of 1 or 2. It is sandy loam or loamy sand.

The C horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. It has strata ranging from sand to loam or sandy clay loam.

Kalmia series

The Kalmia series consists of well drained soils that formed in moderately fine textured sediment. These soils are on stream terraces. The slope range is 0 to 3 percent.

Typical pedon of Kalmia loamy sand, 0 to 3 percent slopes, 2.5 miles northeast of Hookerton, 0.2 mile southeast of intersection of State Road 1400 and State Road 1404, and 50 feet north of State Road 1400:

Ap—0 to 8 inches; grayish brown (10YR 5/2) loamy sand, weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

A2—8 to 12 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.

B1—12 to 16 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; friable; common fine roots; strongly acid; gradual wavy boundary.

B2t—16 to 35 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3—35 to 39 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

IIC—39 to 72 inches; very pale brown (10YR 7/3) sand; few medium faint light gray (10YR 7/2) and light yellowish brown (10YR 6/4) mottles; single grained; loose; about 20 percent of the sand grains are coarse; very strongly acid.

Kalmia soils have a sandy A horizon and a loamy Bt horizon 26 to 40 inches thick over sandy stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam and is 20 to 35 percent clay. The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. It is sandy loam or loamy sand.

The IIC horizon is sand or loamy sand.

Kenansville series

The Kenansville series consists of well drained soils that formed in moderately coarse textured sediment. These soils are on stream terraces. The slope range is 0 to 3 percent.

Typical pedon of Kenansville fine sand, 0 to 3 percent slopes, 1.4 miles east of Fourway, 0.25 mile northeast of the intersection of State Road 1400 and State Road 1411, 500 feet northwest of State Road 1400:

Ap—0 to 8 inches; brown (10YR 5/3) fine sand; weak medium granular structure; very friable; common fine roots; medium acid; abrupt smooth boundary.

A2—8 to 26 inches; light yellowish brown (10YR 6/4) fine sand; weak medium granular structure; very friable; few fine roots; strongly acid; gradual wavy boundary.

B2t—26 to 39 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine subangular blocky structure; very friable; few fine roots; clay coating and bridging sand grains; very strongly acid; gradual wavy boundary.

B3—39 to 43 inches; brownish yellow (10YR 6/6) loamy fine sand; weak medium granular structure; very friable; clay coating on sand grains; very strongly acid; clear wavy boundary.

C—43 to 80 inches; pale yellow (2.5Y 7/4) sand; few coarse faint white (10YR 8/2) mottles; single grained; loose; very strongly acid.

Kenansville soils have a sandy A horizon 20 to 30 inches thick over a loamy Bt horizon that extends to a depth of 40 to 56 inches over stratified sandy sediment. Unless limed, the soils range from very strongly acid to medium acid.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is fine sandy loam or sandy loam.

The C horizon is loamy sand or sand.

Kinston series

The Kinston series consists of poorly drained soils that formed in moderately fine textured recent alluvium. These soils are on flood plains. Slopes are less than 1 percent.

Typical pedon of Kinston loam, frequently flooded, 4.8 miles southwest of Walstonburg, 2.8 miles east of the intersection of N.C. Highway 58 and State Road 1225, 300 feet west of the bridge over Contentnea Creek on the south side of State Road 1225:

A11—0 to 5 inches; dark gray (10YR 4/1) loam; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

A12g—5 to 11 inches; gray (10YR 5/1) loam; few fine distinct yellowish brown mottles; weak medium granular structure; friable; common fine roots; very strongly acid; clear wavy boundary.

C1g—11 to 40 inches; gray (10YR 6/1) clay loam; many medium prominent strong brown (7.5YR 5/8) mottles; massive in places, parting to weak medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; very strongly acid; gradual wavy boundary.

C2g—40 to 55 inches; gray (10YR 6/1) clay loam and few fine strata of sandy loam; many coarse prominent strong brown (7.5YR 5/8) mottles; massive; friable, slightly sticky and slightly plastic; few fine flakes of mica; very strongly acid; gradual wavy boundary.

C3g—55 to 80 inches; gray (N 6/0) loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable, slightly sticky and slightly plastic; few fine flakes of mica; very strongly acid.

Unless limed, Kinston soils are very strongly acid or strongly acid.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2.

The C horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sandy clay loam, loam, or clay loam. In some pedons, it is stratified in some combination of these textures.

Lumbee series

The Lumbee series consists of poorly drained soils that formed in moderately fine textured sediment. These soils are on stream terraces. Slopes are less than 1 percent.

Typical pedon of Lumbee sandy loam, 8.5 miles northwest of Snow Hill, 0.5 mile north of intersection of State Road 1058 and State Road 1201, 200 feet northwest of intersection of State Road 1253 and State Road 1058:

Ap—0 to 8 inches; dark gray (10YR 4/1) sandy loam; weak medium granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.

A2—8 to 11 inches; gray (10YR 5/1) sandy loam; weak medium granular structure; very friable; few fine roots; common root channels filled with dark gray sandy loam; very strongly acid; clear wavy boundary.

B1g—11 to 15 inches; grayish brown (10YR 5/2) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; very strongly acid; clear wavy boundary.

B2tg—15 to 37 inches; gray (10YR 6/1) sandy clay loam; common medium prominent strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

IICg—37 to 80 inches; grayish brown (10YR 5/2) loamy sand thinly stratified with sand and coarse sand; single grained; loose; slightly sticky; very strongly acid.

Lumbee soils have loamy horizons 26 to 40 inches thick over sandy stratified horizons. Unless limed, they are very strongly acid or strongly acid.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2.

The B2tg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sandy clay loam or sandy loam.

The IICg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified sand or loamy sand.

Lynchburg series

The Lynchburg series consists of somewhat poorly drained soils that formed in moderately fine textured sediment. These soils are on uplands. Slopes are less than 1 percent.

Typical pedon of Lynchburg sandy loam, 1.3 miles northeast of Lizzie, 0.1 mile west of intersection of State Road 1324 and U.S. Highway 13, 200 feet north of State Road 1324:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable, few fine roots; strongly acid; abrupt smooth boundary.

A2—9 to 12 inches; pale brown (10YR 6/3) sandy loam; weak medium granular structure; very friable; few fine roots; common pores filled with dark gray sandy loam; strongly acid; clear wavy boundary.

B1—12 to 15 inches; light yellowish brown (10YR 6/4) sandy loam; few fine faint gray mottles; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; few fine roots; few pores filled with dark gray sandy loam; very strongly acid; clear wavy boundary.

B21t—15 to 25 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct gray (10YR 6/1) and brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; few fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.

B22tg—25 to 44 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—44 to 66 inches; light gray (10YR 7/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) and few medium prominent red (2.5YR 5/8) mottles; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; very strongly acid; gradual wavy boundary.

Cg—66 to 80 inches; gray (10YR 6/1) sandy clay loam; few fine distinct brownish yellow mottles; massive; firm; extremely acid.

Lynchburg soils have loamy horizons 60 inches to more than 80 inches thick over stratified sediment. Unless limed, they are extremely acid to strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. The B22t and B3 horizons have hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The B horizon is sandy clay loam or sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is sandy loam, sandy clay loam, or clay loam. In some pedons, it is stratified in some combination of these textures.

Norfolk series

The Norfolk series consists of well drained soils that formed in moderately fine textured sediment. These soils are on uplands. The slope range is 0 to 6 percent.

Typical pedon of Norfolk loamy sand, 0 to 2 percent slopes, 6 miles southeast of Snow Hill, 0.3 mile southeast of intersection of N.C. Highway 123 and N.C. Highway 58, 100 feet northeast of N.C. Highway 58:

Ap—0 to 8 inches; grayish brown (10YR 5/2) loamy sand; weak medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

A2—8 to 14 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; many fine roots; slightly acid; clear wavy boundary.

B1—14 to 16 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; very friable; many fine roots; many fine pores; very strongly acid; clear wavy boundary.

B21t—16 to 48 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; many fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—48 to 65 inches; yellowish brown (10YR 5/8) sandy clay loam; few fine distinct light gray and few fine faint strong brown mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3—65 to 80 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid.

Norfolk soils have a sandy A horizon and a fine-loamy Bt horizon 60 inches to more than 80 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid throughout.

The Ap or A1 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8. Some pedons have a B3 horizon. This horizon is mottled in shades of gray, brown, yellow, or red. These horizons are dominantly sandy clay loam but range to sandy loam or clay loam.

Orangeburg series

The Orangeburg series consists of well drained soils that formed in moderately fine textured sediment. These soils are on uplands. The slope range is from 0 to 6 percent.

Typical pedon of Orangeburg loamy sand, 2 to 6 percent slopes, 2 miles northwest of Snow Hill, 0.1 mile northwest of intersection of U.S. Highway 13 and N.C. Highway 58, 50 feet north of N.C. Highway 58:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium granular structure; very friable; many fine roots; medium acid; clear wavy boundary.

