United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with North Carolina Department of Environment and Natural Resources, North Carolina Agricultural Research Service, North Carolina Cooperative Extension Service, Hyde County Soil and Water Conservation District, and Hyde County Board of Commissioners

Soil Survey of Hyde County, North Carolina

How to Use This Soil Survey

General Soil Map

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

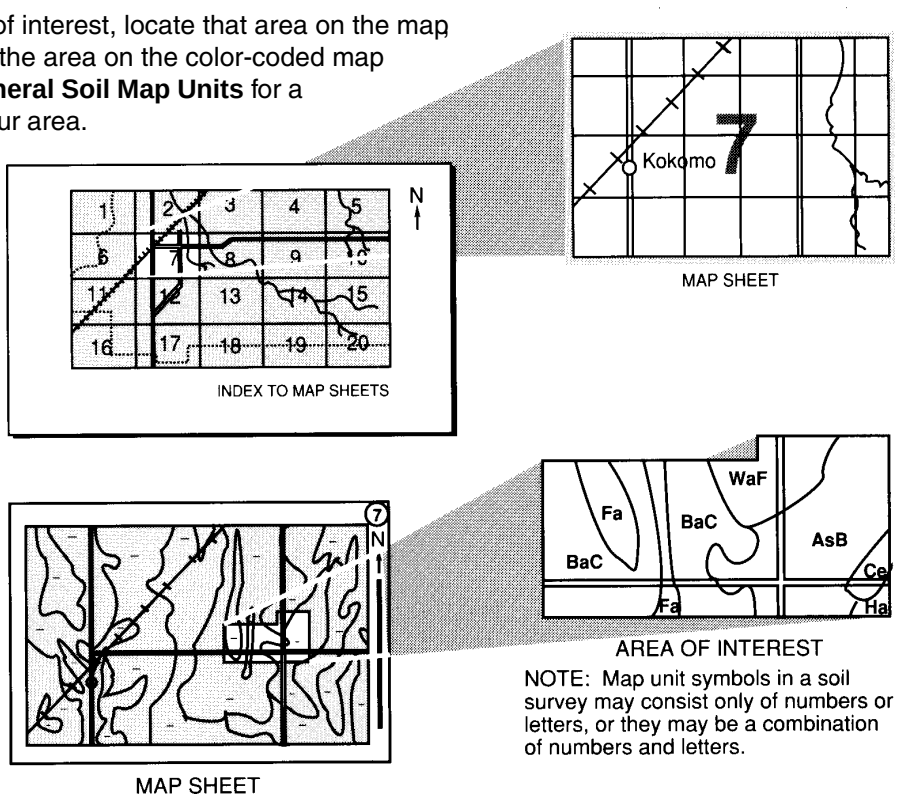
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

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

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

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



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

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

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the North Carolina Agricultural Research Service, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1996. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1991. This soil survey was made cooperatively by the Natural Resources Conservation Service, the North Carolina Department of Environment and Natural Resources, the North Carolina Agricultural Research Service, the North Carolina Cooperative Extension Service, the Hyde County Soil and Water Conservation District, and the Hyde County Board of Commissioners. The survey is part of the technical assistance furnished to the Hyde County Soil and Water Conservation District. The Hyde County Board of Commissioners provided financial assistance for the survey. In addition, the U.S. Fish and Wildlife Service, the North Carolina Forest Service, and East Carolina University provided equipment and the expertise and time of personnel necessary for the completion of the survey.

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: Lake Mattamuskeet Lodge, which was originally a pumping station for the lake in the early 1900's. Lake Mattamuskeet was drained and farmed for several years. The smokestack is now a lookout tower.

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

Contents

Issued 2001

Foreword

This soil survey contains information that affects land use planning in Hyde County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

Various regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various decisions for land use or land treatment. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

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 Natural Resources Conservation Service or the Cooperative Extension Service.

Bobbye J. Jones
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Hyde County, North Carolina

By John A. Gagnon, Jr., Natural Resources Conservation Service

Soils surveyed by John A. Gagnon, Jr., and Phillip L. Tant, Natural Resources Conservation Service, and Timothy A. Dilliplane, North Carolina Department of Environment and Natural Resources

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
North Carolina Department of Environment and Natural Resources, North Carolina Agricultural Research Service, North Carolina Cooperative Extension Service, Hyde County Soil and Water Conservation District, and Hyde County Board of Commissioners

HYDE COUNTY is in the extreme eastern part of the Lower Coastal Plain in North Carolina (fig. 1). It is in the Tidewater Region, occupying some of the lowest land elevations in the state. The total land area is 399,500 acres and includes the island of Ocracoke on the Outer Banks. In 1990, according to the U.S. Census, the county had a population of 5,411. Swan Quarter, the county seat, had a population of 985, and the village of Ocracoke had a population of 713.

Hyde County is bounded on the west by the Pungo River and Beaufort County, on the east by Dare County, on the south by Pamlico Sound and the Atlantic Ocean, and on the north by Washington and Tyrrell Counties. The Alligator River forms the boundary between Hyde and Tyrrell Counties.

The highest elevation on the mainland is located in the area west of Alligator Lake and is approximately 18 feet above mean sea level. Mainland areas at elevations above 10 feet are pocosins, which are landforms resulting from the accumulation of organic material. Ocracoke Island has dunes that are more than 18 feet in elevation.

According to 1993 records of the Agricultural Stabilization and Conservation Service, the county has approximately 95,000 acres of cropland. Saltwater and brackish marshes make up about 45,000 acres. Freshwater marshes and wooded flood plains make up about 19,000 acres. The rest of the county is woodland, areas of scrub-shrub vegetation, duneland, and beaches.

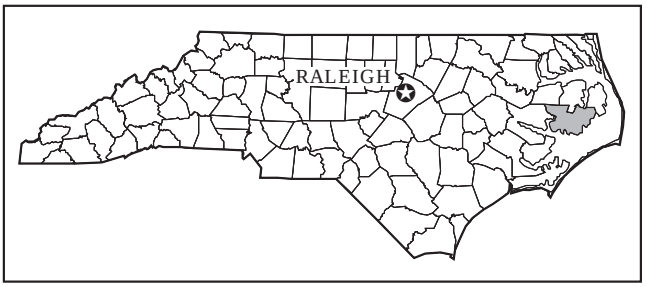


Figure 1.—Location of Hyde County in North Carolina.

Approximately 70,820 acres of the county is owned by the U.S. Fish and Wildlife Service and used for wildlife refuge. The Lake Mattamuskeet National Wildlife Refuge makes up 10,000 acres; the Swan Quarter National Wildlife Refuge, 16,411 acres; the Alligator River National Wildlife Refuge, 8,800 acres; and the Pocosin Lakes National Wildlife Refuge, 35,609 acres. Ocracoke Island consists of 5,340 acres of National Seashore *(8)*.

Farming, logging, and commercial fishing are still the major industries supporting the mainland economy. Tourism and commercial fishing are the major industries for Ocracoke Island.

Soil descriptions, names, and boundaries in this survey do not fully agree with those of adjoining counties. Discrepancies along the border of Washington County are due to a peat fire in 1985, which lowered the depth of the organic soils as much as 1 to 3 feet. Discrepancies with the soil survey of Tyrrell County are due to the subsidence of organic soils resulting from land clearing that occurred after that survey was made. Other discrepancies are due to differences in soil classification, which in most cases do not effect use and interpretations.

General Nature of the County

This section gives general information about Hyde County. It describes the history, physiography, and climate.

History

The first inhabitants of the survey area were the Machapungo and Mattamuskeet Indians. By A.D. 1200, the Indians were very dependent on agriculture. They grew several kinds of corn, beans, squash, pumpkins, sunflower seeds, and tobacco. Land was cleared by killing trees by girdling them. Crops were planted among the dead trees in "hills." When soils in an area became unproductive, the area was abandoned and a new area was cleared. The Indians maintained large areas of open land by burning. By the early 1700's, most of the Indians lived on a reservation in the eastern part of the county. In 1711 the number of Indians was about 30, and by 1761 only 6 remained.

English explorers first arrived in the survey area in 1585. They visited the Indian village of Pomeiooc, located along the eastern shore of Lake Mattamuskeet. In the early 1700's, Edward Teach, more commonly known as the pirate Blackbeard, resided on Ocracoke Island. He was captured there by the order of governor of Virginia and beheaded.

Hyde County was formed from Bath County in 1705 and originally named Wickham County. It became Hyde County in 1712 in honor of Edward Hyde, the first governor of North Carolina. The first English settlers were castaways from the Outer Banks. Other settlers moved to the survey area from Virginia, Maryland, and the Albemarle area of North Carolina.

In the 1800's, many plantation homes were constructed in Hyde County. The best known is the Octogon House in the eastern part of the county. Some of these homes still exist today.

Hyde County has long been known for its corn production. Even before the Civil War, it was known as the granary of eastern North Carolina. People traveled to the county from the central part of the state for corn. Oats, rice, and wheat were also grown. Rice production has been practically abandoned because its culture encourages the breeding and attraction of insects.

In 1910, the first soil survey of Lake Mattamuskeet was commissioned by the U.S. Department of Agriculture, Bureau of Soils *(4)*. The first commercial fertilizers and lime were also used around this time. Many farmers, however, still limed their land with shells at the rate of 50 to 100 bushels per acre.

In the early 1900's, Lake Mattamuskeet was drained for farming (fig. 2). It was first drained in 1910 by a huge pumping facility, which was abandoned in 1913 *(3)*. August Hecksher purchased the grounds of the facility in 1925, and the pumps began again. The fertile lakebed soils soon produced record crops of oats, sweet potatoes, corn, beans, and wheat. As insect pests invaded the area, however, the pumps were stopped and the lake soon refilled. The total cost of the two farming operations was 17 million dollars. In 1934, the lake and surrounding area became a National wildlife refuge. The lake attracted huge populations of wintering waterfowl and became a haven for hunters and bird-watchers. The old pumping plant was converted to a hunting lodge and used by sportsmen from around the world.

The acreage of agricultural land in Hyde County remained relatively constant until the 1970's when large corporate farms were established. Large tracts of pocosin were cleared and drained. These areas were dominantly organic soils from which large stumps and logs of baldcypress and juniper (Atlantic white-cedar) were bulldozed, raked, and burned. Because of difficulty in farming and stricter wetland regulations, many acres of this converted land have been donated to the government as wildlife refuges. Examples are the Alligator River and Pocosin Lakes National Wildlife Refuges. Hyde County remains rural today, and farming, timber production, and commercial fishing are still its main industries.

Physiography

Hyde County is in the Tidewater Region of the Atlantic Lower Coastal Plain. It is on the Pamlico morphostratographic unit at elevations of less than 25 feet above mean sea level. The highest elevation on the county's mainland is 18 feet. There are several dunes on Ocracoke Island that are higher than 18 feet in elevation. Soils are nearly level in areas throughout

Figure 2.—Discing and farming on the drained bottom of Lake Mattamuskeet in the early 1900's.

the mainland, with slopes changing about 1 foot in elevation per mile. Soils are nearly level to steep on the Outer Banks.

During the past million years, sea level has ranged from about 400 feet above its present level to several hundred feet below. The survey area emerged from the sea about 75,000 years ago. A cooling trend during that geologic period caused expansion of the polar ice caps and thus lowered sea level *(7)*. The marine and fluvial sediments deposited by the waters covering the survey area at that time are the parent material from which the present-day mineral soils of Hyde County formed.

The last ice age, the Wisconsin Ice Age, occurred about 15,000 years ago. Since that time, sea level has been slowly rising and is still rising today at a rate of approximately 1 foot per century.

Hyde County is composed of six landforms (fig. 3). They are pocosins, broad flat interstream areas (or mineral flats), marshes, forested flood plains, lakewash rims, and coastal barrier islands. The landform making up the largest acreage by far is the pocosin (fig. 4).

Pocosins are vast formations of highly decomposed peat (muck) which blankets the area and forms a gentle dome on the nearly level surfaces. They formed from the accumulation of dead plant matter in swamps and the transformation of this matter into muck. In Hyde County, the broad flat interstream area of the Albemarle Pamlico Peninsula had few dissecting streams for water removal. The soils in this area were predominantly slowly permeable and remained continually waterlogged. These factors caused the formation of extensive swamp forests of cypress and Atlantic white-cedar. Organic matter decayed slowly under these anaerobic conditions and thus began to accumulate. The swamp forests eventually drowned in the accumulating muck, or burned and fell, and organic matter continued to accumulate over extensive areas. The highest elevations in the county (18 feet

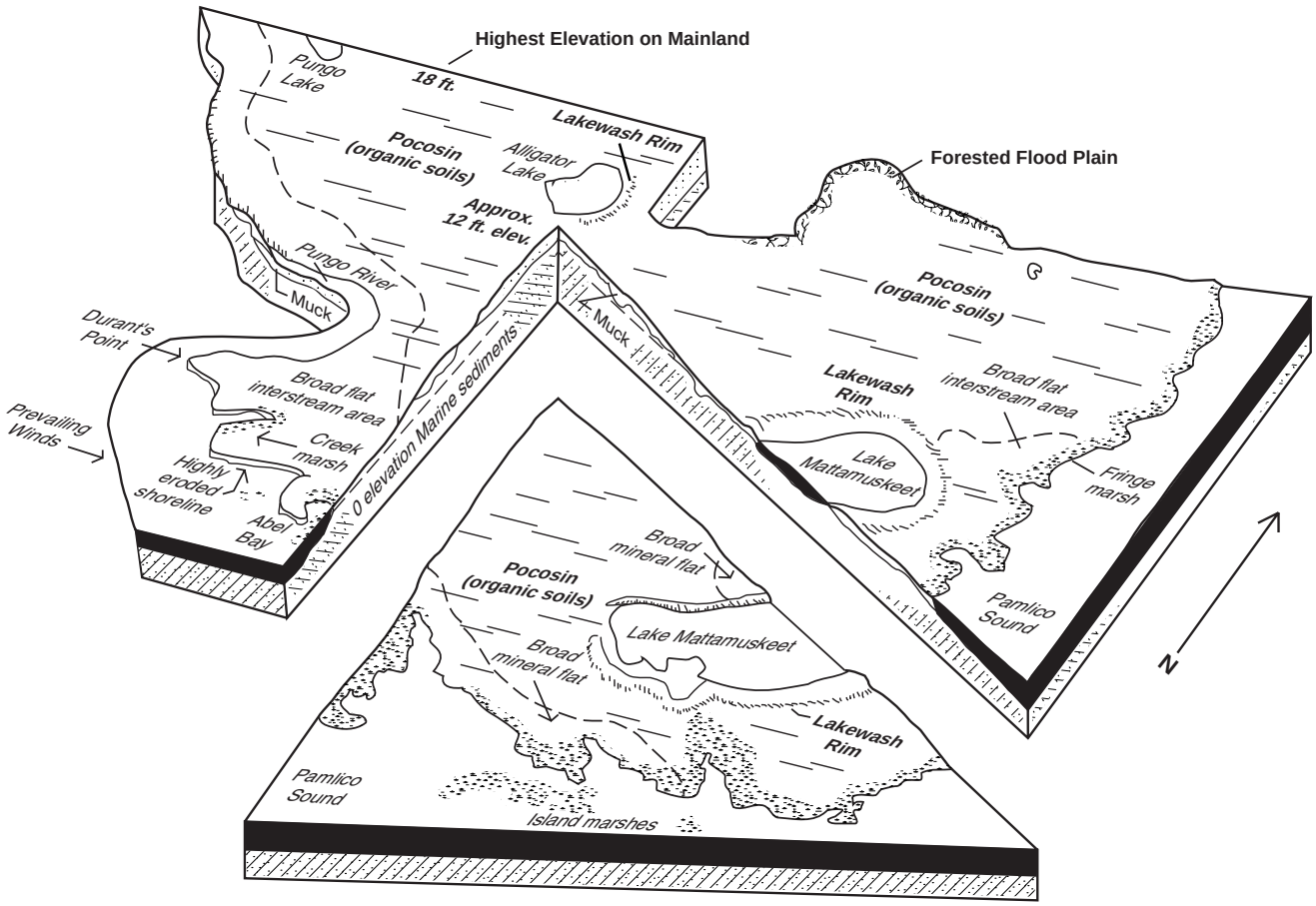


Figure 3.—Cross section of landforms in Hyde County.

above sea level east of Pungo Lake) are at the center of pocosins. The average muck accumulations are 6 to 8 feet thick. The term pocosin is derived from an Indian term meaning swamp on a hill *(7)*.