A2—6 to 12 inches; yellowish brown (10YR 5/6) loamy sand; weak medium granular structure; very friable; many fine roots; medium acid; clear wavy boundary.

B1—12 to 20 inches; strong brown (7.5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; many fine roots; many fine pores; strongly acid; gradual wavy boundary.

B21t—20 to 48 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—48 to 68 inches; red (2.5YR 4/8) sandy clay loam; few medium distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—68 to 80 inches; red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid.

Orangeburg soils have a sandy A horizon and a fine-loamy Bt horizon 60 to 80 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR and 7.5YR, value of 4 or 5, and chroma of 3 or 4. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam or clay loam.

These soils are taxadjuncts to the Orangeburg series because they are slightly higher in content of silt than the Orangeburg series. Use, management, and behavior, however, are the same.

Pactolus series

The Pactolus series consists of moderately well drained and somewhat poorly drained soils that formed in coarse textured sediment. These soils are on stream terraces. The slope range is 0 to 2 percent.

Typical pedon of Pactolus fine sand, 4.7 miles southeast of Snow Hill, 0.7 mile southeast of intersection of State Roads 1400 and 1418, 50 feet north of State Road 1418:

Ap—0 to 8 inches; grayish brown (10YR 5/2) fine sand; single grained; loose; common fine roots; strongly acid; abrupt smooth boundary.

C1—8 to 22 inches; pale brown (10YR 6/3) loamy sand; single grained; loose; common fine roots; strongly acid; gradual wavy boundary.

C2—22 to 34 inches; light brownish gray (10YR 6/2) sand; single grained; loose; strongly acid; gradual wavy boundary.

C3—34 to 56 inches; light gray (10YR 7/2) sand; single grained; loose; common clean sand grains; about 20 percent coarse sand; strongly acid; gradual wavy boundary.

C4—56 to 65 inches; light gray (10YR 7/2) sand; single grained; loose; common clean sand grains; about 35 percent coarse sand; strongly acid.

Pactolus soils have sandy textured horizons more than 80 inches thick. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. The lower part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 4. The C horizon is commonly sand but ranges to loamy sand.

Paxville series

The Paxville series consists of very poorly drained soils that formed in moderately fine textured sediment. These soils are on stream terraces. Slopes are less than 1 percent.

Typical pedon of Paxville loam, 2.5 miles northwest of Snow Hill, 1.8 miles northwest of the intersection of N.C. Highway 91 and State Road 1247, 0.2 mile east of State Road 1247 on farm path, 50 feet east of end of farm path:

Ap—0 to 9 inches; black (10YR 2/1) loam; weak medium granular structure; very friable; common fine roots; many fine pores; very strongly acid; abrupt smooth boundary.

A12—9 to 14 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; many fine pores; very strongly acid; clear wavy boundary.

B1g—14 to 19 inches; dark gray (10YR 4/1) fine sandy loam; common coarse faint very dark gray (10YR 3/1) mottles; weak fine subangular blocky structure; friable; common fine roots; many fine pores; very strongly acid; gradual wavy boundary.

B2tg—19 to 34 inches; gray (10YR 5/1) sandy clay loam; common coarse faint very dark gray (10YR 3/1) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—34 to 47 inches; grayish brown (10YR 5/2) sandy loam; common coarse faint very dark gray (10YR 3/1) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid; gradual wavy boundary.

IICg—47 to 80 inches; light brownish gray (10YR 6/2) sand; single grained; loose; very strongly acid.

Paxville soils have loamy horizons 40 to 60 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 0 or 1. It is sandy clay loam or sandy loam.

The IIC horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is loamy sand or sand.

Rains series

The Rains series consists of poorly drained soils that formed in moderately fine textured sediment. These soils are on uplands. Slopes are less than 1 percent.

Typical pedon of Rains sandy loam, 5.5 miles southeast of Snow Hill, 0.3 mile northwest of intersection of N.C. Highway 123 and N.C. Highway 58, 300 feet northeast of N.C. Highway 58:

Ap—0 to 8 inches; dark gray (10YR 4/1) sandy loam; weak medium granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.

A2—8 to 13 inches; gray (10YR 6/1) sandy loam; weak medium granular structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B1g—13 to 15 inches; gray (10YR 6/1) sandy loam; few medium faint light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

B21tg—15 to 48 inches; gray (10YR 6/1) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) and few medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine pores; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—48 to 75 inches; gray (10YR 6/1) sandy clay loam; common coarse distinct brownish yellow (10YR 6/8) and common fine prominent red mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

Cg—75 to 80 inches; gray (10YR 6/1) sandy clay loam and few thin strata of sandy clay; common medium distinct brownish yellow (10YR 6/8) and common medium prominent red (2.5YR 4/8) mottles; massive; firm, slightly sticky and slightly plastic; very strongly acid.

The Rains soils have loamy horizons 60 inches to more than 75 inches thick over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Btg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is dominantly sandy clay loam or clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified sandy loam, sandy clay loam, or sandy clay.

Stallings series

The Stallings series consists of somewhat poorly drained soils that formed in moderately coarse textured marine sediment. These soils are on uplands. The slope range is 0 to 2 percent.

Typical pedon of Stallings loamy fine sand, 0.9 mile southeast of Jason, 0.6 mile northwest of intersection of State Road 1122 and State Road 1001, 50 feet south of State Road 1001:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy fine sand; weak medium granular structure; very friable; few fine roots; medium acid; abrupt smooth boundary.

B1—8 to 17 inches; pale brown (10YR 6/3) fine sandy loam; few fine faint yellow mottles; weak fine subangular blocky structure; friable, few fine roots; strongly acid; clear wavy boundary.

B21t—17 to 28 inches; pale brown (10YR 6/3) sandy loam; few medium distinct yellowish brown (10YR 5/8), strong brown (7.5YR 5/8), and gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable; few fine roots; clay coating and bridging sand grains; strongly acid; gradual wavy boundary.

B22tg—28 to 50 inches; gray (10YR 6/1) sandy loam; few coarse distinct brownish yellow (10YR 6/6) and common medium prominent yellowish red (5YR 4/8) mottles; weak fine subangular blocky structure; friable; thin clay coating and bridging grains; strongly acid; gradual wavy boundary.

B3g—50 to 68 inches; gray (10YR 6/1) sandy loam and light gray (10YR 7/1) pockets of sand; common medium distinct gray (5YR 5/1) and few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Cg—68 to 80 inches; gray (10YR 6/1) sandy loam and few thin strata of loamy sand; common medium distinct strong brown (7.5YR 5/8) mottles; massive; friable; very strongly acid.

Stallings soils have a sandy A horizon and a loamy Bt horizon 60 inches to more than 80 inches thick over stratified sediment. Unless limed, they range from extremely acid to strongly acid.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The A2 horizon, if present, has hue of 10YR, value of 5 to 7, and chroma of 2 or 3.

The upper part of the Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. The lower part of the Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The B horizon is sandy loam or fine sandy loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified loamy sand, sandy loam, or sandy clay loam.

Wagram series

The Wagram series consists of well drained soils that formed in moderately fine textured sediment. These soils are on uplands. The slope range is 0 to 6 percent.

Typical pedon of Wagram loamy sand, 0 to 6 percent slopes, 8 miles northwest of Snow Hill, 0.6 mile southwest of intersection of State Road 1058 and State Road 1201, 50 feet south of State Road 1201:

Ap—0 to 8 inches; light brownish gray (10YR 6/2) loamy sand; weak medium granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.

A2—8 to 27 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B1—27 to 31 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; very friable; strongly acid; clear wavy boundary.

B21t—31 to 44 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; slightly sticky and slighty plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—44 to 72 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct pale brown (10YR 6/3) and few medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; diffuse wavy boundary.

B3—72 to 80 inches; light yellowish brown (10YR 6/4) sandy clay loam and few thin strata of sandy clay; few medium distinct light gray (10YR 7/2) and common medium distinct yellowish red (5YR 4/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; very strongly acid.

The Wagram soils have a sandy A horizon 20 to 40 inches thick over a loamy Bt horizon that extends to a depth of 60 inches to more than 80 inches over stratified sediment. Unless limed, they are very strongly acid or strongly acid.

The Ap or A1 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam or sandy loam.

Formation of the soils

Soil is the product of the combined effects of (1) plants and animals and (2) climate acting on (3) the parent material, as conditioned by (4) relief and (5) the age of the landform. The characteristics of a soil at any given place depend on these five factors and the resulting soil forming processes. The relative importance of each factor differs from place to place. In many places, one or two factors dominate in the formation of a soil and determine most of its properties.

Plant and animal life

The plants and animals that live on and in the soil strongly influence its development and many of its profile characteristics. They determine the kind of organic matter and the way in which it is incorporated into the soil. They transfer nutrient elements and soil particles from one horizon to another. They affect the addition and removal of organic matter, nitrogen, and other plant nutrients and also influence the soil structure, porosity, and certain other characteristics.

Pine forests originally covered most of the upland in Greene County, and cypress, gum, and miscellaneous hardwoods were dominant on lower flood plains along the drainageways. As fallen leaves, twigs, roots, and whole plants decay, plant nutrients and organic acids are released to percolate down through the soil horizons. Roots take some of the nutrients. Organic acids act to dissolve the soluble mineral components and hasten the rate of removal of soluble inorganic materials from the surface horizons. Climate modifies the rate of chemical reaction and rate of leaching and to a large degree determines the kinds of plants and animals living in and on the soil.

Organic matter decays more rapidly in the surface horizon of a well drained soil—Norfolk, Wagram, or Kenansville soil for example—because the periods of saturation are shorter than in a poorly drained soil. The surface horizon of a well drained soil has very little accumulation of organic matter, and it is light colored. Decay of organic matter is retarded in the surface horizon of a poorly drained soil, such as Rains, Paxville, Lumbee, or Johnston soil, because periods of saturation are long. Because excess moisture retards oxidation, a large amount of organic matter accumulates in the surface horizon of a wet soil. For this reason the surface layer is darker colored than that of a well drained soil.

Organic matter probably is the energy source for micro-organisms involved in oxygen consumption in a saturated A horizon. Because wet soils have longer periods of saturation, biological activity can reduce the oxygen level in the ground water to the extent that anaerobic conditions last for several days or weeks. This reduction along with the saturation is most likely responsible for gray colors in the subsoil of a poorly drained soil.

Climate

The climate of Greene County is warm and humid. Summers are long and hot. Winters are short and mild. The climate is fairly uniform throughout the county and has caused little of the difference among the individual soils. The average annual temperature is 60 degrees, and the average annual rainfall is 48.6 inches.

The mild temperatures and the amount and intensity of rainfall favor rapid decomposition of organic matter, hasten chemical reaction, speed leaching of soluble bases, and increase translocation of the less soluble fine particles in the soil profile. As a result, the soils of the county are acid in reaction, are strongly leached, and are low in natural fertility.

Parent material

The parent material in Greene County is unconsolidated rock material, sand, silt, and clay. It is the sediment of the Coastal Plain uplands and the soil material washed from the uplands and deposited as alluvium in drainageways and on flood plains or terraces.

The parent material differs in mineral and chemical composition and physical makeup. Some differences, such as texture, can be observed in the field. Other differences, such as mineral composition, can be determined only by careful laboratory examination.

Many of the differences among the soils of Greene County reflect the varying geologic material from which the soils formed (fig. 13). Following are examples of soils and related parent material:

1. Soils formed in sediment that has a low percentage of silt and very fine sand are Cowarts, Orangeburg, Norfolk, Goldsboro, Lynchburg, and Rains soils on uplands; and Kalmia, Johns, Lumbee, and Paxville soils on terraces.
2. Soils formed in sediment that has a high sand content are Alpin, Pactolus, and Kenansville soils on terraces and Wagram, Blanton, Autryville, and Stallings soils on uplands.
3. Soils formed in sediment that has a high percentage of clay and silt are Gritney soils.
4. Soils formed in sediment that has a high percentage of silt and very fine sand are Aycock, Exum, and Grantham soils.

The particular location of a parent material can result in the formation of a different kind of soil. Bibb, Johnston, and Kinston soils, for example, formed in alluvial deposits of sand, silt, and clay in flood plains. Alpin, Pactolus, Kenansville, Kalmia, Johns, Lumbee, and Paxville soils, which also formed in alluvial sediment, are on terraces.

Johnston soils formed in part from alluvial deposits and in part from the decay of plant material. Thus, they have a high content of organic matter inherited from plant material.

Parent material has caused the soils of Greene County to differ in thickness and texture of horizons, clay mineralogy, and amount of exchangeable cations.

Relief

Greene County is dissected by Contentnea Creek and its tributary streams. A dissected landscape influences the depth to the water table and the geologic removal of soil material. Depth to the water table and geologic erosion, in turn, influence the formation of soils.

The water table is at the greatest depth near the short, sharply rounded side slopes. A water table below 6 feet is associated with soils that have a thick A2 horizon, bright colors in the B horizon, and a decrease and eventual disappearance of low clay content bodies in the B horizon. Wagram and Orangeburg are examples of well

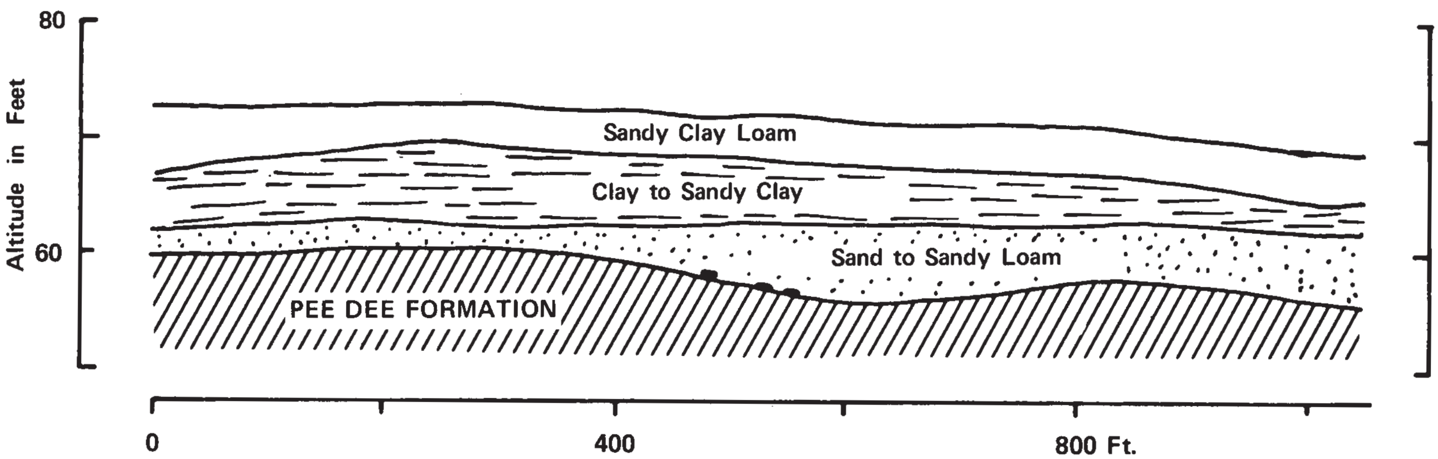

Figure 13.—A 1,000-foot cross section showing the distribution of geologic material in the Wicomico Formation, above the Pee Dee Formation, of the lower Coastal Plain.

drained soils in uplands where the water table is below 6 feet.

A high water table is associated with soils that have a thin A2 horizon and low-contrast mottling and low clay content bodies in the B horizon. Soils in the interstream areas, such as Lynchburg and Rains, have the characteristics associated with a high water table.

The removal of soil material by geologic erosion is apparent in the sloping Cowarts and Gritney soils. These soils lack the thick profile that is typical of soils in less sloping areas.

Time

Some differences among soils reflect differences in age. The formation of a sequence of horizons in a soil profile requires a long time. Horizons are more strongly defined in older soils than in younger soils.

The older soils in Greene County, on the smoother nearly level upland divides, have well developed horizons. Norfolk, Wagram, and Goldsboro soils are examples. These soils formed in Coastal Plain material that has remained essentially unchanged for millions of years.