The area in the center of the pocosin, which has the greatest accumulation of muck, is known as the short pocosin because of its characteristic scrub-shrub plant community. The vegetation in these areas is nutrient deprived, obtaining virtually all of its nutrients from rainfall. The area surrounding the perimeter of the pocosin is known as the tall pocosin because of its tall woodland vegetation (fig. 5). It is estimated that muck has been accumulating in pocosins for approximately 9,000 years *(5)*.

Broad flat interstream areas are another landform on uplands in Hyde County. They formed from marine and fluvial sediments and have nearly level mineral soils dominantly composed of silt and clay. Many of these areas have shell beds within a depth of 10 to 20 feet which result in a high base saturation in the lower part of the soil. Broad flat interstream areas commonly occur within several miles of natural drainageways and are sometimes referred to as broad flat interstream divides. The largest areas of this landform surround Sladesville and Middletown.

Marshes are landforms dominated by vegetation which is tolerant of inundation by salt water and brackish water. Marshes adjacent to the mainland are flooded irregularly with brackish water by wind tides. Marshes on Ocracoke Island are flooded daily by ocean tides and storm tides. Soils on marshes are level and range from mineral to deep organic in composition. Marshes surrounding the mainland form a vital barrier against shoreline erosion and flooding.

Forested flood plains are at the head of creeks and on the outer perimeter of pocosins. They formed from the accumulation of organic matter in drainageways. These landforms transport excess water laterally from upland landforms, such as pocosins and broad flat interstream areas, to creeks and marshes. They have nearly level organic soils.

Lakewash rims are located around the perimeter of

large pocosin lakes. They formed from the transport and deposition of lake bottom sediment to the shoreline by wave action. The long fetch of large shallow pocosin lakes has caused production of waves large enough to scour the bottom and transport large amounts of sediment to the shoreline. The rims are widest on the east side of lakes and, to lesser degree, on the south side because of the prevailing southwest and northeast winds. Soils on lakewash rims commonly have a buried layer of muck. This layer is the result of the draping of wave transported mineral sediments over organic soils around the edges of lakes.

Pocosin lakes are most likely produced by the extensive burning of pocosins. Pocosin lakes are located in the highest areas of pocosins. These areas are the most likely to burn because they are the first to dry out during extended periods of drought. Peat fires also can burn for extended periods of time. According to Indian legend, the area now known as Lake Mattamuskeet once burned for 13 moons. Fires may have been started by lightning. Further evidence that fire has probably helped form these lakes is the fact that ash deposits occur beneath lakewash sediments surrounding Lake Mattamuskeet. During a dry enough period, fire may have burned down to the mineral soil material. Lake Mattamuskeet, which has a predominantly mineral bottom, could have formed in this way.

Coastal barrier islands, which include Ocracoke Island, extend from Virginia to South Carolina. They formed from the combined effects of a low slope characteristic of the North Carolina continental shelf and the rising sea level, which resulted in the rapid flooding of the Coastal Plain drainage system and the creation of estuaries (drowned river valleys). Waves breaking far offshore began to build sandbars. These sandbars formed barrier islands, including the Outer Banks. These barrier islands are slowly moving westward as sea level rises.

Another band of sandy sediments runs through the western tip of the county in a southwest to northeast direction. It runs beneath the pocosin area south of Pungo Lake and up through Lake Phelps in Washington County. It is at an elevation of approximately 5 to 10 feet above sea level. The sandy sediments are most likely the remnants of a still stand (an area where sea level remained stationary for an extended period of time).

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Belhaven, North Carolina, in the period 1968 to 1988. 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.

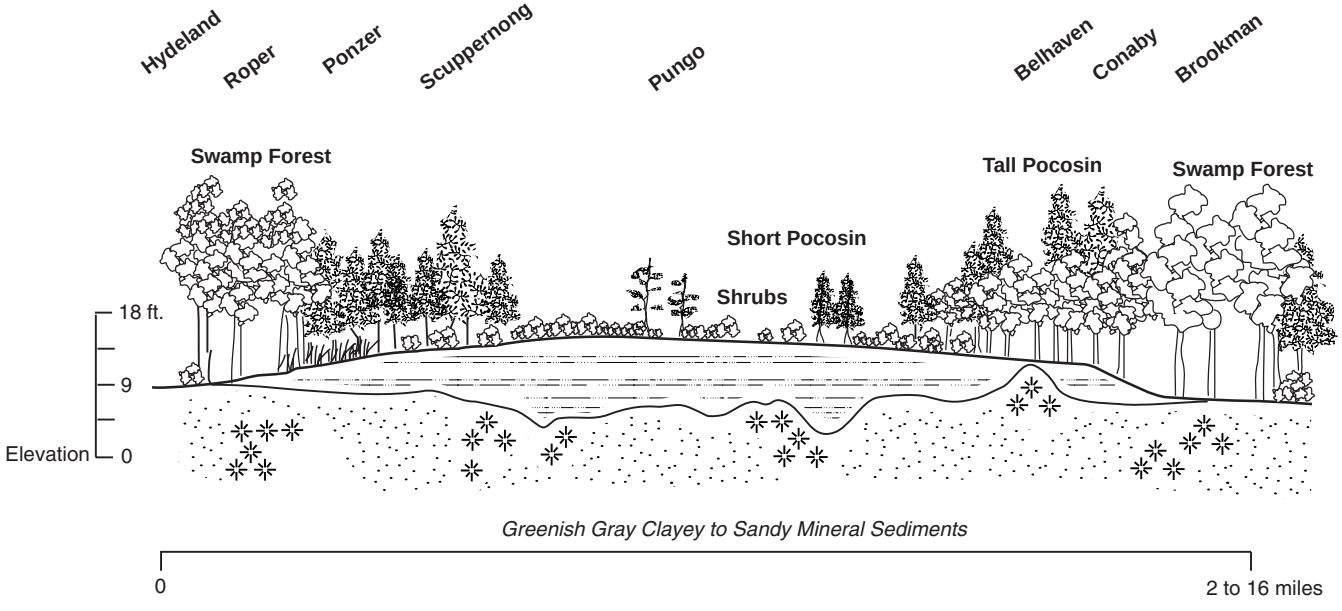


Figure 4.—Cross section of a pocosin that illustrates the relationship among soils, topography, and vegetation.

Figure 5.—Typical pocosin landscape. Vegetation includes pond pine, titi, zenobia, sweetbay, redbay, fetterbush lyonia, and Virginia chainfern.

In winter, the average temperature is 43 degrees F and the average daily minimum temperature is 33 degrees. The lowest temperature on record, which occurred on January 10, 1985, is -10 degrees. In summer, the average temperature is 78 degrees and the average daily maximum temperature is 87 degrees. The highest recorded temperature, which occurred on July 7, 1977, is 101 degrees.

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

The total average annual precipitation is about 50 inches. Of this, about 30 inches, or 60 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 11 inches. The heaviest 1-day rainfall during the period of record was 7.73 inches on October 1, 1971. Thunderstorms occur on about 41 days each year. Every few years a hurricane crosses the survey area.

The average seasonal snowfall is about 5 inches. The greatest snow depth at any one time during the period of record was 16 inches. On the average, 2 days of the year have at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 65 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 65 percent of the time possible in summer and 50

percent in winter. The prevailing wind is from the north-northeast. Average windspeed is highest, 12 miles per hour, in winter.

How This Survey Was Made

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

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

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

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

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

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

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

General Soil Map Units

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

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

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

1. Pungo

Nearly level, very poorly drained soils that have an organic surface layer and subsoil that are more than 51 inches thick and are underlain by loamy material; on pocosins and in depressions

Setting

Location in the survey area: Throughout the county
Landscape position: Pocosins and depressions
Slope: 0 to 2 percent

Composition

Percent of the survey area: 22
Pungo soils—99 percent
Minor soils (including Belhaven, Scuppernong, Ponzer, and Dorovan soils)—1 percent

Soil Characteristics

Pungo

Surface layer: Dark reddish brown muck
Subsoil: Dark reddish brown muck
Underlying material: Gray silt loam
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Organic materials underlain by marine and fluvial sediments

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Poorly suited
Management concerns: Wetness, thickness of organic layers, wood content, and acidity

Woodland

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, thickness of organic layers, and hazard of ground fire in drained areas

Urban Development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and thickness of organic layers

2. Scuppernong-Ponzer-Roper

Nearly level, very poorly drained soils that have an organic surface layer and subsoil that are 16 to 51 inches thick or have an organic surface layer and a loamy subsoil; on pocosins, on broad flats, and in depressions

Setting

Location in the survey area: Scattered throughout the county
Landscape position: Pocosins, broad flats, and depressions
Slope: 0 to 2 percent

Composition

Percent of the survey area: 40
Scuppernong soils—37 percent
Ponzer soils—23 percent
Roper soils—14 percent
Minor soils (including Belhaven, Conaby, Gullrock, Pettigrew, and Wasda soils)—26 percent

Soil Characteristics

Scuppernong

Surface layer: Black muck
Subsoil: Dark reddish brown muck
Underlying material: Upper part—dark grayish brown silt loam that has very dark grayish brown mottles; lower part—dark gray silt loam
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Organic materials over loamy marine and fluvial sediments

Ponzer

Surface layer: Black muck
Subsoil: Very dark brown muck
Underlying material: Upper part—dark grayish brown very fine sandy loam that has very dark grayish brown mottles and dark brown silt loam; lower part—gray silty clay loam and greenish gray silty clay loam that has strong brown mottles
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Organic materials over loamy marine and fluvial sediments

Roper

Surface layer: Black muck
Subsoil: Upper part—dark reddish brown muck and black silt loam; middle part—olive gray silty clay loam that has dark reddish brown mottles; lower part—dark gray silt loam
Underlying material: Dark gray silt loam and dark greenish gray silty clay loam that have olive mottles
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy marine and fluvial sediments

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Scuppernong—moderately suited in drained areas; Ponzer and Roper—well suited in drained areas
Management concerns: Wetness, acidity, wood content, and soil blowing

Woodland

Suitability: Scuppernong—poorly suited; Ponzer—moderately suited in drained areas; Roper—well suited in drained areas
Management concerns: Wetness, trafficability, seedling mortality, and hazard of ground fire in drained areas

Urban Development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and subsidence

3. Portsmouth-Newholland-Yonges

Nearly level, very poorly drained and poorly drained soils that have a loamy or sandy surface layer and a loamy subsoil; in broad flat interstream areas, in depressions, and at the outer edge of pocosins

Setting

Location in the survey area: The western part of the county, bordering the Pungo River and its tributaries
Landscape position: Broad flat interstream areas, depressions, and areas along stream terraces
Slope: 0 to 2 percent

Composition

Percent of the survey area: 4
Portsmouth soils—26 percent
Newholland soils—19 percent
Yonges soils—18 percent
Minor soils (including Stockade, Bolling, Fork, and Seabrook soils)—37 percent

Soil Characteristics

Portsmouth

Surface layer: Black mucky sandy loam and black mucky fine sandy loam

Subsoil: Dark brown fine sandy loam and dark grayish brown sandy clay loam that have very dark brown pockets of surface material
Underlying material: Light brownish gray fine sand that has dark brown mottles and dark gray fine sand
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy marine and fluvial sediments

Newholland

Surface layer: Black mucky loamy sand
Underlying material: Upper part—very dark brown loamy sand; middle part—grayish brown and dark gray sandy loam that has brown mottles; lower part—grayish brown loamy sand that has light olive brown and yellowish brown mottles
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy and sandy marine and fluvial sediments

Yonges

Surface layer: Dark grayish brown loam
Subsoil: Upper part—grayish brown, dark gray, and gray loam that has light yellowish brown, yellowish brown, strong brown, and dark gray mottles; lower part—grayish brown and gray fine sandy loam that has yellowish brown, strong brown, light olive brown, and gray mottles
Underlying material: Grayish brown loamy fine sand that has strong brown mottles
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy marine and fluvial sediments

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Management concerns: Wetness

Woodland

Suitability: Well suited in drained areas
Management concerns: Wetness, seedling mortality, and trafficability

Urban Development

Suitability: Moderately suited in drained areas
Management concerns: Wetness, seedling mortality, and trafficability

4. Hydeland-Acredale-Argent

Nearly level, very poorly drained and poorly drained soils that have a mineral surface layer and a loamy or clayey subsoil; in broad flat interstream areas, in depressions, and at the outer edge of pocosins

Setting

Location in the survey area: Areas in the western part of the county from Ponzer to Germantown and in the eastern part of the county from Engelhard to Nebraska
Landscape position: Broad flat interstream areas, depressions, and the outer edge of pocosins
Slope: 0 to 2 percent

Composition

Percent of the survey area: 13
Hydeland soils—33 percent
Acredale soils—26 percent
Argent soils—19 percent
Minor soils (including Brookman, Chapanoke, Weeksville, Yeopim, and Pasquotank soils)—22 percent

Soil Characteristics

Hydeland

Surface layer: Black silt loam
Subsoil: Upper part—black and grayish brown silt loam that has light brownish gray pockets and strong brown mottles; middle part—light brownish gray silt loam that has grayish brown, yellowish brown, and light yellowish brown mottles; lower part—gray and grayish brown loam that has strong brown, light olive brown, and yellowish brown mottles
Underlying material: Gray loam that has olive and yellowish brown mottles
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 feet in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy marine and fluvial sediments

Acredale

Surface layer: Dark grayish brown silt loam
Subsoil: Upper part—light brownish gray silt loam that has yellowish brown mottles; middle part—gray silty clay loam that has brownish yellow mottles; lower part—gray clay loam that has brownish yellow mottles and gray loam that has strong brown and yellowish red mottles
Underlying material: Gray loamy sand that has light yellowish brown mottles
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 1.0 foot in undrained areas
Slope: 0 to 2 percent
Parent material: Loamy marine and fluvial sediments

Argent

Surface layer: Very dark brown loam
Subsoil: Upper part—grayish brown silt loam that has yellowish brown mottles; middle part—grayish brown silty clay that has strong brown mottles; lower part—gray clay loam that has strong brown and light olive brown mottles
Underlying material: Gray silty clay that has light olive brown mottles
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 1.0 foot
Slope: 0 to 2 percent
Parent material: Clayey marine and fluvial sediments

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Hydeland and Acredale—well suited in drained areas; Argent—moderately suited in drained areas
Management concerns: Hydeland and Acredale—wetness; Argent—wetness, slow permeability, and poor trafficability

Woodland

Suitability: Well suited in drained areas
Management concerns: Wetness, seedling mortality, and trafficability

Urban Development

Suitability: Poorly suited
Management concerns: Wetness and restricted permeability

5. Engelhard-Weeksville-Fortescue

Nearly level, very poorly drained and poorly drained soils that have a loamy or sandy surface layer and a loamy or mucky subsoil; on lakewash rims of pocosin lakes

Setting

Location in the survey area: Adjacent to Lake Mattamuskeet and Alligator Lake and in the Gull Rock area
Landscape position: Slightly elevated lakewash rims of large pocosin lakes (fig. 6)
Slope: 0 to 3 percent

Composition

Percent of the survey area: 5
Engelhard soils—35 percent
Weeksville soils—25 percent
Fortescue soils—18 percent
Minor soils (including Wysocking and Newholland soils)—22 percent

Soil Characteristics

Engelhard

Surface layer: Very dark brown loamy very fine sand
Underlying material: Upper part—grayish brown and light brownish gray loamy very fine sand that has brown mottles; middle part—light brownish gray loamy very fine sand that has strata of black mucky silt loam; lower part—light brownish gray, dark brown, and dark grayish brown silt loam that has brown mottles
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 1.0 foot
Slope: 0 to 2 percent
Parent material: Loamy lacustrine sediments

Weeksville

Surface layer: Very dark brown loam
Subsoil: Dark grayish brown and grayish brown loam
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 1.0 foot
Slope: 0 to 2 percent
Parent material: Loamy lacustrine sediments along lakewash rims or marine and fluvial sediments

Fortescue

Surface layer: Black silt loam
Subsoil: Upper part—black silt loam and clay loam; middle part—black muck; lower part—black very fine sandy loam

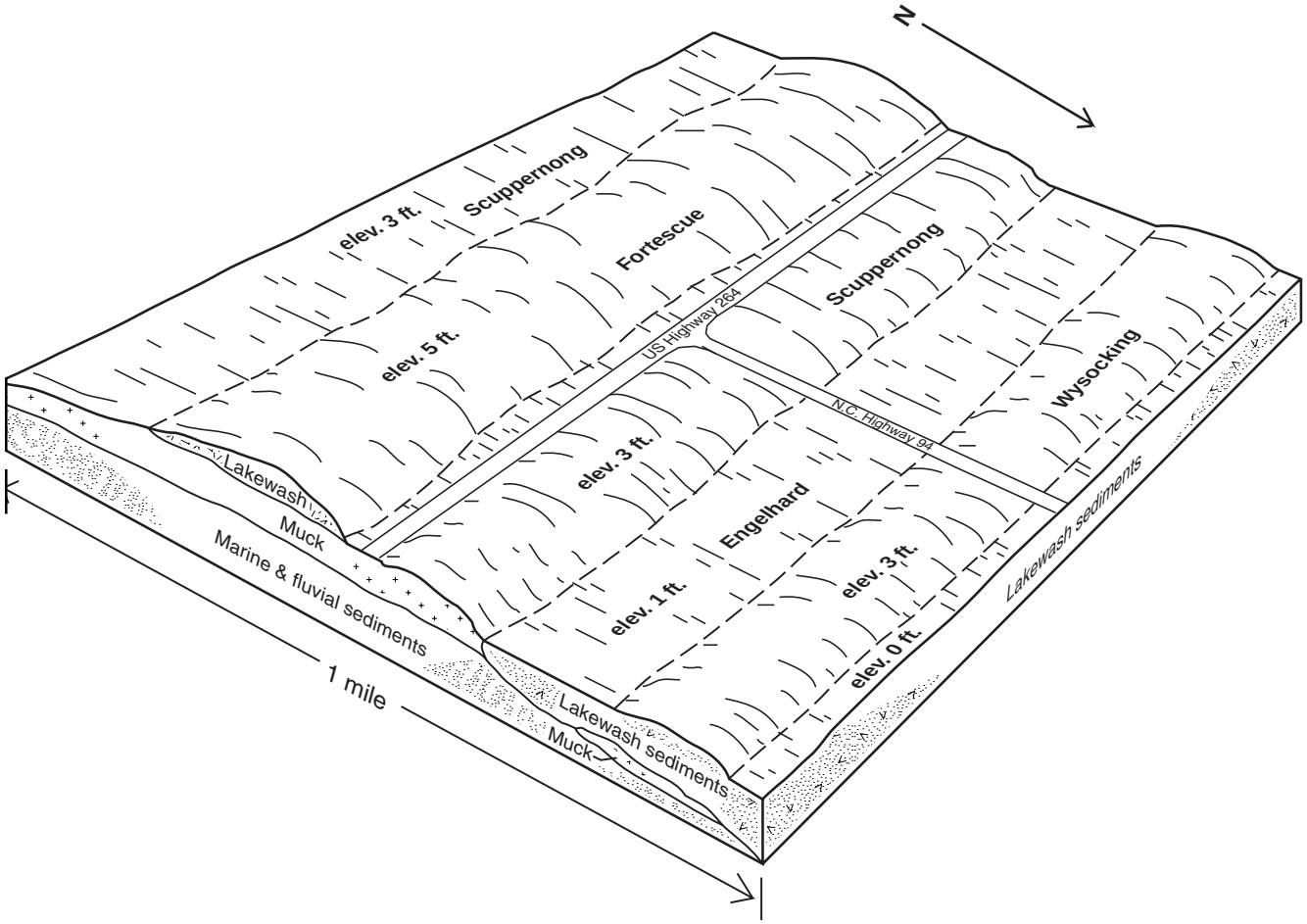


Figure 6.—Cross section of a lakewash rim on south side of Lake Mattamuskeet near Lake Comfort.

Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 3.0 feet
Slope: 0 to 2 percent
Parent material: Loamy lacustrine sediments

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Management concerns: Wetness, ditchbanks caving, and piping

Woodland

Suitability: Engelhard—moderately suited; Weeksville and Fortescue—well suited
Management concerns: Wetness, seedling mortality, and ditchbanks caving

Urban Development

Suitability: Engelhard—moderately suited in drained areas; Weeksville—poorly suited; Fortescue—moderately suited
Management concerns: Wetness, ditchbanks caving, and low bearing strength in the subsoil of the Fortescue soils

6. Longshoal-Delway-Belhaven

Nearly level and level, very poorly drained soils that are frequently flooded and have an organic surface layer and subsoil that are 16 to more than 51 inches thick; in brackish marshes and on forested flood plains

Setting

Location in the survey area: Throughout the county

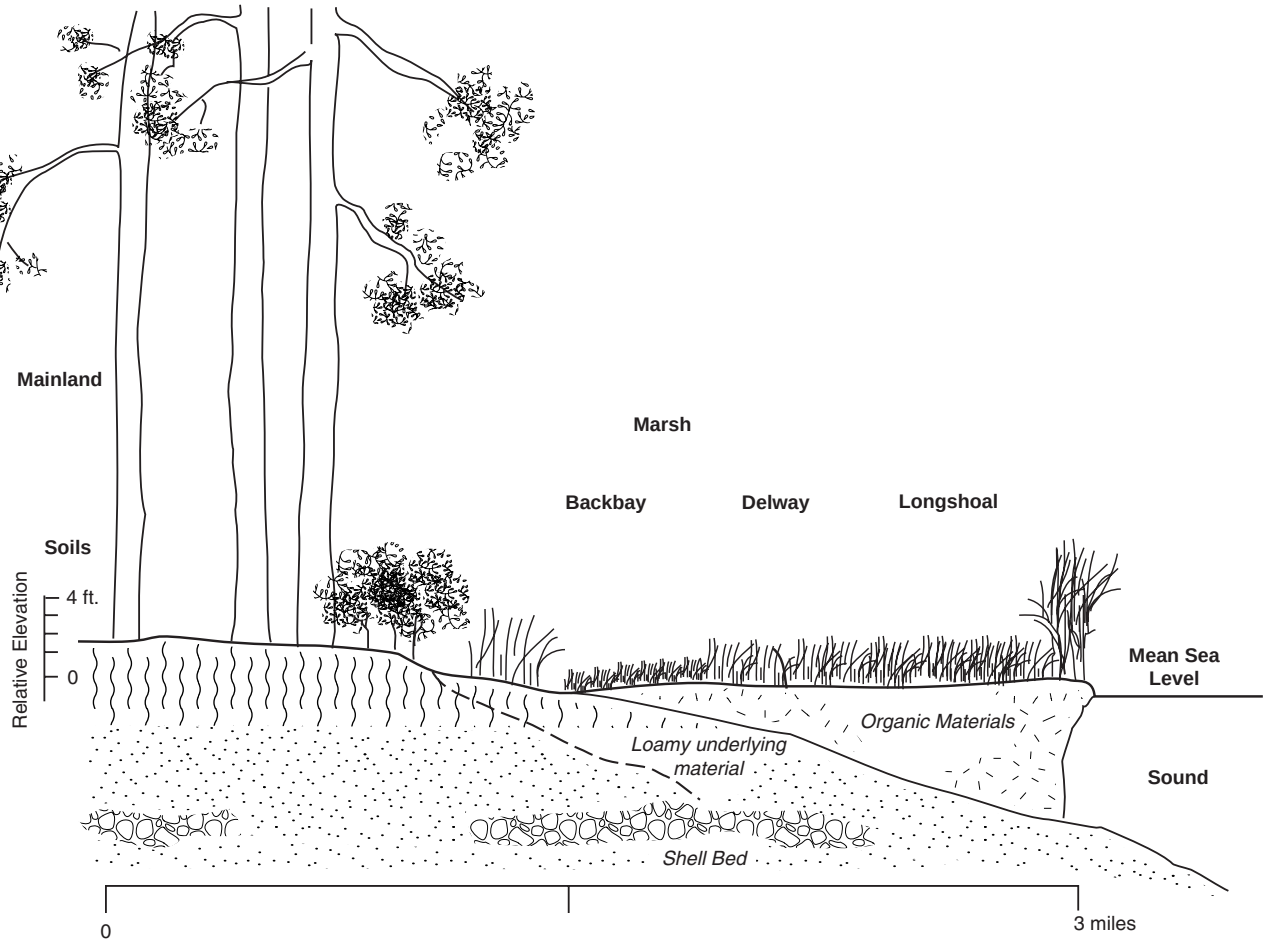


Figure 7.—Cross section of the soils and sediments of a brackish marsh.

Landscape position: Brackish marshes and forested flood plains (fig. 7)
Slope: 0 to 2 percent

Composition

Percent of the survey area: 14
Longshoal soils—32 percent
Delway soils—30 percent
Belhaven soils—14 percent
Minor soils (including Backbay, Dorovan, and Carteret soils)—24 percent

Soil Characteristics

Longshoal

Surface layer: Dark reddish brown mucky peat
Subsoil: Dark reddish brown and very dark brown muck
Depth: Very deep
Drainage class: Very poorly drained
High water table: 1.0 foot above the surface to 0.5 foot below the surface
Slope: 0 to 1 percent
Parent material: Organic materials over fluvial and marine sediments

Delway

Surface layer: Dark reddish brown muck
Subsoil: Upper part—black muck; lower part—black loam
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 0.5 foot
Slope: 0 to 1 percent
Parent material: Organic materials over marine and fluvial sediments

Belhaven

Surface layer: Dark reddish brown muck

Subsoil: Very dark grayish brown mucky sandy loam
Depth: Very deep
Drainage class: Very poorly drained
High water table: Within a depth of 0.1 foot
Slope: 0 to 2 percent
Parent material: Organic materials over marine and fluvial sediments

Use and Management

Major Uses: Wildlife habitat and woodland

Cropland

Suitability: Unsuited
Management concerns: Frequent flooding and high salt content

Woodland

Suitability: Longshoal and Delway—unsuited; Belhaven—poorly suited
Management concerns: Frequent flooding, high salt content, and low bearing strength

Urban Development

Suitability: Unsuited
Management concerns: Longshoal and Delway—very frequent flooding; Belhaven—frequent flooding

7. Carteret-Duckston-Newhan

Nearly level to steep, poorly drained to excessively drained, sandy soils; on the Outer Banks

Setting

Location in the survey area: Ocracoke Island (fig. 8)
Landscape position: Beaches, tidal marshes, sand flats, depressions, and undulating to steep sand dunes
Slope: 0 to 25 percent

Composition

Percent of the survey area: 2
Carteret soils—40 percent
Duckston soils—19 percent
Newhan soils—15 percent
Minor components (including Beaches and Corolla soils)—26 percent

Soil Characteristics

Carteret

Surface layer: Dark brown sand
Underlying material: Gray sand that has yellow mottles
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 0.1 foot

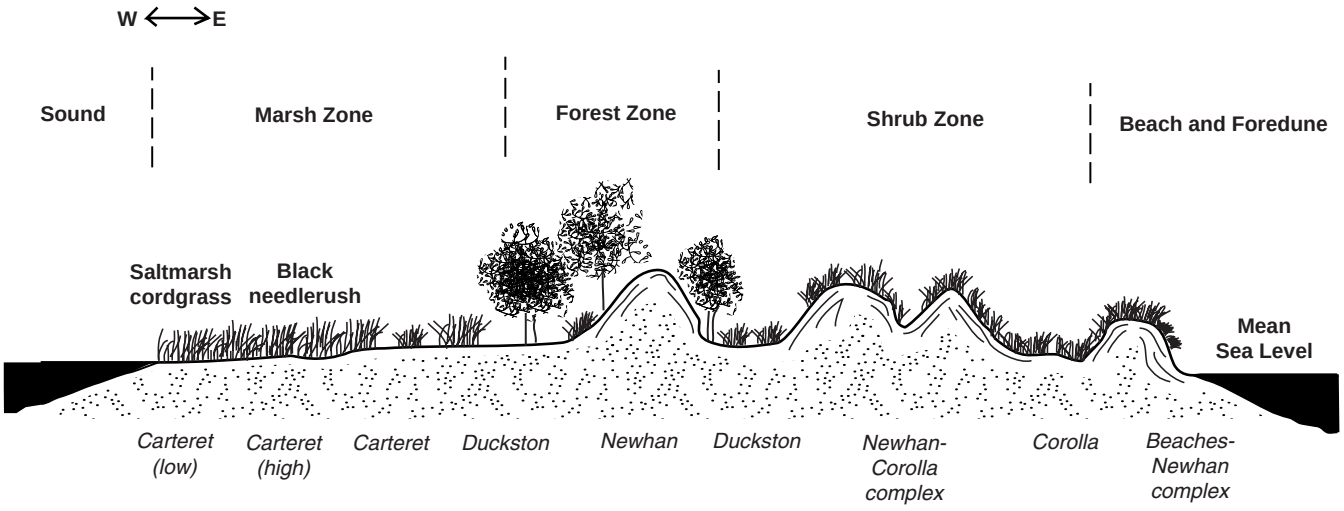


Figure 8.—Soils and vegetation zones of Ocracoke Island.

Slope: 0 to 3 percent
Parent material: Sandy marine sediments

Duckston

Surface layer: Brown sand
Underlying material: Grayish brown and greenish gray sand
Depth: Very deep
Drainage class: Poorly drained
High water table: Within a depth of 1.0 foot
Slope: 0 to 2 percent
Parent material: Sandy marine sediments

Newhan

Surface layer: Light brownish gray fine sand
Underlying material: Brown, light yellowish brown, and light brownish gray fine sand
Depth: Very deep
Drainage class: Excessively drained
High water table: At a depth of more than 6 feet
Slope: 0 to 25 percent
Parent material: Sandy aeolian and marine sediments

Use and Management

Major Uses: Recreational development and wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Exposure to salt spray, frequent flooding, and droughtiness

Woodland

Suitability: Unsuited
Management concerns: Exposure to salt spray, frequent flooding, and droughtiness

Urban Development

Suitability: Carteret and Duckston—unsuited; Newhan—poorly suited
Management concerns: Frequent flooding, wetness, and poor filtering capacity in the Newhan soils

Detailed Soil Map Units

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

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, slope, salinity, 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, Engelhard loamy very fine sand, 0 to 2 percent slopes, very frequently flooded, is a phase of the Engelhard series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Newhan-Corolla complex, 0 to 15 percent slopes, rarely flooded, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Table 5 lists the common and scientific names for native vegetation in the survey area. Other tables (see "Contents") 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 or miscellaneous areas.