In contrast, the younger Bibb, Kinston, and Johnston soils formed in alluvial material that has not been in place long enough for well defined horizons to develop.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

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

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

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

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

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

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

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

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

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

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

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

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Lamella. Thin clay enriched layer that formed in a sandy textured subsoil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

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

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

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

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

Relief. The elevations or inequalities of a land surface, considered collectively.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called groundwater runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	Less than 0.002

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

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

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

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

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

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the low lands along streams.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water. *Water table, apparent.*—A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian.—A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched.—A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Wetness. General term used for soils with a seasonal high water table.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1956-76 at Greenville, North Carolina]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	52.8	30.0	41.4	77	10	34	3.88	2.42	5.19	7	0.5
February---	55.2	32.6	43.9	79	14	39	4.00	2.38	5.43	7	0.9
March------	62.8	39.1	51.0	86	23	145	3.76	2.50	4.90	7	0.5
April------	73.3	47.4	60.4	92	30	312	3.38	1.61	4.81	6	0
May--------	80.3	56.4	68.4	96	38	570	3.89	2.09	5.36	7	0
June-------	86.3	63.9	75.1	99	47	753	4.09	1.90	5.87	6	0
July-------	89.1	68.1	78.6	99	54	887	5.92	3.25	8.10	8	0
August-----	88.4	67.2	77.8	98	53	862	6.15	2.80	8.88	8	0
September--	83.6	60.6	72.1	95	43	663	4.57	2.13	6.55	6	0
October----	74.0	49.5	59.0	89	27	593	2.82	.88	4.37	5	0
November---	64.9	38.9	49.5	84	20	357	2.85	1.32	4.09	5	0
December---	55.9	32.3	42.2	78	13	225	3.33	1.74	4.62	7	0.5
Yearly:											
Average--	72.2	48.8	60.0	---	---	---	---	---	---	---	---
Extreme--	---	---	---	100	9	---	---	---	---	---	---
Total----	---	---	---	---	---	5,440	48.64	41.86	55.16	79	2.4

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1956-76 at Greenville, North Carolina]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 25	April 2	April 16
2 years in 10 later than--	March 16	March 28	April 12
5 years in 10 later than--	February 27	March 17	April 4
First freezing temperature in fall:			
1 year in 10 earlier than--	November 9	October 27	October 16
2 years in 10 earlier than--	November 14	November 3	October 21
5 years in 10 earlier than--	November 25	November 15	October 30

TABLE 3.--GROWING SEASON

[Recorded in the period 1956-76 at Greenville, North Carolina]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	238	214	191
8 years in 10	249	223	197
5 years in 10	271	242	209
2 years in 10	292	261	221
1 year in 10	304	271	227

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AnB	Alpin fine sand, 1 to 5 percent slopes	3,787	2.2
AuB	Autryville fine sand, 0 to 6 percent slopes	7,320	4.3
AxB	Autryville-Urban land complex, 0 to 6 percent slopes	850	0.5
AyB	Aycock very fine sandy loam, 1 to 4 percent slopes	11,190	6.5
BB	Bibb loam, frequently flooded	6,542	3.8
BnB	Blanton sand, 0 to 5 percent slopes	1,500	0.9
CoC2	Cowarts sandy loam, 6 to 12 percent slopes, eroded	4,022	2.3
ExA	Exum very fine sandy loam, 0 to 2 percent slopes	4,476	2.6
GoA	Goldsboro loamy sand, 0 to 2 percent slopes	12,912	7.5
Gr	Grantham loam	1,033	0.6
GyC2	Gritney fine sandy loam, 5 to 12 percent slopes, eroded	2,238	1.3
Jo	Johns sandy loam	8,608	5.0
JS	Johnston loam, frequently flooded	4,476	2.6
KaA	Kalmia loamy sand, 0 to 3 percent slopes	3,271	1.9
KeA	Kenansville fine sand, 0 to 3 percent slopes	5,681	3.3
KN	Kinston loam, frequently flooded	2,926	1.7
Lu	Lumbee sandy loam	5,164	3.0
Ly	Lynchburg sandy loam	10,329	6.0
NoA	Norfolk loamy sand, 0 to 2 percent slopes	15,322	8.9
NoB	Norfolk loamy sand, 2 to 6 percent slopes	12,510	7.2
OrA	Orangeburg loamy sand, 0 to 2 percent slopes	204	0.1
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	1,000	0.6
Pa	Pactolus fine sand	2,582	1.5
Pm	Paxville loam	3,098	1.8
Pt	Pits	172	0.1
Ra	Rains sandy loam	13,600	7.9
St	Stallings loamy fine sand	13,772	8.0
WaB	Wagram loamy sand, 0 to 6 percent slopes	12,025	7.0
	Water	1,550	0.9
	Total	172,160	100.0

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Corn	Soybeans	Tobacco	Wheat	Improved bermuda-grass	Sweet-potatoes	Barley
	Bu	Bu	Lb	Bu	AUM*	Bu	Bu
AnB---------------------- Alpin	55	20	1,500	---	7.0	---	---
AuB---------------------- Autryville	80	27	2,000	40	8.0	325	55
AyB---------------------- Aycock	125	45	2,800	60	9.0	400	85
BB----------------------- Bibb	---	---	---	---	---	---	---
BnB---------------------- Blanton	60	25	1,800	40	7.0	325	55
CoC2--------------------- Cowarts	---	---	---	---	7.0	---	---
ExA---------------------- Exum	125	50	2,800	60	7.0	400	85
GoA---------------------- Goldsboro	125	45	3,000	60	7.0	425	85
Gr***-------------------- Grantham	115	45	---	50	---	---	75
GyC2--------------------- Gritney	---	---	---	---	7.0	---	---
Jo----------------------- Johns	120	45	2,700	60	---	---	85
JS----------------------- Johnston	---	---	---	---	---	---	---
KaA---------------------- Kalmia	115	40	2,900	55	7.0	400	75
KeA---------------------- Kenansville	70	25	2,000	45	7.0	375	60
KN----------------------- Kinston	---	---	---	---	---	---	---
Lu***-------------------- Lumbee	120	45	---	---	---	---	---
Ly***-------------------- Lynchburg	125	50	2,500	55	---	---	---
NoA---------------------- Norfolk	120	45	3,000	60	7.0	425	85
NoB---------------------- Norfolk	110	40	2,800	55	7.0	400	75
OrA---------------------- Orangeburg	120	45	2,700	60	8.5	425	85
OrB---------------------- Orangeburg	115	40	2,600	55	8.5	400	75
Pa----------------------- Pactolus	60	25	1,800	40	7.0	325	55
Pm***-------------------- Paxville	120	40	---	---	---	---	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Tobacco	Wheat	Improved bermuda-grass	Sweet-potatoes	Barley
	Bu	Bu	Lb	Bu	AUM*	Bu	Bu
Pt**. Pits							
Ra*** Rains	120	50	---	60	---	---	85
St*** Stallings	105	35	2,500	50	---	350	75
WaB Wagram	85	30	2,600	40	7.0	400	60

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.
** See description of the map unit for composition and behavior characteristics of the map unit.
*** The yields shown for this map unit are for drained areas only.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	18,797	---	---	---
II	100,375	24,700	50,097	25,578
III	26,977	---	22,895	4,082
IV	7,809	4,022	---	3,787
V	6,542	---	6,542	---
VI	5,164	2,238	2,926	---
VII	4,476	---	4,476	---
VIII	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
AnB: Alpin	3s	Slight	Moderate	Moderate	Loblolly pine	85	Loblolly pine, slash pine, longleaf pine.
					Slash pine	80	
					Longleaf pine	70	
AuB: Autryville	3s	Slight	Moderate	Moderate	Loblolly pine	80	Loblolly pine, slash pine.
					Slash pine	83	
					Longleaf pine	65	
AyB: Aycock	2o	Slight	Slight	Slight	Slash pine	89	Loblolly pine, slash pine, longleaf pine.
					Loblolly pine	89	
					Longleaf pine	75	
					Southern red oak	80	
BB: Bibb	2w	Slight	Severe	Severe	Loblolly pine	90	Eastern cottonwood, loblolly pine, sweetgum.
					Sweetgum	90	
					Water oak	90	
BnB: Blanton	3s	Slight	Moderate	Moderate	Slash pine	80	Slash pine, loblolly pine, longleaf pine.
					Loblolly pine	80	
					Longleaf pine	70	
CoC2: Cowarts	2o	Slight	Slight	Slight	Loblolly pine	86	Loblolly pine, slash pine.
					Slash pine	86	
					Longleaf pine	67	
ExA: Exum	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, sweetgum, American sycamore.
					Longleaf pine	77	
					Sweetgum	90	
					Yellow-poplar	100	
					Southern red oak	---	
					White oak	---	
GoA: Goldsboro	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, yellow-poplar, American sycamore, sweetgum.
					Slash pine	93	
					Longleaf pine	77	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
Gr: Grantham	2w	Slight	Severe	Severe	Loblolly pine	95	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	95	
					Sweetgum	96	
					Southern red oak	---	
					White oak	---	
					Water oak	90	
GyC2: Gritney	3o	Slight	Slight	Slight	Slash pine	80	Loblolly pine, slash pine.
					Loblolly pine	80	
					Longleaf pine	65	
Jo: Johns	2w	Slight	Moderate	Slight	Loblolly pine	86	Loblolly pine, slash pine.
					Sweetgum	90	
					Slash pine	86	
JS: Johnston	1w	Slight	Severe	Severe	Loblolly pine	97	Loblolly pine, baldcypress, sweetgum, green ash, water tupelo.
					Sweetgum	111	
					Water oak	103	

See footnote at end of table.

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

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
KaA: Kalmia	2o	Slight	Slight	Slight	Loblolly pine	88	Loblolly pine, slash pine, yellow-poplar, cherrybark oak.
					Slash pine	88	
					Sweetgum	85	
					Yellow-poplar	96	
					Southern red oak	---	
					White oak	---	
KeA: Kenansville	3s	Slight	Moderate	Moderate	Loblolly pine	80	Loblolly pine, slash pine, longleaf pine.
					Longleaf pine	65	
KN: Kinston	1w	Slight	Severe	Severe	Loblolly pine	100	Loblolly pine, American sycamore, eastern cottonwood, cherrybark oak, green ash, sweetgum.
					Sweetgum	95	
					White oak	90	
					Eastern cottonwood	100	
					Cherrybark oak	95	
Lu: Lumbee	2w	Slight	Severe	Severe	Loblolly pine	94	Loblolly pine, slash pine, water tupelo, sweetgum.
					Slash pine	91	
					Pond pine	75	
					Water tupelo	70	
					Sweetgum	90	
					White oak	---	
Ly: Lynchburg	2w	Slight	Moderate	Slight	Slash pine	91	Loblolly pine, slash pine, American sycamore, sweetgum.
					Loblolly pine	86	
					Longleaf pine	74	
					Yellow-poplar	92	
					Sweetgum	90	
					Southern red oak	---	
					White oak	---	
					Blackgum	---	
NoA, NoB: Norfolk	2o	Slight	Slight	Slight	Loblolly pine	86	Loblolly pine, slash pine, longleaf pine.
					Longleaf pine	68	
					Slash pine	86	
OrA, OrB: Orangeburg	2o	Slight	Slight	Slight	Loblolly pine	86	Loblolly pine, slash pine.
					Slash pine	86	
					Longleaf pine	70	
Pa: Pactolus	3w	Slight	Moderate	Moderate	Loblolly pine	84	Loblolly pine, slash pine.
					Longleaf pine	70	
					Slash pine	83	
Pm: Paxville	1w	Slight	Severe	Severe	Loblolly pine	96	Loblolly pine, slash pine, American sycamore, water tupelo.
					Slash pine	92	
					Pond pine	77	
					Water oak	90	
					Water tupelo	---	
					Baldcypress	---	
Ra: Rains	2w	Slight	Severe	Severe	Loblolly pine	94	Loblolly pine, slash pine, sweetgum, American sycamore.
					Slash pine	91	
					Sweetgum	90	
St: Stallings	2w	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, slash pine, American sycamore, sweetgum.
					Slash pine	90	
					Longleaf pine	75	
					Sweetgum	90	
					Yellow-poplar	100	
					Water oak	90	
WaB: Wagram	3s	Slight	Moderate	Moderate	Loblolly pine	82	Loblolly pine, slash pine, longleaf pine.
					Slash pine	80	
					Longleaf pine	67	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AnB------------------- Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, soil blowing.	Severe: too sandy.	Severe: too sandy, droughty.
AuB------------------- Autryville	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: too sandy, droughty.
AxB*:					
Autryville-----------	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: too sandy, droughty.
Urban land.					
AyB------------------- Aycock	Slight----------	Slight----------	Moderate: slope.	Slight------------	Slight.
BB-------------------- Bibb	Severe: floods, wetness.	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness.
BnB------------------- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, droughty.
CoC2------------------ Cowarts	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight------------	Moderate: slope.
ExA------------------- Exum	Slight----------	Slight----------	Moderate: wetness.	Slight------------	Slight.
GoA------------------- Goldsboro	Slight----------	Slight----------	Slight----------	Slight------------	Slight.
Gr-------------------- Grantham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GyC2------------------ Gritney	Moderate: slope, percs slowly.	Moderate: slope.	Severe: slope.	Slight------------	Moderate: too sandy, slope.
Jo-------------------- Johns	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
JS-------------------- Johnston	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: floods, wetness.
KaA------------------- Kalmia	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Slight------------	Moderate: too sandy.
KeA------------------- Kenansville	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
KN-------------------- Kinston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Lu-------------------- Lumbee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ly-------------------- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: wetness.
NoA------------------- Norfolk	Slight----------	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
NoB------------------- Norfolk	Slight: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: too sandy.
OrA------------------- Orangeburg	Slight----------	Slight----------	Slight----------	Slight------------	Moderate: too sandy.
OrB------------------- Orangeburg	Slight----------	Slight----------	Moderate: slope.	Slight------------	Moderate: too sandy.
Pa-------------------- Pactolus	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: too sandy.	Moderate: too sandy, wetness.
Pm-------------------- Paxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pt*. Pits					
Ra-------------------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
St-------------------- Stallings	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: too sandy, wetness.
WaB------------------- Wagram	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Moderate: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that it is not applicable to rate the soils for the features shown on this table]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AnB----------------- Alpin	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AuB----------------- Autryville	Poor	Fair	Good	Good	Good	Fair	Very poor.	Fair	Good	Poor.
AxB*:										
Autryville.	Poor	Fair	Good	Good	Good	Fair	Very poor.	Fair	Good	Poor.
Urban land.										
AyB----------------- Aycock	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BB------------------ Bibb	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
BnB----------------- Blanton	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
CoC2---------------- Cowarts	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ExA----------------- Exum	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GoA----------------- Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Gr------------------ Grantham	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GyC2---------------- Gritney	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Jo------------------ Johns	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
JS------------------ Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
KaA----------------- Kalmia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KeA----------------- Kenansville	Poor	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
KN------------------ Kinston	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Lu------------------ Lumbee	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Ly------------------ Lynchburg	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
NoA, NoB------------ Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OrA, OrB------------ Orangeburg	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Pa------------------ Pactolus	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pm------------------ Paxville	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pt*. Pits										
Ra------------------ Rains	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
St------------------ Stallings	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
WaB----------------- Wagram	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AnB: Alpin	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: too sandy.
AuB: Autryville	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: too sandy.
AxB*:						
Autryville	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: too sandy.
Urban land.						
AyB: Aycock	Slight	Slight	Moderate: wetness.	Slight	Moderate: low strength.	Slight.
BB: Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness.
BnB: Blanton	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Severe: too sandy.
CoC2: Cowarts	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
ExA: Exum	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: wetness.	Moderate: low strength.	Slight.
GoA: Goldsboro	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
Gr: Grantham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness.
GyC2: Gritney	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
Jo: Johns	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
JS: Johnston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.
KaA: Kalmia	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
KeA: Kenansville	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: too sandy.
KN: Kinston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Lu: Lumbee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ly: Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
NoA----------------- Norfolk	Moderate: wetness.	Slight-----------	Moderate: wetness.	Moderate: wetness.	Slight-----------	Slight.
NoB----------------- Norfolk	Moderate: wetness.	Slight-----------	Moderate: wetness.	Moderate: slope.	Slight-----------	Slight.
OrA----------------- Orangeburg	Slight-----------	Slight-----------	Slight-----------	Slight-----------	Slight-----------	Slight.
OrB----------------- Orangeburg	Slight-----------	Slight-----------	Slight-----------	Moderate: slope.	Slight-----------	Slight.
Pa------------------ Pactolus	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: too sandy, wetness.
Pm------------------ Paxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pt*. Pits						
Ra------------------ Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness.
St------------------ Stallings	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
WaB----------------- Wagram	Slight-----------	Slight-----------	Slight-----------	Slight-----------	Slight-----------	Moderate: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that it is not applicable to rate the soils for the features shown in this table]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AnB----------------- Alpin	Moderate: wetness.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
AuB----------------- Autryville	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Fair: too sandy.
AxB*: Autryville.					
Urban land.					
AyB----------------- Aycock	Slight-----------	Moderate: seepage, slope.	Slight-----------	Slight-----------	Fair: too clayey.
BB------------------ Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
BnB----------------- Blanton	Slight-----------	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy, seepage.
CoC2---------------- Cowarts	Severe: percs slowly.	Severe: slope.	Slight-----------	Slight-----------	Fair: thin layer, slope.
ExA----------------- Exum	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
GoA----------------- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Gr------------------ Grantham	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
GyC2---------------- Gritney	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.
Jo------------------ Johns	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
JS------------------ Johnston	Severe: floods, wetness.	Severe: seepage, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Poor: wetness.
KaA----------------- Kalmia	Slight-----------	Moderate: seepage.	Slight-----------	Slight-----------	Good.
KeA----------------- Kenansville	Slight-----------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
KN------------------ Kinston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Lu------------------ Lumbee	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ly------------------ Lynchburg	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness.	Poor: wetness.
NoA----------------- Norfolk	Slight-----------	Moderate: seepage, wetness.	Moderate: wetness.	Moderate: wetness.	Good.
NoB----------------- Norfolk	Slight-----------	Moderate: slope, seepage.	Moderate: wetness.	Moderate: wetness.	Good.
OrA----------------- Orangeburg	Slight-----------	Moderate: seepage.	Slight-----------	Slight-----------	Good.
OrB----------------- Orangeburg	Slight-----------	Moderate: slope, seepage.	Slight-----------	Slight-----------	Good.
Pa------------------ Pactolus	Severe: wetness.	Severe: wetness, seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Fair: too sandy.
Pm------------------ Paxville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Pt*. Pits					
Ra------------------ Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
St------------------ Stallings	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
WaB----------------- Wagram	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Fair: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that it is not applicable to rate the soils for the features shown on this table]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AnB Alpin	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
AuB Autryville	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.
AxB*: Autryville.				
Urban land.				
AyB Aycock	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
BB Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
BnB Blanton	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
CoC2 Cowarts	Fair: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
ExA Exum	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
GoA Goldsboro	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Gr Grantham	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
GyC2 Gritney	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Jo Johns	Fair: wetness.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
JS Johnston	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
KaA Kalmia	Good	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy, thin layer.
KeA Kenansville	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
KN Kinston	Poor: wetness.	Poor: excess fines.	Poor: excess fines.	Poor: wetness.
Lu Lumbee	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
Ly Lynchburg	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
NoA, NoB Norfolk	Good	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
OrA, OrB: Orangeburg	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Pa: Pactolus	Fair: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Pm: Paxville	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Pt*. Pits				
Ra: Rains	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
St: Stallings	Fair: wetness.	Poor: excess fines.	Unsuited: excess fines.	Good.
WaB: Wagram	Good	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that it is not applicable to rate the soils for the features shown on this table]