AcA—Acredale silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas
Shape of areas: Irregular
Size of areas: 20 to 3,000 acres

Composition

Acredale soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

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

Subsoil:
7 to 13 inches—light brownish gray silt loam that has yellowish brown mottles
13 to 30 inches—gray silty clay loam that has brownish yellow mottles
30 to 42 inches—gray clay loam that has brownish yellow mottles
42 to 51 inches—gray loam that has strong brown and yellowish red mottles

Underlying material:
51 to 62 inches—gray loamy sand that has light yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Moderate
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsoil and underlying material
Reaction: Extremely acid to strongly acid in the surface layer and the upper part of the subsoil, except in limed areas; very strongly acid to neutral in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
- Intermingled areas of Argent soils that have more clay in the subsoil than the Acredale soil
- Intermingled areas of Yonges soils that have a sandier subsoil than the Acredale soil
- The very poorly drained Brookman and Hydeland soils in depressions and low areas on interstream divides

Similar:
- Intermingled small areas that have a dark surface layer that is 7 to 10 inches thick

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness and trafficability
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, sweetgum, swamp blackgum, green ash, yellow-poplar, water oak, willow oak, and swamp chestnut oak in the overstory; switchcane, American holly, sweetbay, redbay, bitter gallberry, blueberry, horsesugar, fetterbush, waxmyrtle, sweet pepperbush, and various vines and herbaceous plants in the understory
Management concerns: Wetness, trafficability, seedling mortality, and soil compaction during wet periods
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.
- Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IVw in undrained areas; IIIw in drained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

ArA—Argent loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas
Shape of areas: Irregular
Size of areas: 5 to 2,000 acres

Composition

Argent soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
5 inches to 0—partially decomposed roots, leaves, and twigs
0 to 5 inches—very dark brown loam

Subsoil:
5 to 14 inches—grayish brown silt loam that has yellowish brown mottles
14 to 32 inches—grayish brown silty clay that has strong brown mottles
32 to 36 inches—gray clay loam that has strong brown mottles
36 to 58 inches—gray clay loam that has light olive brown mottles

Underlying material:
58 to 65 inches—gray silty clay that has light olive brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Slow
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Moderate
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low below the surface layer
Reaction: Extremely acid to moderately acid in the surface layer and the upper part of the subsoil, except in limed areas; very strongly acid to moderately alkaline in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
• The very poorly drained Brookman and Hydeland soils in depressions and in areas further from drainageways
• Intermingled areas of Acredale and Yonges soils that have less clay in the subsoil than the Argent soil
• Small undrained areas that are ponded for brief periods

Similar:
• Intermingled small areas that have a dark surface layer that is 7 to 10 inches thick

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Moderately suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, trafficability, and permeability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Moderately suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, sweetgum, swamp blackgum, water tupelo, green ash, yellow-poplar, water oak, willow oak, and swamp chestnut oak in the overstory; switchcane, American holly, redbay, sweetbay, blueberry, waxmyrtle, and sweet pepperbush in the understory
Management concerns: Wetness, trafficability, seedling mortality, and soil compaction during wet periods

Figure 9.—Backbay mucky peat, 0 to 1 percent slopes, very frequently flooded, is in the foreground. It has trees and shrubs that have been adversely affected by salt. Black needlerush on Delway muck, 0 to 1 percent slopes, very frequently flooded, is in the background.

Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.
- Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, trafficability, and restricted permeability
Management measures and considerations:
- Installing and maintaining drainage systems and crowning lots helps to minimize standing water.
- The use of equipment should be restricted during wet periods.

Interpretive Groups

Land capability classification: IVw in undrained areas; IIIw in drained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

BaA—Backbay mucky peat, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape position: Brackish marshes along the edge of uplands (fig. 9)
Shape of areas: Elongated
Size of areas: 10 to 1,200 acres

Composition

Backbay soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 4 inches—dark brown mucky peat
4 to 14 inches—very dark brown muck
14 to 21 inches—black sandy loam

Underlying material:
21 to 29 inches—dark bluish gray sandy loam that has gray mottles
29 to 41 inches—greenish gray sandy clay loam that has yellowish brown mottles
41 to 62 inches—dark greenish gray sandy clay loam that has yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow
Available water capacity: Moderate or high
High water table: Within a depth of 0.5 foot
Flooding: Very frequently flooded by wind tides
Shrink-swell potential: Low in the surface layer; moderate in the underlying material
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high in the surface layer; low in the underlying material
Reaction: Very strongly acid to moderately acid in the surface layer; strongly acid to neutral in the underlying material

Inclusions

Contrasting:
- Delway soils that are at the outer edge of the map unit delineations and have more than 16 inches of muck or mucky peat in the surface layer
- Intermingled small areas that have more clay in the subsoil than the Backbay soil

Similar:
- Small frequently flooded areas that are on the mainland edge of the map unit delineations and have less than 8 inches of muck or mucky peat in the surface layer

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Woodland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Wildlife and fish habitat

Native vegetation: Black needlerush, saltmarsh cordgrass, saltgrass, sea oxeye, marsh sedge, and three square in the saltier areas; saltmeadow hay, sawgrass, big cordgrass, marsh mallow, narrowleaf cattail, poison ivy, marshelder, baccharis, waxmyrtle, red cedar, pond pine, and stunted loblolly pines in other areas
Management measures and considerations:
- This map unit is valuable as nursery areas for many commercial fish species.
- Areas of this map unit form a natural barrier against storm surges and provide a buffer against saltwater intrusion.
- Marshes remain stable as sea level rises, filter sediments from creeks and ditches, and have aesthetic value as natural open areas.
- This map unit provides important habitat to ducks, wading birds, and many other wildlife species.

Urban development

Suitability: Unsuited
Management concerns: Very frequent flooding by wind tides

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

BcA—Beaches

Setting

Landscape position: Smooth areas on sand flats at the south end of Ocracoke Island
Shape of areas: Elongated
Size of areas: 449 acres

Composition

Beaches: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

This map unit consists of fine to very coarse sand. The material has few to many shell fragments. A typical profile is not given.

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Rapid
Available water capacity: Very low
High water table: At a depth of 1.0 to 3.0 feet
Flooding: Very frequently flooded by storm tides
Shrink-swell potential: Low
Erosion: Severe by wind and storm tides
Slope class: Nearly level
Organic matter content: Low throughout the profile
Reaction: Strongly acid to slightly alkaline throughout the profile

Inclusions

Contrasting:
- Carteret soils near the outer edge of the map unit delineations
- Intermingled areas of Duckston soils
- Intermingled areas of Corolla soils on small hummocks

Similar:
- Small areas that have slopes of more than 3 percent

Use and Management

Major Uses: Recreational development and wildlife habitat

Recreational development

Management concerns: Storm tides, strong winds, and shifting sands
Management measures and considerations:
- This map unit has limitations restricting the use of permanent structures.

Wildlife habitat

Native vegetation: Little or no vegetation due to occasional flooding by storm tides and severe hazard of soil blowing
Management concerns: Shifting sands due to wind and flooding by storm tides
Management measures and considerations:
- Areas of this map unit are vital in stabilizing the barrier islands and provide a buffer to the mainland against storm surges.
- This map unit provides important habitat for shore birds and other wildlife species.
- This map unit has limitations restricting the use of permanent structures.

Urban development

Suitability: Poorly suited
Management concerns: Flooding, severe hazard of soil blowing, and wetness
Management measures and considerations:
- This map unit has limitations restricting the use of permanent structures.

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

BeE—Beaches-Newhan complex, 3 to 50 percent slopes, flooded

Setting

Landscape position: Beaches—on ocean side and near inlets of Ocracoke Island, in low areas flooded daily by ocean tides and low areas between foredunes very frequently flooded by storm tides; Newhan—rolling to steep sand dunes adjacent to Beaches at elevations of 3 to 20 feet
Shape of areas: Linear
Size of areas: 945 acres

Composition

Beaches: 65 percent
Newhan soil and similar inclusions: 30 percent
Constrasting inclusions: 5 percent

Typical Profile

Beaches

This component consists of fine to very coarse sand. The material has few to many shell fragments. A typical profile is not given.

Newhan

Surface layer:
0 to 1 inch—light brownish gray fine sand

Underlying material:
1 to 24 inches—brown fine sand
24 to 42 inches—light yellowish brown fine sand
42 to 80 inches—light gray fine sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Beaches—poorly drained; Newhan—excessively drained
Permeability: Beaches—rapid; Newhan—very rapid
Available water capacity: Very low
High water table: Beaches—within a depth of 3.0 feet; Newhan—at a depth of more than 6.0 feet
Flooding: Beaches—flooded daily by ocean tides,

flooded very frequently on beach berm by storm tides; Newhan—rarely flooded by storm tides
Shrink-swell potential: Low
Erosion: Beaches—severe by storm tides, wind, and ocean currents; Newhan—severe by wind and storm tides
Slope class: Beaches—gently sloping; Newhan—strongly sloping to steep
Organic matter content: Low throughout the profile
Reaction: Beaches—strongly acid to slightly alkaline throughout; Newhan—extremely acid to slightly alkaline throughout

Inclusions

Contrasting:
• Intermingled areas of Duckston and Corolla soils in depressions and troughs

Similar:
• Small areas that have slopes of less than 3 percent

Use and Management

Major Uses: Recreational development and wildlife habitat

Recreational development

Management concerns: Daily ocean tides, storm tides, and shifting sands due to wind and wave action
Management measures and considerations:
• This map unit has limitations restricting the use of permanent structures.

Wildlife habitat

Native vegetation: Beaches—little or no vegetation due to daily tidal flooding and severe hazard of soil blowing; Newhan—American beachgrass, seaoats, coastal panicgrass, and bitter panicum
Management concerns: Shifting sands due to wind and flooding by storm tides
Management measures and considerations:
• Areas of this map unit are vital in stabilizing the barrier islands by providing a buffer against storm surges and also protect the mainland against storm surges.
• This map unit provides important habitat for shore birds and other wildlife species.
• This map unit has limitations restricting the use of permanent structures.

Urban development

Suitability: Poorly suited
Management concerns: Daily flooding by ocean tides, occasional flooding by storm tides, severe hazard of soil blowing, erosion by ocean currents, and poor filtering capacity
Management measures and considerations:
• This map unit has limitations restricting the use of permanent structures.
• Planting American beachgrass and other salt- and drought-tolerant vegetation helps to stabilize areas of this map unit.

Interpretive Groups

Land capability classification: Beaches—VIIIw; Newhan—VIIIs
Woodland ordination symbol: None assigned

BmA—Belhaven muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flats, pocosins, and depressions, mainly in the northwestern part of the county
Shape of areas: Irregular
Size of areas: 10 to 2,000 acres

Composition

Belhaven soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 40 inches—dark reddish brown muck
40 to 53 inches—very dark grayish brown mucky sandy loam

Underlying material:
53 to 65 inches—dark grayish brown sandy clay loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind
Slope class: Nearly level
Organic matter content: Very high in the surface layer and subsoil (if it occurs); high in the underlying material
Reaction: Extremely acid in the surface layer, except in

limed areas; extremely acid to slightly acid in the underlying material

Inclusions

Contrasting:
- Conaby and Wasda soils that are near the outer edge of the map unit delineations and have less than 16 inches of muck in the surface layer
- Ponzer soils that are near the outer edge of the map unit delineations and have black muck
- Intermingled areas of Scuppernong soils that have a silty mineral subsoil
- Pungo soils that are near the outer edge of the map unit delineations and have a thicker layer of muck than the Belhaven soil
- Intermingled small areas that are south of Pungo Lake and west of Fairfield and have muck underlain by sandy materials
- Small undrained areas that are ponded for brief to long periods

Similar:
- Small areas that have a thin mineral surface layer and are mainly near the edge of pocosin lakes

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Moderately suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, acidity, wood content, and soil blowing
Management measures and considerations:
- Drainage systems should be installed and maintained.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.
- Removing roots and wood fragments helps to increase productivity.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Poorly suited
Productivity: Moderately high
Native vegetation: Pond pine, red maple, sweetgum, swamp blackgum, baldcypress, water tupelo, and Atlantic white-cedar in the overstory; bitter gallberry, fetterbush, titi, zenobia, loblolly bay, sweetbay, redbay, waxmyrtle, Virginia chainfern, and sweet pepperbush in the understory
Management concerns: Wetness, low strength, seedling mortality, and hazard of ground fire during dry periods
Management measures and considerations:
- Drainage systems should be maintained.
- The use of equipment should be restricted during wet periods.
- Bedding helps to reduce seedling mortality rates.
- Installing water-control structures in drained areas helps to control wildfire.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and excess humus
Management measures and considerations:
- Drainage systems should be maintained.
- The use of pilings for heavy structures helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IVw in drained areas; VIIw in undrained areas
Woodland ordination symbol: 3W, based on pond pine as the indicator species

BnA—Belhaven muck, 0 to 2 percent slopes, frequently flooded

Setting

Landscape position: Forested flood plains and the freshwater marshes of Lake Mattamuskeet
Shape of areas: Elongated
Size of areas: 10 to 400 acres

Composition

Belhaven soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 40 inches—dark reddish brown muck
40 to 53 inches—very dark grayish brown mucky sandy loam

Underlying material:
53 to 65 inches—dark grayish brown sandy clay loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid throughout the profile
Available water capacity: High or very high

High water table: Within a depth of 0.5 foot in undrained areas
Flooding: Frequent
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high in the surface layer; high in the underlying material
Reaction: Extremely acid in the surface layer and subsoil; extremely acid to slightly acid in the underlying material

Inclusions

Contrasting:
- Intermingled areas of Dorovan soils that have more than 51 inches of muck
- Areas that have less than 16 inches of muck and are near the edge of the map unit delineations
- Small areas that are ponded for long or very long periods

Similar:
- Small areas that have a thin mineral surface layer

Use and Management

Major Uses: Woodland

Woodland

Suitability: Poorly suited
Productivity: Moderately high
Native vegetation: Baldcypress, swamp blackgum, water tupelo, green ash, red maple, and willow in the overstory; baccharis, marshelder, and various shrubs and herbaceous plants in the understory; dominantly cattails, three square, and rushes in the marsh areas
Management concerns: Flooding, wetness, low strength, and seedling mortality
Management measures and considerations:
- The use of equipment should be restricted during wet periods.

Urban development

Suitability: Unsuited
Management concerns: Flooding and low bearing strength

Interpretive Groups

Land capability classification: VIIw in undrained areas
Woodland ordination symbol: 7W, based on swamp blackgum as the indicator species

BoA—Bolling loamy fine sand, 0 to 3 percent slopes, rarely flooded

Setting

Landscape position: Smooth to slightly rounded ridges along the upland edge of marshes and creeks bordering the Pungo River
Shape of areas: Irregular
Size of areas: 10 to 400 acres

Composition

Bolling soil and similar inclusions: 80 percent
Constrasting inclusions: 20 percent

Typical Profile

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

Subsurface layer:
6 to 17 inches—light yellowish brown loamy fine sand

Subsoil:
17 to 22 inches—light yellowish brown sandy clay loam that has yellowish brown mottles
22 to 31 inches—light yellowish brown sandy clay loam that has gray and brown mottles
31 to 48 inches—gray sandy loam that has strong brown and light yellowish brown mottles
48 to 55 inches—light yellowish brown loamy sand

Underlying material:
55 to 70 inches—light yellowish brown sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Available water capacity: Moderate or high
High water table: At a depth of 1.5 to 2.5 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsurface layer, subsoil, and underlying material
Reaction: Very strongly acid to neutral throughout the profile

Inclusions

Contrasting:
- The poorly drained Yonges soils in depressions and drainageways

• Intermingled areas of the somewhat poorly drained Fork soils in depressions and at the edge of the map unit delineations
• The very poorly drained Dorovan soils on flood plains near the edge of the map unit delineations

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness and limited size of areas
Management measures and considerations:
• Drainage systems should be installed and maintained.

Woodland

Suitability: Well suited
Productivity: High
Native vegetation: Loblolly pine, red maple, sweetgum, water oak, yellow-poplar, white oak, southern red oak, dogwood, and swamp blackgum in the overstory; American holly, sourwood, waxmyrtle, highbush blueberry, and sweet pepperbush in the understory
Management concerns: Wetness
Management measures and considerations:
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Moderately suited
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

BrA—Brookman loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas, depressions, and the outer edge of pocosins
Shape of areas: Irregular
Size of areas: 5 to 1,000 acres

Composition

Brookman soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 7 inches—very dark gray loam

Subsoil:
7 to 13 inches—very dark gray silty clay loam
13 to 18 inches—dark grayish brown silty clay loam that has light olive brown and dark gray mottles
18 to 31 inches—gray clay that has strong brown mottles
31 to 42 inches—gray fine sandy loam that has strong brown and dark brown mottles

Underlying material:
42 to 58 inches—dark greenish gray fine sandy loam that has olive brown and strong brown mottles
58 to 70 inches—dark gray loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low in the surface layer; moderate in the subsoil
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in surface layer; low to high in the subsoil and underlying material
Reaction: Very strongly acid to slightly acid in the surface layer and the upper part of the subsoil; very strongly acid to slightly alkaline in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
• Intermingled areas of Hydeland soils that have a silty subsoil
• Intermingled areas of Pettigrew soils that have a muck surface layer that is 8 to 16 inches thick
• Intermingled areas of the poorly drained Argent soils
• Small undrained areas that are ponded for brief to very long periods

Similar:
• Intermingled small areas that have less than 8 inches of muck on the surface

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, trafficability, and restricted permeability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, sweetgum, Atlantic white-cedar, water tupelo, swamp blackgum, green ash, water oak, willow oak, and swamp chestnut oak in the overstory; switchcane, American holly, blueberry, waxmyrtle, bitter gallberry, and sweet pepperbush in the understory
Management concerns: Wetness, trafficability, seedling mortality, and soil compaction during wet periods
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
• Installing and maintaining drainage systems and crowning lots help to minimize standing water.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

CaA—Carteret sand, low, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape position: Tidal marshes on Ocracoke Island
Shape of areas: Elongated
Size of areas: 5 to 600 acres

Composition

Carteret soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 2 inches—dark brown sand

Underlying material:
2 to 9 inches—gray sand
9 to 60 inches—olive gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Rapid or very rapid
Available water capacity: Very low
High water table: Within a depth of 1.0 foot
Flooding: Flooded daily by ocean tides
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Level
Organic matter content: Low throughout the profile
Reaction: Moderately acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
• The poorly drained Duckston and Carteret soils that are near the upland edge of the map unit delineations and are rarely flooded
• Carteret soils, high, that are on the upland edge of the map unit delineations and are irregularly flooded but usually flooded at least once monthly

Similar:
• Small areas that have a thin organic surface layer

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Daily tidal flooding

Woodland

Suitability: Unsuited
Management concerns: Daily tidal flooding

Wildlife and fish habitat

Native vegetation: Saltmarsh cordgrass

Management measures and considerations:
• This map unit is valuable as nursery areas for many commercial fish species.
• Areas of this map unit form a natural barrier against storm surges and provide a buffer against the inland intrusion of salt water.

Urban development

Suitability: Unsuited
Management concerns: Flooding and wetness

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

CbA—Carteret sand, high, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape position: Tidal marshes on Ocracoke Island
Shape of areas: Irregular
Size of areas: 5 to 350 acres

Composition

Carteret soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 2 inches—dark brown sand

Underlying material:
2 to 9 inches—gray sand
9 to 60 inches—olive gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Rapid or very rapid
Available water capacity: Very low
High water table: Within a depth of 1.0 foot
Flooding: Irregularly flooded by storm and wind tides
Shrink-swell potential: Low
Erosion: None
Slope class: Level
Organic matter content: Low throughout the profile
Reaction: Moderately acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
• The poorly drained Duckston soils that are near the edge of the map unit delineations and are rarely flooded
• Intermingled small areas of the occasionally flooded Carteret soils
• Carteret soils, low, that are near the outer edge of the map unit delineations and are flooded daily by ocean tides

Similar:
• Intermingled small areas that have less than 8 inches of muck on the surface

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Very frequent flooding by storm and wind tides

Woodland

Suitability: Unsuited
Management concerns: Very frequent flooding by storm and wind tides

Wildlife and fish habitat

Native vegetation: Black needlerush, saltmeadow hay, sea lavender, saltgrass, sea oxeye, and three square
Management measures and considerations:
• This map unit is valuable as nursery areas for many commercial fish species.
• Areas of this map unit form a natural barrier against storm surges and provide a buffer against the inland intrusion of salt water.

Urban development

Suitability: Unsuited
Management concerns: Flooding and wetness

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

CeA—Carteret sand, 0 to 3 percent slopes, frequently flooded

Setting

Landscape position: Tidal marshes on Ocracoke Island
Shape of areas: Irregular
Size of areas: 10 to 200 acres

Composition

Carteret soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 2 inches—dark brown sand

Underlying material:
2 to 9 inches—gray sand
9 to 60 inches—olive gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Rapid or very rapid
Available water capacity: Very low
High water table: Within a depth of 1.0 foot
Flooding: Occasionally flooded by storm and wind tides
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Level or nearly level
Organic matter content: Low throughout the profile
Reaction: Moderately acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
- The poorly drained Duckston and Carteret soils that are near the edge of the map unit delineations and are rarely flooded
- Small areas of Carteret soils, high, that are near the outer edge of the map unit delineations and are very frequently flooded by storm and wind tides

Similar:
- Intermingled small areas that have less than 8 inches of muck on the surface

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Occasional flooding by storm and wind tides, wind, and excess salt

Woodland

Suitability: Unsuited
Management concerns: Occasional flooding by storm and wind tides, wind, and excess salt

Wildlife and fish habitat

Native vegetation: Saltmeadow hay, sea lavender, saltgrass, sea oxeye, and three square
Management measures and considerations:
- This map unit is valuable as nursery areas for many commercial fish species.
- Areas of this map unit form a natural barrier against storm surges and provide a buffer against the inland intrusion of salt water.

Urban development

Suitability: Unsuited
Management concerns: Flooding and wetness

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

ChA—Chapanoke silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Smooth ridges on the upland edge of creeks and marshes, near the Pungo River and its tributaries
Shape of areas: Elongated
Size of areas: 5 to 50 acres

Composition

Chapanoke soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

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

Subsurface layer:
3 to 5 inches—light brownish gray silt loam that has pale brown and yellowish brown mottles

Subsoil:
5 to 13 inches—light olive brown silt loam that has light brownish gray and strong brown mottles
13 to 40 inches—light brownish gray clay loam that has yellowish brown and gray mottles
40 to 50 inches—gray loam that has strong brown mottles

Underlying material:
50 to 58 inches—gray sandy loam that has light olive brown and yellowish brown mottles
58 to 72 inches—stratified gray clay loam, sandy clay loam, and clay having light olive brown and yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Available water capacity: High
High water table: At a depth of 0.5 foot to 1.5 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsurface layer, subsoil, and underlying material
Reaction: Extremely acid to slightly acid throughout the profile

Inclusions

Contrasting:
- The poorly drained Acredale soils on the outer edge of the map unit delineations
- The poorly drained Argent soils that are on the outer edge of the map unit delineations and have a clayey subsoil
- Intermingled areas of Yeopim soils that are moderately well drained

Similar:
- Small areas that have a dark surface layer that is 7 to 10 inches thick
- Small areas that are at the outer edge of the map unit delineations and have slopes of more than 2 percent

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness and trafficability
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Moderately suited
Productivity: High
Native vegetation: Loblolly pine, sweetgum, water oak, willow oak, swamp chestnut oak, red maple, yellow-poplar, white oak, and hickory in the overstory; sweetbay, redbay, American holly, sweet pepperbush, switchcane, waxmyrtle, bitter gallberry, horsesugar, highbush blueberry, and various ferns, vines, and herbaceous plants in the understory
Management concerns: Wetness, trafficability, and seedling mortality
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.
- Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIw in drained areas; IIIw in undrained areas
Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

CoA—Conaby muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Depressions, broad flats, and the edge of pocosins
Shape of areas: Irregular
Size of areas: 50 to 500 acres

Composition

Conaby soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 9 inches—black muck
9 to 13 inches—very dark brown muck
13 to 27 inches—dark brown fine sandy loam

Underlying material:
27 to 42 inches—brown fine sand that has light brownish gray and very dark gray mottles
42 to 51 inches—light gray fine sand that has very dark gray and light yellowish brown mottles
51 to 70 inches—gray fine sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow or moderate in the surface layer; moderately rapid in the underlying material
Available water capacity: Low or moderate
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind
Slope class: Nearly level
Organic matter content: Very high in the surface layer; low in the underlying material
Reaction: Extremely acid to strongly acid in the surface layer, except in limed areas; moderately acid to slightly alkaline in the underlying material

Inclusions

Contrasting:
• Intermingled areas of Wasda soils that have more clay in the subsoil than the Conaby soil
• Intermingled areas of Stockade and Portsmouth that have a mineral surface layer and have more clay in the subsoil than the Conaby soil
• Intermingled areas of Newholland soils that have a mineral surface layer
• Intermingled areas of Belhaven and Ponzer soils that have more than 16 inches of muck in the surface layer and subsoil and are mainly along the outer edge of the map unit delineations
• Small undrained areas that are ponded for very brief to very long periods
• Intermingled small areas that have a mineral subsoil of sand or loamy sand

Similar:
• Intermingled small areas that have less than 8 inches of muck in the surface layer

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, wheat, and soybeans
Management concerns: Wetness, low bearing strength, ditchbanks caving, soil blowing, and wood content
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Removing wood from the soil increases productivity.
• Minimizing tillage, managing crop residue, and establishing windbreaks help to control soil blowing.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Red maple, Atlantic white-cedar, sweetbay, redbay, loblolly bay, baldcypress, water tupelo, swamp blackgum, loblolly pine, and sweetgum in the overstory; bitter gallberry, titi, waxmyrtle, sweet pepperbush, highbush blueberry, fetterbush, and switchcane in the understory
Management concerns: Wetness, poor trafficability, and seedling mortality
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Bedding helps to reduce seedling mortality rates.
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and ditchbanks caving
Management measures and considerations:
• Installing and maintaining drainage systems help to overcome the wetness limitation.
• Removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 11W, based on loblolly pine as the indicator species

CrB—Corolla sand, 0 to 6 percent slopes, rarely flooded

Setting

Landscape position: Areas between dunes and next to depressions and sloughs on Ocracoke Island
Shape of areas: Elongated
Size of areas: 10 to 200 acres

Composition

Corolla soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 1 inch—dark grayish brown sand

Underlying material:
1 to 22 inches—brown sand
22 to 36 inches—grayish brown sand that has strong brown layers of coarse sand
36 to 40 inches—very dark grayish brown sand
40 to 60 inches—dark gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Very rapid
Available water capacity: Very low
High water table: At a depth of 1.5 to 3.0 feet
Flooding: Rare
Shrink-swell potential: Low
Erosion: Moderate by wind
Slope class: Nearly level or undulating
Organic matter content: Low throughout the profile
Reaction: Moderately acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
- Intermingled areas of the poorly drained Duckston soils in sloughs and depressions
- Intermingled areas of the excessively drained Newhan soils on hummocks
- The very poorly drained Carteret soils near the edge of salt marshes

Similar:
- Small intermingled areas that do not have a surface layer

Use and Management

Major Uses: Wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Exposure to salt spray, flooding with salt water, and droughtiness

Woodland

Suitability: Unsuited
Management concerns: Exposure to salt spray, flooding with salt water, and droughtiness

Wildlife habitat

Native vegetation: Bitter panicum, saltmeadow hay, and silverlead croton in areas that receive high amounts of salt spray; live oak, red cedar, waxmyrtle, largeleaf pennywort, seaside goldenrod, yaupon holly, baccharis, blueberry, wild olive, stunted pine, seacoast bluestem, seashore mallow, marshelder, and searocket in areas that are less affected by salt spray

Urban development

Suitability: Poorly suited
Management concerns: Wetness, soil blowing, poor filtering capacity, seepage, and rare flooding from strong storms and hurricanes
Management measures and considerations:
- Building structures on pilings helps to reduce the hazard of flooding.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: None assigned

DeA—Delway muck, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape position: Brackish marshes adjacent to rivers, creeks, and the Pamlico Sound
Shape of areas: Elongated
Size of areas: 10 to 2,000 acres

Composition

Delway soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 28 inches—dark reddish brown muck

Subsoil:
28 to 36 inches—black muck
36 to 48 inches—black loam
48 to 80 inches—greenish gray loam that has dark gray mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid or rapid in the surface layer and the upper part of the subsoil; moderately slow in the lower part of the subsoil and in the underlying material
Available water capacity: Very high
High water table: Within a depth of 0.5 foot

Flooding: Very frequently flooded by wind tides
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high throughout the profile
Reaction: Extremely acid to slightly alkaline throughout the profile

Inclusions

Contrasting:
• Longshoal soils that are on the outer edge of the map unit delineations and in old buried sloughs and have more than 51 inches of muck
• Backbay soils that are on the outer edge of the map unit delineations and have less than 16 inches of muck

Similar:
• Intermingled small areas in which more than half of the thickness of the organic layer is mucky peat
• Small areas near the edge of the water that have a mineral surface layer less than 16 inches thick

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Woodland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Wildlife and fish habitat

Native vegetation: Black needlerush, saltmeadow hay, saltmarsh cordgrass, rose mallow, marshelder, sea oxeye, baccharis, marsh sedge, and three square
Management measures and considerations:
• This map unit supports native marsh vegetation.
• This map unit is valuable as nursery areas for many commercial fish species.
• Areas of this map unit form a natural barrier against storm surges and provide a buffer against saltwater intrusion.
• Marshes remain stable as sea level rises, filter sediments from creeks and ditches, and have aesthetic value as natural open areas.
• This map unit provides important habitat for sea ducks, wading birds, and many other wildlife species.