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
AnB: Alpin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Not needed	Not needed	Not needed.
AuB: Autryville	Severe: seepage.	Severe: seepage.	Severe: no water.	Not needed	Too sandy	Droughty.
AxB*: Autryville.						
Urban land.						
AyB: Aycock	Moderate: seepage.	Moderate: piping.	Severe: deep to water.	Not needed	Favorable	Favorable.
BB: Bibb	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Floods	Not needed	Wetness.
BnB: Blanton	Severe: seepage.	Severe: piping, seepage.	Severe: no water.	Not needed	Soil blowing, too sandy.	Droughty.
CoC2: Cowarts	Slight	Slight	Severe: no water.	Not needed	Percs slowly	Slope, percs slowly.
ExA: Exum	Moderate: seepage.	Moderate: compressible, piping.	Moderate: deep to water.	Favorable	Not needed	Favorable.
GoA: Goldsboro	Moderate: seepage.	Slight	Moderate: deep to water.	Favorable	Not needed	Favorable.
Gr: Grantham	Slight	Severe: wetness.	Moderate: slow refill.	Favorable	Not needed	Wetness, erodes easily.
GyC2: Gritney	Slight	Moderate: hard to pack.	Severe: no water.	Not needed	Erodes easily, percs slowly, slope.	Erodes easily, slope, percs slowly.
Jo: Johns	Moderate: seepage.	Moderate: seepage.	Moderate: deep to water.	Cutbanks cave	Not needed	Not needed.
JS: Johnston	Severe: seepage.	Severe: wetness.	Slight	Floods	Not needed	Wetness.
KaA: Kalmia	Moderate: seepage.	Moderate: seepage.	Severe: deep to water.	Not needed	Not needed	Favorable.
KeA: Kenansville	Severe: seepage.	Moderate: seepage.	Severe: deep to water.	Not needed	Too sandy	Droughty.
KN: Kinston	Moderate: seepage.	Moderate: piping.	Slight	Poor outlets, floods.	Not needed	Not needed.
Lu: Lumbee	Moderate: seepage.	Moderate: seepage.	Slight	Poor outlets, cutbanks cave.	Not needed	Not needed.
Ly: Lynchburg	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Favorable	Not needed	Wetness.
NoA, NoB: Norfolk	Moderate: seepage.	Slight	Severe: no water.	Not needed	Slope	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
OrA: Orangeburg	Moderate: seepage.	Slight	Severe: no water.	Not needed	Not needed	Favorable.
OrB: Orangeburg	Moderate: seepage.	Slight	Severe: no water.	Not needed	Favorable	Favorable.
Pa: Pactolus	Severe: seepage.	Severe: seepage.	Moderate: deep to water.	Cutbanks cave	Not needed	Not needed.
Pm: Paxville	Moderate: seepage.	Moderate: piping.	Slight	Favorable	Not needed	Not needed.
Pt*. Pits						
Ra: Rains	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Favorable	Not needed	Wetness.
St: Stallings	Severe: seepage.	Moderate: piping.	Moderate: deep to water.	Cutbanks cave	Not needed	Not needed.
WaB: Wagram	Moderate: seepage.	Moderate: piping.	Severe: no water.	Not needed	Slope, too sandy.	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
AnB----------------- Alpin	0-7	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	7-38	Fine sand, sand	SP-SM	A-3, A-2-4	0	95-100	90-100	60-100	5-12	---	NP
	38-80	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
AuB----------------- Autryville	0-27	Fine sand--------	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	27-38	Sandy loam, sandy clay loam.	SM	A-2	0	100	100	50-100	15-30	<23	NP-3
	38-54	Sand, loamy sand	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	54-80	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4	0	100	100	60-100	20-49	<30	NP-10
AxB*:											
Autryville---------	0-27	Fine sand--------	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	27-38	Sandy loam, sandy clay loam.	SM	A-2	0	100	100	50-100	15-30	<20	NP-3
	38-54	Sand, loamy sand	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	54-80	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4	0	100	100	60-100	20-49	<30	NP-10
Urban land.											
AyB----------------- Aycock	0-12	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	95-100	80-100	51-80	<25	NP-10
	12-80	Clay loam, silty clay loam, loam.	CL	A-4, A-6, A-7	0	100	95-100	90-100	60-90	22-49	8-30
BB------------------ Bibb	0-35	Loam, sandy loam, fine sandy loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	35-78	Fine sandy loam, loam, loamy sand, sand.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
BnB----------------- Blanton	0-48	Sand-------------	SP-SM	A-3, A-2-4	0	100	100	65-100	5-12	---	NP
	48-51	Sandy loam, loamy sand, loamy coarse sand.	SM	A-2-4	0	100	100	65-95	13-30	---	NP
	51-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	100	69-95	25-50	18-23	4-12
CoC2---------------- Cowarts	0-7	Sandy loam-------	SM, SM-SC	A-2, A-4	0	95-100	90-100	75-90	20-40	<20	NP-5
	7-20	Fine sandy loam, sandy loam, sandy clay loam.	SM-SC, SC, SM	A-2, A-4, A-6	0	95-100	90-100	60-90	23-45	20-40	NP-15
	20-32	Sandy clay loam, sandy loam.	SM-SC, SM	A-6, A-7	0	95-100	90-100	60-90	25-50	30-50	11-23
	32-80	Sandy loam, sandy clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	85-100	80-100	60-95	30-58	25-50	5-18

See footnote at end of table.

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

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
ExA---------------- Exum	0-11	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	95-100	80-100	51-80	<25	NP-10
	11-80	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	100	95-100	90-100	60-90	22-49	8-30
GoA---------------- Goldsboro	0-12	Loamy sand------	SM, SM-SC, SC	A-2, A-4	0	90-100	75-100	50-95	15-45	<25	NP-14
	12-80	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-35	4-16
Gr----------------- Grantham	0-12	Loam------------	ML, CL-ML	A-4	0	100	100	85-100	55-80	<30	NP-7
	12-80	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	100	100	90-100	60-85	22-49	8-30
GyC2--------------- Gritney	0-12	Fine sandy loam	SM	A-2-4	0	100	95-100	75-99	18-28	---	NP
	12-53	Sandy clay, clay, clay loam.	CH, CL, SC	A-7	0	100	95-100	80-100	45-65	44-60	22-35
	53-70	Sandy clay loam, sandy loam.	CH, CL, SC	A-7	0	100	95-100	80-100	40-55	40-55	20-35
Jo----------------- Johns	0-15	Sandy loam------	SM, SM-SC	A-2, A-4	---	100	95-100	60-90	15-45	<20	NP-7
	15-37	Sandy clay loam, sandy loam.	SC, SM-SC, CL	A-2, A-4, A-6	---	100	95-100	60-90	30-55	20-35	4-15
	37-60	Sand, loamy sand	SM, SP-SM, SP	A-2, A-3	---	95-100	95-100	51-90	4-25	---	NP
JS----------------- Johnston	0-44	Loam, mucky loam, fine sandy loam.	ML, SM	A-2, A-4	0	100	100	60-95	30-75	<35	NP-10
	44-76	Stratified loamy sand to sand.	SM, SP-SM	A-2, A-3	0	100	100	50-75	5-30	---	NP
KaA---------------- Kalmia	0-16	Loamy sand------	SM, SM-SC, SC	A-2	0	100	95-100	50-75	15-40	<25	NP-10
	16-35	Sandy clay loam	SC, SM-SC	A-2, A-4, A-6	0	100	95-100	70-90	30-49	20-35	4-15
	35-72	Loamy sand, sand, sandy loam.	SM, SP-SM, SP	A-2, A-3	0	100	95-100	50-70	4-25	---	NP
KeA---------------- Kenansville	0-26	Fine sand--------	SM	A-1, A-2	0	100	95-100	45-99	10-25	<25	NP-3
	26-39	Sandy loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4	0	100	95-100	50-99	20-40	<30	NP-10
	39-80	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-1, A-2, A-3	0	100	95-100	40-99	5-30	---	NP
KN----------------- Kinston	0-11	Loam------------	ML, CL, CL-ML	A-4	0	100	98-100	85-99	65-97	17-40	4-10
	11-55	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	0	100	95-100	75-100	60-95	20-45	8-22
	55-80	Variable--------	---	---	0	---	---	---	---	---	---

See footnote at end of table.