Urban development

Suitability: Unsuited
Management concerns: Very frequent flooding by wind tides

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

DoA—Dorovan muck, 0 to 1 percent slopes, frequently flooded

Setting

Landscape position: Forested flood plains
Shape of areas: Elongated
Size of areas: 50 to 200 acres

Composition

Dorovan soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark brown muck

Subsoil:
5 to 70 inches—dark reddish brown muck

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Available water capacity: High
High water table: Within a depth of 0.5 foot in undrained areas
Flooding: Frequent
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high throughout the profile
Reaction: Extremely acid to very strongly acid in the surface layer; very strongly acid or strongly acid in the underlying material

Inclusions

Contrasting:
• Intermingled areas of the frequently flooded Belhaven soils that have 16 to 51 inches of muck
• Longshoal soils that are on the downstream edge of the map unit delineations and have a higher salt content than the Dorovan soil

Similar:
• Small intermingled areas that have a mineral surface layer less than 16 inches thick

Use and Management

Major Uses: Woodland and wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Frequent flooding

Woodland

Suitability: Poorly suited
Productivity: Moderately high
Native vegetation: Baldcypress, swamp blackgum, water tupelo, Atlantic white-cedar, green ash, and red maple in the overstory; various shrubs and herbaceous plants in the understory
Management concerns: Flooding, wetness, and low bearing strength
Management measures and considerations:
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Unsuited
Management concerns: Flooding, wetness, and low bearing strength

Interpretive Groups

Land capability classification: VIIw
Woodland ordination symbol: 7W, based on swamp blackgum as the indicator species

DuA—Duckston sand, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Flats and depressions on Ocracoke Island
Shape of areas: Elongated
Size of areas: 5 to 500 acres

Composition

Duckston soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 12 inches—brown sand
Underlying material:
12 to 24 inches—grayish brown sand
24 to 60 inches—greenish gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Very rapid
Available water capacity: Very low or low
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Low to moderate in the surface layer; low below the surface layer
Reaction: Extremely acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
• Intermingled areas of Corolla and Newhan soils on hummocks
• Carteret soils adjacent to salt marshes
• Small areas that pond for very brief periods

Similar:
• Small intermingled areas that have a thin organic surface layer

Use and Management

Major Uses: Wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Wetness and exposure to salt spray

Woodland

Suitability: Unsuited
Management concerns: Wetness and exposure to salt spray

Wildlife habitat

Native vegetation: Saltmeadow cordgrass and waxmyrtle in areas affected by salt spray; red cedar, baccharis, black willow, three square, cattail, sawgrass, blueberry, wild olive, and Virginia creeper in areas less affected by salt spray

Urban development

Suitability: Unsuited

Management concerns: Wetness, seepage, and flooding

Interpretive Groups

Land capability classification: VIIw
Woodland ordination symbol: None assigned

DwB—Duckston-Corolla complex, 0 to 6 percent slopes, rarely flooded

Setting

Landscape position: Duckston—slightly lower depressional areas between sand dunes on Ocracoke Island; Corolla—nearly level or undulating areas inland from the frontal dunes
Shape of areas: Elongated
Size of areas: 5 to 15 acres

Composition

Duckston soil and similar inclusions: 55 percent
Corolla soil and similar inclusions: 35 percent
Constrasting inclusions: 10 percent

Typical Profile

Duckston

Surface layer:
0 to 12 inches—brown sand

Underlying material:
12 to 24 inches—grayish brown sand
24 to 60 inches—greenish gray sand

Corolla

Surface layer:
0 to 1 inch—dark grayish brown sand

Underlying material:
1 to 22 inches—brown sand
22 to 36 inches—grayish brown sand that has strong brown layers of coarse sand
36 to 40 inches—very dark grayish brown sand
40 to 60 inches—dark gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Duckston—poorly drained; Corolla—moderately well drained or somewhat poorly drained
Permeability: Very rapid
Available water capacity: Duckston—very low or low; Corolla—very low
High water table: Duckston—within a depth of 1.0 foot; Corolla—at a depth of 1.5 to 3.0 feet
Flooding: Rare
Shrink-swell potential: Low
Erosion: Duckston—none or slight; Corolla—moderate by wind
Slope class: Duckston—level or nearly level; Corolla—nearly level or gently sloping
Organic matter content: Duckston—low to moderate in the surface layer and low below the surface layer; Corolla—low throughout
Reaction: Duckston—extremely acid to moderately alkaline throughout; Corolla—moderately acid to moderately alkaline throughout

Inclusions

Contrasting:
- Intermingled areas of Newhan soils on dunes and in the higher landscape positions
- Small areas that are ponded for very brief periods

Similar:
- Small intermingled areas that do not have a surface layer

Use and Management

Major Uses: Urban development and wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Wetness and exposure to salt spray

Woodland

Suitability: Unsuited
Management concerns: Wetness and exposure to salt spray

Wildlife habitat

Native vegetation: Waxmyrtle, red cedar, eastern baccharis, Virginia creeper, black willow, live oak, yaupon holly, seaside goldenrod, and marshelder

Urban development

Suitability: Duckston—unsuited; Corolla—poorly suited
Management concerns: Duckston—wetness, sandy texture, poor filtering capacity, and rare flooding due to strong storms and hurricanes; Corolla—wetness, seepage, poor filtering capacity, soil blowing, sandy texture, droughtiness, and rare flooding due to strong storms and hurricanes
Management measures and considerations:
- A lack of suitable outlets can hinder drainage.
- Salt- and drought-tolerant species should be selected for landscaping.

• In areas of the Corolla soil, building structures on pilings helps to reduce the hazard of flooding.

Interpretive Groups

Land capability classification: Duckston—VIIw; Corolla—VIIs
Woodland ordination symbol: None assigned

EaA—Engelhard loamy very fine sand, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Lakewash rims of pocosin lakes, mainly on the east side of Lake Mattamuskeet
Shape of areas: Elongated
Size of areas: 5 to 2,000 acres

Composition

Engelhard soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

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

Underlying material:
8 to 16 inches—grayish brown loamy very fine sand that has dark yellowish brown and yellowish brown mottles
16 to 33 inches—light brownish gray loamy very fine sand that has dark yellowish brown and yellowish brown mottles
33 to 49 inches—light brownish gray loamy very fine sand that has yellowish brown and black mottles
49 to 60 inches—light brownish gray silt loam that has yellowish brown and black mottles
60 to 67 inches—dark brown silt loam that has pockets of dark reddish brown muck
67 to 73 inches—dark grayish brown silt loam that has pockets of very dark brown muck

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the underlying material, except for the buried surface layer
Reaction: Extremely acid to strongly acid in the surface layer and the upper part of the underlying material, except in limed areas; very strongly acid to neutral in the lower part of the underlying material

Inclusions

Contrasting:
• The very poorly drained Weeksville soils that are on the outer edge of the map unit delineations and have a surface layer that is more than 10 inches thick
• The very poorly drained Fortescue soils that have more clay in the subsoil than the Engelhard soil and have a muck layer in the lower part of the subsoil
• Wysocking soils that are on the outer edge of the map unit delineations and have a muck layer in the lower part of the subsoil
• Intermingled small undrained areas that are ponded for very brief to long periods

Similar:
• Intermingled small areas that have a surface layer less than 6 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, ditchbanks caving, and piping
Management measures and considerations:
• Installing and maintaining drainage systems help to overcome the wetness limitation.

Woodland

Suitability: Moderately suited
Productivity: High
Native vegetation: Loblolly pine, water oak, willow oak, swamp chestnut oak, red maple, swamp blackgum, sweetgum, southern baldcypress, and yellow-poplar in the overstory; sweetbay, redbay, American holly, sweet pepperbush, switchcane, waxmyrtle, bitter gallberry, horsesugar, highbush blueberry, and various vines and herbaceous plants in the understory
Management concerns: Wetness, seedling mortality, and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.

• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited in drained areas
Management concerns: Wetness, potential low bearing strength below a depth of 40 inches, and ditchbanks caving
Management measures and considerations:
• Drainage systems, including drainage tile, should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

EnA—Engelhard loamy very fine sand, 0 to 2 percent slopes, frequently flooded

Setting

Landscape position: Lakewash rims of pocosin lakes, mainly surrounding Lake Mattamuskeet
Shape of areas: Linear
Size of areas: 10 to 300 acres

Composition

Engelhard soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

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

Underlying material:
8 to 16 inches—grayish brown loamy very fine sand that has dark yellowish brown and yellowish brown mottles
16 to 33 inches—light brownish gray loamy very fine sand that has dark yellowish brown and yellowish brown mottles
33 to 49 inches—light brownish gray loamy very fine sand that has yellowish brown and black mottles
49 to 60 inches—light brownish gray silt loam that has yellowish brown and black mottles
60 to 67 inches—dark brown silt loam that has pockets of dark reddish brown muck
67 to 73 inches—dark grayish brown silt loam that has pockets of very dark brown muck

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid
Available water capacity: Moderate or high
High water table: Within a depth of 0.5 foot
Flooding: Frequent
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the underlying material, except for the buried surface layer
Reaction: Extremely acid to strongly acid in the surface layer and the upper part of the underlying material, except in limed areas; very strongly acid to neutral in the lower part of the underlying material

Inclusions

Contrasting:
• The frequently flooded Weeksville soils that are on the outer edge of the map unit delineations and have a surface layer that is more than 10 inches thick
• Wysocking soils that are on the outer edge of the map unit delineations and have a muck layer in the subsoil

Similar:
• Small areas that have a surface layer less than 6 inches thick
• Small areas that are ponded for brief to very long periods

Use and Management

Major Uses: Woodland and wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Frequent flooding and wetness

Woodland

Suitability: Poorly suited
Productivity: Low
Native vegetation: Baldcypress, water tupelo, red maple, swamp blackgum, and scattered loblolly pine in the overstory; waxmyrtle, highbush blueberry, Virginia chainfern, three square, cattails, tall reed, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Flooding and wetness

Management measures and considerations:
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Unsuited
Management concerns: Frequent flooding

Interpretive Groups

Land capability classification: VIw
Woodland ordination symbol: 8W, based on swamp blackgum as the indicator species

FkA—Fork fine sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Low, smooth ridges along the Pungo River
Shape of areas: Elongated
Size of areas: 5 to 40 acres

Composition

Fork soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—very dark gray fine sandy loam

Subsoil:
8 to 12 inches—light yellowish brown fine sandy loam that has brownish gray mottles
12 to 17 inches—light yellowish brown fine sandy loam that has light brownish gray and yellowish brown mottles
17 to 30 inches—light brownish gray sandy clay loam that has yellowish brown mottles
30 to 41 inches—gray clay loam that has strong brown and brownish yellow mottles
41 to 46 inches—gray fine sandy loam that has brownish yellow mottles

Underlying material:
46 to 62 inches—gray loamy sand that has yellowish brown mottles and layers of sandy loam and sandy clay loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: Moderate or high
High water table: At a depth of 1.0 to 2.0 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsoil and underlying material
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, except in limed areas; very strongly acid to neutral in the lower part of the subsoil; moderately acid to neutral in the underlying material

Inclusions

Contrasting:
• The poorly drained Yonges soils near the outer edge of the map unit delineations
• The moderately well drained Bolling soils near the outer edge of the map unit delineations
• Intermingled areas of Chapanoke soils that have a silty subsoil

Similar:
• Intermingled small areas that have a surface layer that is more than 7 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, water oak, willow oak, swamp chestnut oak, sweetgum, red maple, yellow-poplar, white oak, and hickory in the overstory; American holly, sweet pepperbush, waxmyrtle, bitter gallberry, horsesugar, highbush blueberry, and various ferns, vines, and herbaceous plants in the understory
Management concerns: Wetness

Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
• Installing and maintaining drainage systems help to overcome the wetness limitation.

Interpretive Groups

Land capability classification: IIIw in drained areas
Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

FoA—Fortescue silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Lakewash rims of large pocosin lakes
Shape of areas: Linear
Size of areas: 5 to 900 acres

Composition

Fortescue soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 10 inches—black silt loam

Subsoil:
10 to 21 inches—black silt loam
21 to 31 inches—black clay loam
31 to 39 inches—black muck
39 to 55 inches—dark brown muck

Underlying material:
55 to 61 inches—black very fine sandy loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow in the mineral surface layer; moderately slow to moderately rapid in muck layers
Available water capacity: High
High water table: Within a depth of 3.0 feet, depending on elevation
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high throughout the profile
Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

Inclusions

Contrasting:
• Scuppernong soils that are near the outer edge of the map unit delineations and have more than 16 inches of muck in the upper 32 inches (the muck is less than 35 inches thick)
• Hydeland soils that are near the outer edge of the map unit delineations and have less than 8 inches of muck in the upper 32 inches
• Gullrock and Roper soils that are near the outer edge of the map unit delineations and have 8 to 16 inches of muck in the upper 32 inches

Similar:
• Small areas that are near the outer edge of the map unit delineations and have 10 to 16 inches of silt loam over muck

Use and Management

Major Uses: Cropland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.

Woodland

Suitability: Well suited in drained areas but not generally used
Productivity: Very high
Native vegetation: Loblolly pine, baldcypress, red maple, sweetgum, water oak, willow oak, swamp chestnut oak, swamp blackgum, and yellow-poplar in the overstory; sweetbay, redbay, waxmyrtle, bitter gallberry, titi, switchcane, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.

Urban development

Suitability: Moderately suited in some areas, depending on elevation and drainage
Management concerns: Wetness and low bearing strength in the subsoil
Management measures and considerations:
• For the construction of heavy structures, removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

GuA—Gullrock muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flats, depressions, and the outer edge of pocosins
Shape of areas: Elongated
Size of areas: 20 to 1,500 acres

Composition

Gullrock soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—black muck

Subsoil:
6 to 13 inches—dark reddish brown muck that has a 2-inch layer of strong brown ash
13 to 18 inches—dark brown loamy very fine sand that has dark brown and very dark brown mottles
18 to 33 inches—brown loamy very fine sand that has yellowish brown mottles

Underlying material:
33 to 50 inches—dark grayish brown loamy very fine sand that has yellowish brown mottles
50 to 64 inches—grayish brown loamy very fine sand that has dark yellowish brown mottles
64 to 70 inches—dark brown loamy very fine sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid
Available water capacity: Moderate to very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind
Slope class: Nearly level
Organic matter content: Very high in the surface layer and subsoil; moderate in the underlying material
Reaction: Extremely acid to moderately acid throughout the profile, except in limed areas

Inclusions

Contrasting:
• Roper soils that are on the outer edge of the map unit delineations and have more clay in the subsoil than the Gullrock soil
• Weeksville soils that are on the outer edge of the map unit delineations and have a mineral surface layer
• Intermingled areas of Scuppernong soils that have more than 16 inches of muck in the surface layer and subsoil
• Small intermingled undrained areas that are ponded for very brief to long periods

Similar:
• Small intermingled areas that have a muck surface layer that is less than 8 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, low strength, ditchbanks caving, and piping
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited
Productivity: High
Native vegetation: Red maple, sweetbay, baldcypress, Atlantic white-cedar, swamp blackgum, loblolly pine, and sweetgum in the overstory; swamp cyrilla, waxmyrtle, sweet pepperbush, bitter gallberry, fetterbush, and switchcane in the understory

Management concerns: Wetness, ditchbanks caving, poor trafficability, and seedling mortality
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and ditchbanks caving
Management measures and considerations:
• Installing and maintaining drainage systems help to overcome the wetness limitation.
• Removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 11W, based on loblolly pine as the indicator species

HyA—Hydeland silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas, depressions, and the outer edge of pocosins
Shape of areas: Irregular
Size of areas: 10 to 2,000 acres

Composition

Hydeland soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—black silt loam

Subsoil:
6 to 11 inches—black silt loam that has light brownish gray pockets
11 to 17 inches—grayish brown silt loam that has strong brown mottles
17 to 31 inches—light brownish gray silt loam that has grayish brown, yellowish brown, and light yellowish brown mottles
31 to 41 inches—gray loam that has strong brown and light olive brown mottles
41 to 58 inches—grayish brown loam that has yellowish brown mottles

Underlying material:
58 to 66 inches—gray loam that has olive and yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in the surface layer and the upper part of the subsoil; low in the lower part of the subsoil and in the underlying material
Reaction: Extremely acid to strongly acid in the surface layer and the upper part of the subsoil, except in limed areas; extremely acid to neutral in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
• The poorly drained Acredale soils that are on the outer edge of the map unit delineations and have a dark surface layer less than 7 inches thick
• Roper soils that are on the outer edge of the map unit delineations and have a muck surface layer more than 8 inches thick
• Brookman soils that are on the outer edge of the map unit delineations and have more clay in the subsoil than the Hydeland soil
• Weeksville soils that are on the outer edge of the map unit delineations and have less clay in the subsoil than the Hydeland soil
• Small undrained areas that are ponded for very brief to long periods

Similar:
• Small intermingled areas that have an organic surface layer less than 8 inches thick
• Small intermingled areas that have a dark surface layer 7 to 10 inches thick

Use and Management

Major Uses: Cropland and woodland

Figure 10.—Corn on Hydeland silt loam, 0 to 2 percent slopes, rarely flooded. This soil is one of the most productive soils in Hyde County.

Cropland

Suitability: Well suited in drained areas
Major crops: Corn (fig. 10), soybeans, and wheat
Management concerns: Wetness and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: Very high
Native vegetation: Loblolly pine, red maple, sweetgum, water oak, willow oak, swamp chestnut oak, swamp blackgum, pond pine, water tupelo, baldcypress, and Atlantic white-cedar in the overstory; redbay, sweetbay, bitter gallberry, highbush blueberry, switchcane, waxmyrtle, and various other shrubs and herbaceous plants in the understory
Management concerns: Wetness and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

LfA—Longshoal mucky peat, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape position: Brackish marshes adjacent to rivers, creeks, and the Pamlico Sound
Shape of areas: Irregular
Size of areas: 50 to 3,000 acres

Composition

Longshoal soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 12 inches—dark reddish brown mucky peat

Subsoil:
12 to 30 inches—dark reddish brown muck
30 to 72 inches—very dark brown muck

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid or rapid
Available water capacity: Very high
High water table: Within a depth of 0.5 foot
Flooding: Very frequently flooded by wind tides
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Very high throughout the profile
Reaction: Very strongly acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
• Delway soils that are on the outer edge of the map unit delineations and have a muck layer 16 to 51 inches thick
• Intermingled small areas that have more than 22 inches of mucky peat on the surface

Similar:
• Small areas that have a mineral surface layer less than 16 inches thick and are near the edge of the sound and bays

Use and Management

Major Uses: Wildlife and fish habitat

Cropland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Woodland

Suitability: Unsuited
Management concerns: Very frequent flooding with brackish water

Wildlife and fish habitat

Native vegetation: Black needlerush, saltmeadow hay, saltmarsh cordgrass, sawgrass, big cordgrass, seashore mallow, saltgrass, rose mallow, marshelder, sea oxeye, baccharis, marsh sedge, three square, and narrowleaf cattail
Management measures and considerations:
• This map unit is valuable as nursery areas for many commercial fish species.
• Areas of this map unit form a natural barrier against storm surges and provide a buffer to the inland intrusion of salt water.
• Marshes remain stable as sea level rises, filter sediments from creeks and ditches, and have aesthetic value as natural open areas.
• This map unit provides important natural habitat to sea ducks, wading birds, furbearers, and many other wildlife species.

Urban development

Suitability: Unsuited
Management concerns: Very frequent flooding by wind tides

Interpretive Groups

Land capability classification: VIIIw
Woodland ordination symbol: None assigned

NaD—Newhan fine sand, 6 to 25 percent slopes, rarely flooded

Setting

Landscape position: Sand dunes on Ocracoke Island
Shape of areas: Irregular
Size of areas: 3 to 30 acres

Composition

Newhan soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 1 inch—light brownish gray fine sand

Underlying material:
1 to 24 inches—brown fine sand
24 to 42 inches—light yellowish brown fine sand
42 to 80 inches—light gray fine sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Available water capacity: Very low
High water table: At a depth of more than 6.0 feet
Flooding: Rare
Shrink-swell potential: Low
Erosion: Severe by wind in unvegetated areas
Slope class: Undulating to hilly
Organic matter content: Low throughout the profile
Reaction: Extremely acid to slightly alkaline throughout the profile

Inclusions

Contrasting:
- Intermingled areas of Corolla and Duckston soils

Similar:
- Intermingled small areas that have slopes of more than 25 percent

Use and Management

Major Uses: Wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Droughtiness and exposure to salt spray

Woodland

Suitability: Unsuited
Management concerns: Droughtiness and exposure to salt spray

Wildlife habitat

Native vegetation: American beachgrass, waxmyrtle, yaupon holly, live oak, panicgrass, northern bayberry, seaoats, seashore elder, searocket, smooth cordgrass, bitter panicum, seacoast bluestem, and other species adapted to salt spray, blowing sand, and droughtiness

Urban development

Suitability: Poorly suited
Management concerns: Sandy texture, soil blowing, slope, seepage, and poor filtering capacity
Management measures and considerations:
- Planting vegetation that is tolerant to salt, wind, and drought helps to stabilize areas of this map unit.

Interpretive Groups

Land capability classification: VIIIs
Woodland ordination symbol: None assigned

NcC—Newhan-Corolla complex, 0 to 15 percent slopes, rarely flooded

Setting

Landscape position: Newhan—areas with short, complex slopes on sand dunes on Ocracoke Island; Corolla—basins separating the sand dunes
Shape of areas: Elongated
Size of areas: 5 to 150 acres

Composition

Newhan soil and similar inclusions: 55 percent
Corolla soil and similar inclusions: 35 percent
Constrasting inclusions: 10 percent

Typical Profile

Newhan

Surface layer:
0 to 1 inch—light brownish gray fine sand

Underlying material:
1 to 24 inches—brown fine sand
24 to 42 inches—light yellowish brown fine sand
42 to 80 inches—light gray fine sand

Corolla

Surface layer:
0 to 1 inch—dark grayish brown sand

Underlying material:
1 to 22 inches—brown sand
22 to 36 inches—grayish brown sand that has strong brown layers of coarse sand
36 to 40 inches—very dark grayish brown sand
40 to 60 inches—dark gray sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Newhan—excessively drained; Corolla—moderately well drained or somewhat poorly drained
Permeability: Very rapid
Available water capacity: Very low
High water table: Newhan—at a depth of more than 6.0 feet; Corolla—at a depth of 1.5 to 3.0 feet
Flooding: Rare
Shrink-swell potential: Low throughout the profile
Erosion: Severe by wind in unvegetated areas
Slope class: Newhan—undulating to hilly; Corolla—nearly level to undulating
Organic matter content: Very low
Reaction: Newhan—extremely acid to slightly alkaline throughout; Corolla—moderately acid to moderately alkaline throughout

Inclusions

Contrasting:
- Intermingled Duckston soils in troughs and depressions

Similar:
- Small areas that have slopes of more than 15 percent

Use and Management

Major Uses: National seashore and urban development

Cropland

Suitability: Unsuited
Management concerns: Droughtiness, exposure to salt spray, and windblown sand

Woodland

Suitability: Unsuited
Management concerns: Droughtiness, exposure to salt spray, and windblown sand

Urban development

Suitability: Moderately suited
Management concerns: Newhan—sandy texture, seepage, poor filtering capacity, and slope; Corolla—wetness, poor filtering capacity, and seepage
Management measures and considerations:
- Planting vegetation, such as American beachgrass, that is tolerant to salt, wind, and drought helps to stabilize areas of this map unit.
- Building structures on pilings helps to reduce the hazard of flooding.

Interpretive Groups

Land capability classification: Newhan—VIIIs; Corolla—VIIs
Woodland ordination symbol: None assigned

NeA—Newholland mucky loamy sand, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas, depressions, and the outer edge of pocosins
Shape of areas: Irregular
Size of areas: 10 to 500 acres

Composition

Newholland soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—black mucky loamy sand
8 to 19 inches—black mucky loamy sand

Underlying material:
19 to 27 inches—very dark brown loamy sand
27 to 40 inches—grayish brown sandy loam that has brown mottles
40 to 44 inches—dark gray sandy loam that has brown mottles
44 to 62 inches—grayish brown loamy sand that has light olive brown and yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the surface layer; rapid in the underlying material
Available water capacity: Low
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight

Slope class: Nearly level
Organic matter content: High or very high in the surface layer; low to high in the subsoil and underlying material
Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

Inclusions

Contrasting:
• Conaby soils that are on the outer edge of the map unit delineations and have 8 to 16 inches of muck on the surface
• Wasda soils that are on the outer edge of the map unit delineations, have 8 to 16 inches of muck on the surface, and have more clay in the subsoil than the Newholland soil
• Intermingled areas of Portsmouth and the poorly drained Yonges soils that have more clay in the subsoil than the Newholland soil
• Small areas on the west side of Pocosin Lakes National Wildlife Refuge that have spodic horizons, which are referred to locally as "red sandrock"

Similar:
• Small intermingled areas that have a muck surface layer less than 8 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, droughtiness, and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Installing water-control structures helps to reduce droughtiness during dry periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, swamp blackgum, pond pine, water oak, willow oak, swamp chestnut oak, and sweetgum in the overstory; sweetbay, redbay, loblolly bay, bitter gallberry, waxmyrtle, titi, fetterbush lyonia, switchcane, highbush blueberry, and other shrubs, ferns, vines, and herbaceous plants in the understory
Management concerns: Wetness, trafficability, seedling mortality, and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Moderately suited in drained areas
Management concerns: Wetness and ditchbanks caving
Management measures and considerations:
• Installing and maintaining drainage systems help to overcome the wetness limitation.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

NhA—Newholland mucky loamy sand, 0 to 2 percent slopes, frequently flooded

Setting

Landscape position: Forested flood plains and freshwater marshes on the southwestern edge of Lake Mattamuskeet
Shape of areas: Irregular
Size of areas: 30 to 1,400 acres

Composition

Newholland soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—black mucky loamy sand
8 to 19 inches—black mucky loamy sand
19 to 27 inches—very dark brown loamy sand

Underlying material:
27 to 40 inches—grayish brown sandy loam that has brown mottles
40 to 44 inches—dark gray sandy loam that has brown mottles
44 to 62 inches—grayish brown loamy sand that has light olive brown and yellowish brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the surface layer; rapid in the underlying material
Available water capacity: Low
High water table: Within a depth of 0.5 foot
Flooding: Frequent
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in the surface layer; low to high in the subsoil and underlying material
Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

Inclusions

Contrasting:
• Newholland soils that are rarely flooded and are on the outer edge of the map unit delineations
• Belhaven soils that are frequently flooded, are near the outer edge of the map unit delineations, and have a muck surface layer 16 to 51 inches thick
• Intermingled areas of Portsmouth soils that have more clay in the subsoil than the Newholland soil
• Intermingled areas of Conaby soils that have a muck surface layer 8 to 16 inches thick

Similar:
• Small areas that are ponded for long or very long periods

Use and Management

Major Uses: Woodland and wildlife habitat

Cropland

Suitability: Unsuited
Management concerns: Frequent flooding for very long periods

Woodland

Suitability: Poorly suited
Productivity: Moderately high
Native vegetation: Baldcypress, swamp blackgum, water tupelo, green ash, red maple, and willow in the overstory; waxmyrtle, baccharis, highbush blueberry, and various shrubs and herbaceous plants in the understory; dominantly cattails, three square, and rushes in the marsh areas
Management concerns: Frequent flooding
Management measures and considerations:
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Unsuited
Management concerns: Frequent flooding

Interpretive Groups

Land capability classification: VIIw
Woodland ordination symbol: 8W, based on sweetgum as the indicator species

PaA—Pasquotank silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas
Shape of areas: Elongated
Size of areas: 5 to 300 acres

Composition

Pasquotank soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

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

Subsoil:
6 to 38 inches—grayish brown loam that has yellowish brown mottles

Underlying material:
38 to 55 inches—gray silt loam that has brownish yellow, strong brown, and light yellowish brown mottles
55 to 60 inches—gray silty clay that has strong brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsoil and underlying material
Reaction: Very strongly acid to slightly alkaline throughout the profile

Inclusions

Contrasting:
- Weeksville soils that are on the outer edge of the map unit delineations and have a dark surface layer more than 10 inches thick
- Acredale soils that are on the outer edge of the map unit delineations and have more clay in the subsoil than the Pasquotank soil
- Hydeland soils that are on the outer edge of the map unit delineations, have a dark surface layer more than 10 inches thick, and have more clay in the subsoil than the Pasquotank soil

Similar:
- Small intermingled areas that have a thin, more clayey subsoil

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, ditchbanks caving, and piping
Management measures and considerations:
- Drainage systems should be installed and maintained.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, sweetgum, swamp blackgum, water oak, willow oak, swamp chestnut oak, red maple, and yellow-poplar in the understory; sweetbay, redbay, sweet pepperbush, horsesugar, highbush blueberry, bitter gallberry, and various vines and herbaceous plants in the understory
Management concerns: Wetness, seedling mortality, and ditchbanks caving
Management measures and considerations:
- Drainage systems should be installed and maintained.
- Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, piping, and ditchbanks caving
Management measures and considerations:
- Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

PeA—Pettigrew muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flats, depressions, and the edge of pocosins
Shape of areas: Irregular
Size of areas: 5 to 1,600 acres

Composition

Pettigrew soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 12 inches—black muck

Subsoil:
12 to 18 inches—dark grayish brown silty clay loam that has yellowish brown, light gray, and black mottles
18 to 31 inches—dark grayish brown clay that has reddish brown and very pale brown mottles
31 to 36 inches—mottled grayish brown and light brownish gray clay

Underlying material:
36 to 50 inches—mottled dark greenish gray and greenish gray sand and sandy loam
50 to 65 inches—greenish gray sand that has light brownish gray mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid to moderately slow in the muck surface layer; slow or very slow in the subsoil
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: High
Erosion: None or slight by water; moderate by wind
Slope class: Nearly level
Organic matter content: Very high in the surface layer;

low to moderate in the subsoil and underlying material
Reaction: Extremely acid to strongly acid in the surface layer and subsoil, except in limed areas; moderately acid to slightly alkaline in the underlying material

Inclusions

Contrasting:
• Brookman soils that are on the outer edge of the map unit delineations and have a mineral surface layer or a muck surface layer that is less than 8 inches thick
• Wasda soils that are on the outer edge of the map unit delineations and have a sandier subsoil than the Pettigrew soil
• Roper soils that are on the outer edge of the map unit delineations and have a siltier subsoil than the Pettigrew soil
• Small undrained areas that are ponded for brief to very long periods

Similar:
• Small intermingled areas that have less than 35 inches of muck and clayey materials over sand

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, trafficability, and acidity
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, baldcypress, pond pine, red maple, sweetgum, swamp blackgum, and Atlantic white-cedar in the overstory; bitter gallberry, highbush blueberry, fetterbush, redbay, sweetbay, titi, waxmyrtle, switchcane, Virginia chainfern, and various shrubs and herbaceous plants in the understory
Management concerns: Wetness, trafficability, and seedling mortality
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and restricted permeability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

PnA—Ponzer muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Pocosins, broad flats, and depressions
Shape of areas: Elongated
Size of areas: 10 to 4,000 acres

Composition

Ponzer soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—black muck

Subsoil:
6 to 13 inches—very dark brown muck
13 to 21 inches—very dark brown muck

Underlying material:
21 to 39 inches—dark grayish brown very fine sandy loam that has very dark grayish brown mottles
39 to 47 inches—dark brown silt loam
47 to 64 inches—gray silty clay loam
64 to 71 inches—greenish gray silty clay loam that has strong brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Very slow to moderate in the organic surface layer and subsoil; moderately slow or moderate in the underlying material
Available water capacity: Very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind during dry periods
Slope class: Nearly level
Organic matter content: Very high in the surface layer and subsoil; low to moderate in the underlying material
Reaction: Extremely acid in surface layer and subsoil, except in limed areas; extremely acid to slightly alkaline in underlying material

Inclusions

Contrasting:
- Roper, Wasda, Conaby, Gullrock, and Pettigrew soils that are near the outer edge of the map unit delineations and have less than 16 inches of muck on the surface
- Belhaven and Scuppernong soils that are near the outer edge of the map unit delineations and have red muck
- Pungo soils that are near the outer edge of the map unit delineations and have more than 51 inches of muck
- Small undrained areas that are ponded for brief to long periods

Similar:
- Intermingled small areas that have thin layers of red muck in the subsoil

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, acidity, wood content, and soil blowing
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.
- Removing roots helps to increase productivity.
- Establishing windbreaks helps to control soil blowing.

Woodland

Suitability: Moderately suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, pond pine, red maple, swamp blackgum, baldcypress, water tupelo, and sweetgum in the overstory; switchcane, bitter gallberry, redbay, sweetbay, loblolly bay, fetterbush, zenobia, titi, Virginia chainfern, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness, trafficability, seedling mortality, and hazard of ground fire in drained areas
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.
- Bedding helps to reduce seedling mortality rates.
- Installing water-control structures helps to reduce the hazard of ground fire.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and subsidence
Management measures and considerations:
- Installing and maintaining drainage systems help to overcome the wetness limitation.
- Removing the organic layer or installing pilings through this layer helps to overcome the low bearing strength and the subsidence limitation.