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

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Lu----------------- Lumbee	0-11	Sandy loam------	SM, SM-SC	A-2, A-4	0	100	85-100	65-90	15-45	<20	NP-7
	11-37	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0	100	90-100	65-95	30-49	19-35	4-15
	37-80	Loamy sand, sand, fine sand.	SP, SM, SP-SM	A-2, A-3	0	90-100	85-100	50-90	4-25	---	NP
Ly----------------- Lynchburg	0-15	Sandy loam------	SM, ML	A-2, A-4	0	92-100	90-100	75-100	25-65	<30	NP-7
	15-66	Sandy clay loam, sandy loam, clay loam.	SM-SC, SC, CL, CL-ML	A-2, A-4, A-6	0	92-100	90-100	70-100	25-67	15-40	4-18
	66-80	Variable--------	---	---	---	---	---	---	---	---	---
NoA, NoB----------- Norfolk	0-14	Loamy sand------	SM	A-2	0	95-100	92-100	50-91	13-30	<20	NP
	14-65	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-55	20-38	4-15
	65-80	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	100	98-100	65-98	36-72	20-45	4-22
OrA, OrB----------- Orangeburg	0-12	Loamy sand------	SM	A-2	0	98-100	95-100	60-75	14-27	---	NP
	12-80	Sandy clay loam	SC, CL	A-6, A-4	0	98-100	95-100	71-91	38-55	22-40	8-19
Pa----------------- Pactolus	0-8	Fine sand-------	SM	A-2	0	100	90-100	51-95	13-30	---	NP
	8-65	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	90-100	51-95	5-30	---	NP
Pm----------------- Paxville	0-14	Loam, fine sandy loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	80-98	30-60	<35	NP-7
	14-47	Sandy clay loam, sandy loam.	CL-ML, CL, SM-SC, SC	A-2, A-4, A-6	0	100	98-100	60-98	30-60	25-40	5-15
	47-80	Sandy loam, loamy sand, sand.	SM, SP-SM, SP	A-2	0	100	98-100	60-98	4-35	<30	NP-4
Pt*. Pits											
Ra----------------- Rains	0-15	Sandy loam------	SM, ML	A-2, A-4	0	100	95-100	50-85	25-56	<35	NP-10
	15-75	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
	75-80	Sandy loam, sandy clay loam, sandy clay.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	95-100	60-95	30-60	15-40	3-18
St----------------- Stallings	0-8	Loamy fine sand	SM	A-2	0	100	95-100	51-100	15-35	---	NP
	8-68	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	100	95-100	51-100	20-50	<25	NP-3
	68-80	Sandy loam, loamy sand, loamy fine sand.	SM, SP-SM, SM-SC	A-2, A-4	0	100	95-100	51-100	10-50	<25	NP-4
WaB---------------- Wagram	0-27	Loamy sand------	SM	A-2	0	100	98-100	50-85	15-35	---	NP
	27-80	Sandy clay loam, sandy loam.	SC	A-2, A-4, A-6	0	100	98-100	80-95	31-49	21-40	8-25

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated. Surface layers that have been limed may be slightly higher in pH than is shown in the range]

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
AnB--------------	0-7	>20	0.05-0.10	4.5-5.5	Very low-------	0.10	5
Alpin	7-38	>20	0.03-0.07	4.5-5.5	Very low-------	0.10	
	38-80	>20	0.06-0.09	4.5-5.5	Very low-------	0.10	
AuB--------------	0-27	>6.0	0.04-0.09	4.5-6.5	Low------------	0.10	5
Autryville	27-38	2.0-6.0	0.08-0.13	4.5-5.5	Low------------	0.10	
	38-54	>6.0	0.03-0.08	4.5-5.5	Low------------	0.10	
	54-80	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.17	
AxB*:							
Autryville------	0-27	>6.0	0.04-0.09	4.5-6.5	Low------------	0.10	5
	27-38	2.0-6.0	0.08-0.13	4.5-5.5	Low------------	0.10	
	38-54	>6.0	0.03-0.08	4.5-5.5	Low------------	0.10	
	54-80	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.17	
Urban land.							
AyB--------------	0-12	2.0-6.0	0.15-0.20	4.5-6.0	Low------------	0.37	4
Aycock	12-80	0.6-2.0	0.15-0.20	4.5-5.5	Low------------	0.43	
BB---------------	0-35	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.20	5
Bibb	35-78	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.37	
BnB--------------	0-48	6.0-20	0.03-0.07	4.5-6.0	Very low-------	0.17	5
Blanton	48-51	2.0-6.0	0.10-0.15	4.5-5.5	Low------------	0.24	
	51-80	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.32	
CoC2-------------	0-7	2.0-6.0	0.08-0.13	4.5-5.5	Low------------	0.24	3
Cowarts	7-20	0.6-2.0	0.10-0.14	4.5-5.5	Low------------	0.28	
	20-32	0.2-2.0	0.10-0.16	4.5-5.5	Low------------	0.28	
	32-80	0.06-0.6	0.08-0.12	4.5-5.5	Low------------	0.24	
ExA--------------	0-11	2.0-6.0	0.15-0.20	4.5-6.0	Low------------	0.37	5
Exum	11-80	0.6-2.0	0.15-0.20	4.5-5.5	Low------------	0.37	
GoA--------------	0-15	2.0-6.0	0.08-0.12	4.5-6.0	Low------------	0.20	5
Goldsboro	15-80	0.6-2.0	0.11-0.15	4.5-5.5	Low------------	0.24	
Gr---------------	0-12	2.0-6.0	0.13-0.20	4.5-5.5	Low------------	0.37	4
Grantham	12-80	0.2-0.6	0.15-0.20	4.5-5.5	Low------------	0.43	
GyC2-------------	0-12	6.0-20	0.10-0.15	4.5-5.5	Low------------	0.32	3
Gritney	12-53	0.06-0.2	0.10-0.15	4.5-5.5	High-----------	0.37	
	53-70	0.2-0.6	0.10-0.15	4.5-5.5	High-----------	0.37	
Jo---------------	0-15	2.0-6.0	0.08-0.14	4.5-5.5	Low------------	0.20	5
Johns	15-37	0.6-2.0	0.12-0.15	4.5-5.5	Low------------	0.24	
	37-60	6.0-20	0.03-0.06	4.5-5.5	Low------------	0.10	
JS---------------	0-44	2.0-6.0	0.10-0.20	4.5-5.5	Low------------	0.20	---
Johnston	44-76	6.0-20	0.02-0.07	4.5-5.5	Low------------	0.17	
KaA--------------	0-16	2.0-6.0	0.06-0.10	4.5-6.0	Low------------	0.20	4
Kalmia	16-35	0.6-2.0	0.12-0.16	4.5-5.5	Low------------	0.24	
	35-72	6.0-20	0.03-0.06	4.5-5.5	Low------------	0.10	
KeA--------------	0-26	6.0-20	0.04-0.10	4.5-6.0	Low------------	0.15	5
Kenansville	26-39	2.0-6.0	0.10-0.14	4.5-6.0	Low------------	0.15	
	39-80	6.0-20	<0.05	4.5-6.0	Low------------	0.10	

See footnote at end of table.

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

Map symbol and soil name	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
KN----------------	0-11	0.6-2.0	0.14-0.20	4.5-6.0	Low------------	0.24	5
Kinston	11-55	0.6-2.0	0.14-0.18	4.5-5.5	Low------------	0.32	
	55-80	---	---	---	---------------	----	
Lu----------------	0-11	2.0-6.0	0.08-0.12	4.5-5.5	Low------------	0.24	5
Lumbee	11-37	0.6-2.0	0.12-0.16	4.5-5.5	Low------------	0.32	
	37-80	6.0-20	0.03-0.06	4.5-5.5	Low------------	0.10	
Ly----------------	0-15	2.0-6.0	0.09-0.13	3.6-5.5	Low------------	0.20	4
Lynchburg	15-66	0.6-2.0	0.12-0.16	3.6-5.5	Low------------	0.20	
	66-80	---	---	---	---------------	----	
NoA, NoB----------	0-14	6.0-20	0.06-0.10	4.5-6.0	Low------------	0.17	5
Norfolk	14-65	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.24	
	65-80	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.24	
OrA, OrB----------	0-12	2.0-6.0	0.06-0.08	4.5-6.0	Low------------	0.20	5
Orangeburg	12-80	0.6-2.0	0.10-0.13	4.5-5.5	Low------------	0.24	
Pa----------------	0-8	6.0-20.	0.05-0.10	4.5-6.0	Low------------	0.10	---
Pactolus	8-65	6.0-20.	0.03-0.07	4.5-5.5	Low------------	0.10	
Pm----------------	0-14	2.0-6.0	0.12-0.16	4.5-6.5	Low------------	0.10	5
Paxville	14-47	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.15	
	47-80	6.0-20	0.05-0.08	4.5-5.5	Low------------	0.10	
Pt*. Pits							
Ra----------------	0-15	2.0-6.0	0.08-0.12	4.5-6.5	Low------------	0.17	5
Rains	15-75	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.24	
	75-80	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.28	
St----------------	0-8	6.0-20	0.06-0.11	3.6-5.5	Low------------	0.10	5
Stallings	8-68	2.0-6.0	0.10-0.15	3.6-5.5	Low------------	0.17	
	68-80	2.0-20	0.06-0.15	3.6-5.5	Low------------	0.17	
WaB---------------	0-27	6.0-20	0.05-0.08	4.5-6.0	Low------------	0.15	5
Wagram	27-80	0.6-2.0	0.12-0.16	4.5-5.5	Low------------	0.20	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "none," "frequent," and "apparent." The symbol > means more than. Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
AnB----------------- Alpin	A	None---------	---	---	>6.0	---	---	Low-------	High.
AuB----------------- Autryville	A	None---------	---	---	>6.0	---	---	Low-------	High.
AxB*:									
Autryville--------	A	None---------	---	---	>6.0	---	---	Low-------	High.
Urban land.									
AyB----------------- Aycock	B	None---------	---	---	4.0-6.0	Apparent	Jan-Apr	Moderate	High.
BB------------------ Bibb	C	Frequent----	Brief-----	Dec-May	0-1.5	Apparent	Dec-Apr	High------	Moderate.
BnB----------------- Blanton	A	None---------	---	---	>6.0	---	---	High------	High.
CoC2---------------- Cowarts	C	None---------	---	---	>6.0	---	---	Moderate	Moderate.
ExA----------------- Exum	C	None---------	---	---	2.0-3.0	Apparent	Nov-Apr	Moderate	High.
GoA----------------- Goldsboro	B	None---------	---	---	2.0-3.0	Apparent	Dec-Mar	Moderate	High.
Gr------------------ Grantham	D	None---------	---	---	0-1.0	Apparent	Dec-Mar	High------	High.
GyC2---------------- Gritney	C	None---------	---	---	>6.0	---	---	High------	Moderate.
Jo------------------ Johns	C	None---------	---	---	1.5-3.0	Apparent	Nov-Apr	Moderate	High.
JS------------------ Johnston	D	Frequent----	Long------	Nov-Jul	+1-1.5	Apparent	Nov-Jun	High------	High.
KaA----------------- Kalmia	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
KeA----------------- Kenansville	A	None---------	---	---	>6.0	---	---	Low-------	High.
KN------------------ Kinston	D	Frequent----	Brief-----	Nov-Jun	0-1.0	Apparent	Nov-Jun	High------	High.
Lu------------------ Lumbee	D	None---------	---	---	0-1.0	Apparent	Nov-Apr	High------	High.
Ly------------------ Lynchburg	B/D	None---------	---	---	0.5-1.5	Apparent	Nov-Apr	High------	High.
NoA, NoB------------ Norfolk	B	None---------	---	---	3.5-6.0	Apparent	Jan-Mar	Moderate	High.
OrA, OrB------------ Orangeburg	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Pa----------------- Pactolus	C	None---------	---	---	1.5-2.5	Apparent	Jan-Mar	Low-------	High.
Pm----------------- Paxville	D	None---------	---	---	0-1.0	Apparent	Nov-Apr	High------	High.
Pt*. Pits									
Ra----------------- Rains	B/D	None---------	---	---	0-1.0	Apparent	Nov-Apr	High------	High.
St----------------- Stallings	C	None---------	---	---	1.5-2.5	Apparent	Dec-Mar	High------	High.
WaB---------------- Wagram	A	None---------	---	---	>6.0	---	---	Low-------	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution							Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve--				Percentage smaller than--						
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/ft3	Pct
Autryville fine sand:[1] (S76NC-079-001)													
Ap------- 0 to 8	A-2-4(00)	SP-SM	100	100	100	11	4	3	1	--	NP	62	16
B2t------27 to 38	A-2-4(00)	SM	100	100	100	29	24	21	19	23	3	312	13
A'2------42 to 54	A-2-4(00)	SM	100	100	100	18	9	8	6	--	NP	375	14
B'2t-----54 to 64	A-2-4(00)	SM	100	100	100	21	16	14	14	--	NP	250	12
Kenansville fine sand:[2] (S76NC-079-040)													
Ap------- 0 to 8	A-2-4(00)	SM	100	100	97	16	6	3	2	--	NP	375	13
B2t------26 to 39	A-4 (00)	SM	100	100	99	39	21	15	13	--	NP	--	11
C---------43 to 66	A-3 (01)	SP-SM	100	100	99	9	4	2	2	--	NP	62	17
Kinston loam:[3] (S76NC-079-013)													
A11------ 0 to 5	A-4 (06)	ML	100	100	99	65	36	19	12	40	10	62	24
C1g------11 to 40	A-7-6(15)	CL	100	100	100	73	56	42	34	44	21	250	20
Pactolus fine sand:[4] (S76NC-079-020)													
Ap------- 0 to 8	A-2-4(00)	SM	100	100	82	16	5	3	2	--	NP	187	11
C2--------22 to 34	A-2-4(00)	SM	100	99	85	21	8	4	3	--	NP	312	11
Stallings loamy fine sand:[5] (S76NC-079-025)													
Ap------- 0 to 8	A-2-4(00)	SM	100	100	100	34	16	10	7	--	NP	250	12
B22tg----28 to 50	A-2-4(00)	SM	100	100	99	29	16	11	9	--	NP	312	11
Cg--------68 to 80	A-4 (00)	SM-SC	100	100	100	50	27	18	15	20	4	62	11

[1]Autryville loamy fine sand:
2.7 miles south of Snow Hill; 0.2 mile northwest of junction of State Routes 1002 and 1149; 0.2 mile south of State Route 1002.

[2]Kenansville fine sand:
1.4 miles east of fourway; 0.25 mile northeast of junction of State Routes 1400 and 1411; 500 feet northwest of State Route 1400.

[3]Kinston loam:
2.8 miles east of junction of North Carolina Highway 58 and State Route 1225; 300 feet west of the Contentnea Creek Bridge, south side of State Route 1225.

[4]Pactolus fine sand:
4.7 miles southeast of Snow Hill; 0.7 mile southeast of junction of State Routes 1400 and 1418; 50 feet north of State Route 1418.

[5]Stallings loamy fine sand:
0.9 mile southeast of Jason; 0.6 mile northeast of junction of State Routes 112 and 1001; 50 feet south of State Route 1001.

TABLE 18.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Alpin	Thermic, coated Typic Quartzipsamments
Autryville	Loamy, siliceous, thermic Arenic Paleudults
Aycock	Fine-silty, siliceous, thermic Typic Paleudults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Cowarts	Fine-loamy, siliceous, thermic Typic Hapludults
Exum	Fine-silty, siliceous, thermic Aquic Paleudults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Grantham	Fine-silty, siliceous, thermic Typic Paleaquults
Gritney	Clayey, mixed, thermic Typic Hapludults
Johns	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Aquic Hapludults
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Kalmia	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Typic Hapludults
Kenansville	Loamy, siliceous, thermic Arenic Hapludults
Kinston	Fine-loamy, siliceous, acid, thermic Typic Fluvaquents
Lumbee	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Typic Ochraquults
Lynchburg	Fine-loamy, siliceous, thermic Aeric Paleaquults
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
*Orangeburg	Fine-loamy, siliceous, thermic Typic Paleudults
Pactolus	Thermic, coated Aquic Quartzipsamments
Paxville	Fine-loamy, siliceous, thermic Typic Umbraquults
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Stallings	Coarse-loamy, siliceous, thermic Aeric Paleaquults
Wagram	Loamy, siliceous, thermic Arenic Paleudults

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