Interpretive Groups

Land capability classification: IVw in drained areas; VIIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

PoA—Portsmouth mucky sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas and depressions in the northwestern part of the county
Shape of areas: Irregular
Size of areas: 10 to 1,000 acres

Composition

Portsmouth soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 16 inches—black mucky sandy loam and black mucky fine sandy loam having common clean sand grains

Subsoil:
16 to 25 inches—dark brown organic stained fine sandy loam that has very dark brown pockets of surface material and common clean sand grains
25 to 30 inches—dark grayish brown sandy clay loam that has very dark brown pockets of surface material and common clean sand grains

Underlying material:
30 to 52 inches—light brownish gray fine sand that has dark brown mottles
52 to 70 inches—dark gray fine sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately rapid in the surface layer and subsoil; rapid or very rapid in the underlying material
Available water capacity: Moderate
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in the surface layer; low in the subsoil and underlying material
Reaction: Extremely acid to strongly acid in the surface layer; extremely acid to moderately acid in the subsoil and underlying material

Inclusions

Contrasting:
- Newholland soils that are near the outer edge of the map unit delineations and have a sandier subsoil than the Portsmouth soil
- Hydeland soils that are near the outer edge of the map unit delineations and have a siltier subsoil than the Portsmouth soil
- Wasda, Conaby, Pettigrew, and Roper soils that are near the outer edge of the map unit delineations and have a mucky surface layer more than 8 inches thick
- Yonges soils that are on the outer edge of the map unit delineations and have a dark surface layer less than 7 inches thick
- Small undrained areas that are ponded for brief periods

Similar:
- Intermingled small areas that have more than 40 inches of loamy material over sand
- Intermingled small areas that have less than 8 inches of muck in the surface layer
- Intermingled small areas that have a dark surface layer 7 to 10 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, swamp blackgum, yellow-poplar, sweetgum, willow oak, water oak, swamp chestnut oak, and pond pine in the overstory; titi, waxmyrtle, sweet pepperbush, bitter gallberry, highbush blueberry, fetterbush, switchcane, and other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness and trafficability
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.

Urban development

Suitability: Moderately suited in drained areas
Management concerns: Wetness
Management measures and considerations:
- Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas

Woodland ordination symbol: 11W, based on loblolly pine as the indicator species

PuA—Pungo muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Pocosins and depressions
Shape of areas: Irregular
Size of areas: 50 to 25,000 acres

Composition

Pungo soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 10 inches—dark reddish brown muck

Subsoil:
10 to 80 inches—dark reddish brown muck that has common logs and stumps

Underlying material:
80 to 85 inches—gray silt loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Very slow to moderately rapid in the surface layer and subsoil; moderately slow to moderately rapid in the underlying material
Available water capacity: Very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind during dry periods
Slope class: Nearly level
Organic matter content: Very high in the surface layer and subsoil; low in the underlying material
Reaction: Extremely acid in the surface layer and subsoil, except in limed areas; extremely acid to neutral in the underlying material

Inclusions

Contrasting:
- Belhaven and Scuppernong soils that are near the outer edge of the map unit delineations and have thinner muck layers than the Pungo soil
- Ponzer soils that are near the outer edge of the map unit delineations and have a muck layer that is black and thinner than that of the Pungo soil
- Longshoal and Dorovan soils that are near the outer edge of the map unit delineations and are frequently flooded
- Small undrained areas that are ponded for brief to long periods

Similar:
- Intermingled small areas that are near Pungo Lake and have underlying materials of sand or loamy sand
- Small areas that are near the lakewash rim of pocosin lakes and have a mineral surface layer less than 10 inches thick

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Poorly suited
Major crops: Corn and soybeans
Management concerns: Wetness, wood content, thickness of organic layers, and acidity
Management measures and considerations:
- Drainage systems should be installed and maintained.
- Continually removing wood from the soil helps to increase productivity.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Poorly suited
Productivity: Low
Native vegetation: Pond pine, loblollybay, red maple, baldcypress, swamp blackgum, and Atlantic white-cedar in the overstory; redbay, sweetbay, zenobia, bitter gallberry, sweet pepperbush, titi, fetterbush, highbush blueberry, switchcane, Virginia chainfern, and various vines and herbaceous plants in the understory
Management concerns: Wetness, thickness of organic layers, low strength, and hazard of ground fire in drained areas
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during dry periods.

• Installing water-control structures in drained areas helps to reduce the hazard of ground fire.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and thickness of organic layers
Management measures and considerations:
• Drainage systems should be installed and maintained.
• For the construction of heavy structures, installing pilings through the organic surface layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IVw in drained areas; VIIw in undrained areas
Woodland ordination symbol: 2W, based on pond pine as the indicator species

RoA—Roper muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flats, depressions, and the edge of pocosins
Shape of areas: Elongated
Size of areas: 5 to 3,500 acres

Composition

Roper soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 5 inches—black muck

Subsoil:
5 to 13 inches—dark reddish brown muck
13 to 18 inches—black silt loam
18 to 34 inches—olive gray silty clay loam that has dark reddish brown mottles
34 to 42 inches—dark gray silt loam

Underlying material:
42 to 57 inches—dark gray silt loam that has olive mottles
57 to 72 inches—dark greenish gray silty clay loam that has olive mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow throughout the profile
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind during dry periods
Slope class: Nearly level
Organic matter content: Very high in the surface layer and the upper part of the subsoil; low in the lower part of the subsoil and in the underlying material
Reaction: Extremely acid to strongly acid in the surface layer and the upper part of the subsoil, except in limed areas; extremely acid to slightly alkaline in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
• Hydeland soils that are near the outer edge of the map unit delineations and have a mineral surface layer
• Pettigrew soils that are near the outer edge of the map unit delineations and have more clay in the subsoil than the Roper soil
• Gullrock soils that are near the outer edge of the map unit delineations and have less clay in the subsoil than the Roper soil
• Wasda soils that are near the outer edge of the map unit delineations and have a sandier subsoil than the Roper soil
• Ponzer, Belhaven, and Scuppernong soils that are near the outer edge of the map unit delineations and have more than 16 inches of muck in the surface layer and subsoil
• Small intermingled undrained areas that are ponded for brief to very long periods

Similar:
• Small intermingled areas that have a muck surface layer less than 8 inches thick
• Small intermingled areas that have layers of wood ash in the surface layer and subsoil

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, acidity, trafficability, and low bearing strength
Management measures and considerations:
• Drainage systems should be installed and maintained.

• The use of equipment should be restricted during wet periods.
• Applications of lime help to overcome the acidity limitation.

Woodland

Suitability: Well suited in drained areas
Productivity: Very high
Native vegetation: Loblolly pine, pond pine, red maple, baldcypress, Atlantic white-cedar, willow oak, water oak, swamp chestnut oak, swamp blackgum, and sweetgum in the overstory; redbay, sweetbay, sweet pepperbush, bitter gallberry, fetterbush, switchcane, Virginia chainfern, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness, poor trafficability, and seedling mortality
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, restricted permeability, and low bearing strength
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Removing the organic layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

ScA—Scuppernong muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Pocosins and depressions
Shape of areas: Irregular
Size of areas: 50 to 8,000 acres

Composition

Scuppernong soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 5 inches—black muck

Subsoil:
5 to 33 inches—dark reddish brown muck

Underlying material:
33 to 58 inches—dark grayish brown silt loam that has very dark grayish brown mottles
58 to 72 inches—dark gray silt loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid throughout the profile
Available water capacity: Very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind during dry periods
Slope class: Nearly level
Organic matter content: Very high in the surface layer and subsoil; low to moderate in the underlying material
Reaction: Extremely acid in the surface layer and subsoil, except in limed areas; extremely acid to neutral in the underlying material

Inclusions

Contrasting:
• Pungo soils that are near the outer edge of the map unit delineations and have a thicker muck layer than the Scuppernong soil
• Ponzer soils that are near the outer edge of the map unit delineations and have black muck
• Intermingled areas of Belhaven soils that have less than 30 percent silt in the underlying material
• Roper, Gullrock, Pettigrew, and Wasda soils that are near the outer edge of the map unit delineations and have less than 16 inches of muck in the surface layer and the upper part of the subsoil
• Small intermingled undrained areas that are ponded for brief to very long periods

Similar:
• Small areas that have thin layers of black muck
• Small areas that are adjacent to Fortescue and Wysocking soils and have a mineral surface layer less than 16 inches thick

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Moderately suited in drained areas
Major crops: Corn and soybeans
Management concerns: Wetness, wood content, acidity, and soil blowing
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Continually removing wood from the soil helps to increase productivity.
• Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.
• Establishing windbreaks helps to control soil blowing.

Woodland

Suitability: Poorly suited
Productivity: Low
Native vegetation: Pond pine, red maple, sweetgum, baldcypress, swamp blackgum, Atlantic white-cedar, loblollybay, and loblolly pine in the overstory; bitter gallberry, fetterbush, greenbrier, waxmyrtle, titi, zenobia, redbay, sweet pepperbush, sweetbay, Virginia chainfern, and various other vines and herbaceous plants in the understory
Management concerns: Wetness, trafficability, seedling mortality, and hazard of ground fire in drained areas
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.
• Installing water-control structures in drained areas helps to reduce the hazard of ground fire.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, excess humus, and low bearing strength
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Heavy structures should be built on pilings.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIIw in undrained areas
Woodland ordination symbol: 3W, based on pond pine as the indicator species

SeA—Seabrook fine sand, 0 to 3 percent slopes, rarely flooded

Setting

Landscape position: Ridges and stream terraces near the Pungo River
Shape of areas: Elongated
Size of areas: 3 to 40 acres

Composition

Seabrook soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown fine sand

Underlying material:
5 to 24 inches—yellowish brown loamy sand that has few pockets of sandy loam and has strong brown and light brownish gray mottles
24 to 34 inches—light brown sand that has few pockets of sandy loam and has strong brown and dark reddish brown mottles
34 to 53 inches—light gray fine sand that has brownish yellow mottles
53 to 80 inches—light brownish gray fine sand that has brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Moderately well drained
Permeability: Rapid
Available water capacity: Very low or low
High water table: At a depth of 2.0 to 3.5 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level or gently sloping
Organic matter content: Low to moderate in the surface layer; low in the underlying material
Reaction: Extremely acid to neutral throughout the profile

Inclusions

Contrasting:
• The very poorly drained Stockade, Portsmouth, and Newholland soils that are near the outer edge of the map unit delineations and have more clay in the subsoil than the Seabrook soil

- Intermingled areas of well drained soils

Similar:
- Intermingled small areas that have a thin, more clayey layer
- Intermingled small areas that have slopes of more than 3 percent

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Poorly suited
Major crops: Corn, soybeans, and wheat
Management concerns: Droughtiness, leaching of nutrients, and soil blowing
Management measures and considerations:
- Managing crop residue helps to overcome the droughtiness limitation.
- Establishing windbreaks helps to control soil blowing.

Woodland

Suitability: Moderately suited
Productivity: Moderately high
Native vegetation: Loblolly pine, sweetgum, red maple, southern red oak, blackjack oak, turkey oak, sassafras, and dogwood in the overstory; sweet pepperbush, waxmyrtle, blueberry, and other vines and herbaceous plants in the understory
Management concerns: Seedling mortality
Management measures and considerations:
- Rows should not be bedded.

Urban development

Suitability: Moderately suited
Management concerns: Wetness and poor filtering capacity
Management measures and considerations:
- Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIs in drained areas
Woodland ordination symbol: 8S, based on loblolly pine as the indicator species

StA—Stockade mucky sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas and depressions, in the northwestern part of the county
Shape of areas: Irregular
Size of areas: 10 to 1,000 acres

Composition

Stockade soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—black mucky sandy loam that has few clean sand grains

Subsoil:
6 to 13 inches—very dark brown fine sandy loam that has grayish brown pockets
13 to 22 inches—dark grayish brown sandy clay loam that has light gray and strong brown mottles
22 to 39 inches—dark gray sandy clay loam that has strong brown mottles
39 to 43 inches—gray fine sandy loam that has strong brown and yellowish brown mottles

Underlying material:
43 to 54 inches—grayish brown fine sandy loam that has strong brown and light yellowish brown mottles
54 to 70 inches—dark greenish gray sandy clay loam that has strong brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in the surface layer and the upper part of the subsoil; low to moderate in the lower part of the subsoil and in the underlying material
Reaction: Extremely acid to slightly acid in the surface layer and the upper part of the subsoil; extremely acid to moderately alkaline in the lower part of the subsoil and in the underlying material

Inclusions

Contrasting:
- Newholland soils that are near the outer edge of the

map unit delineations and have a sandier subsoil than the Stockade soil
• Hydeland soils that are near the outer edge of the map unit delineations and have a siltier subsoil than the Stockade soil
• Wasda, Conaby, Pettigrew, and Roper soils that are near the outer edge of the map unit delineations and have a muck surface layer more than 8 inches thick
• Yonges soils that are near the outer edge of the map unit delineations and have a dark surface layer less than 7 inches thick
• Intermingled small areas of Portsmouth soils that have less than 35 inches of loamy material over sand
• Small intermingled undrained areas that are ponded for brief periods

Similar:
• Small intermingled areas that have less than 8 inches of muck in the surface layer

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, red maple, swamp blackgum, sweetgum, willow oak, water oak, swamp chestnut oak, and pond pine in the overstory; titi, waxmyrtle, sweet pepperbush, bitter gallberry, highbush blueberry, fetterbush, switchcane, and other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Moderately suited in drained areas
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

Ud—Udorthents, sandy, rarely flooded

Setting

Landscape position: Areas where the natural soil has been altered by dredging and filling operations, at elevations ranging from 0 to 19 feet above sea level; the largest areas are along the Intracoastal Waterway
Shape of areas: Elongated
Size of areas: 5 to 1,100 acres

Typical Profile

Udorthents typically consist of sand 2 to 15 feet thick that has layers of loamy or clayey materials, or both. The soils have none to many shells and shell fragments throughout. A typical pedon is not given.

Soil Properties and Qualities

Drainage class: Poorly drained to excessively drained
Permeability: Slow to very rapid
Available water capacity: Low
High water table: At a depth of 1.0 to 6.0 feet
Flooding: Rare
Shrink-swell potential: Low
Erosion: None to severe
Slope class: Nearly level to steep
Organic matter content: Variable
Reaction: Extremely acid to moderately alkaline

Inclusions

Contrasting:
• Areas that consist of dominantly clayey or loamy materials
• Intermingled areas that have a buried organic layer and are commonly adjacent to organic soils

Similar:
• Sandy soils that are on the Outer Banks and adjacent to fill areas

Use and Management

Major Uses: Woodland and urban development

Cropland

Suitability: Poorly suited
Management concerns: Droughtiness, wetness, and lack of a topsoil layer
Management measures and considerations:
• A detailed soils investigation should be conducted before planting.

Woodland

Suitability: Well suited
Productivity: Moderate or high
Native vegetation: Loblolly pine, yellow-poplar, water oak, willow oak, sweetgum, and red maple in the understory; waxmyrtle, blueberry, bitter gallberry, and various other plants in the understory
Management concerns: Droughtiness, wetness, and lack of a topsoil layer in some areas
Management measures and considerations:
• A detailed soils investigation should be conducted before planting.

Urban development

Suitability: Moderately suited
Management concerns: Seepage, poor filtering capacity, abundant shells and shell fragments, variable texture of soil layers, and buried organic layers
Management measures and considerations:
• A detailed soils investigation should be conducted before planning development.

Interpretive Groups

Land capability classification: None assigned
Woodland ordination symbol: None assigned

WaA—Wasda muck, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas, depressions, and the edge of pocosins
Shape of areas: Irregular
Size of areas: 5 to 500 acres

Composition

Wasda soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

Surface layer:
0 to 13 inches—black muck

Subsoil:
13 to 25 inches—very dark grayish brown sandy loam
25 to 38 inches—dark grayish brown sandy clay loam that has strong brown mottles and pockets of very dark gray muck
38 to 43 inches—light brownish gray sandy clay loam that has strong brown and light yellowish brown mottles

Underlying material:
43 to 67 inches—light brownish gray sand that has light yellowish brown mottles
67 to 72 inches—dark greenish gray loamy sand

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow in the surface layer; moderate in the subsoil and underlying material
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight by water; moderate by wind during dry periods
Slope class: Nearly level
Organic matter content: Very high in the surface layer and the upper part of the subsoil; low in the lower part of the subsoil and in the underlying material
Reaction: Extremely acid to strongly acid in the surface layer and subsoil, except in limed areas; extremely acid to slightly alkaline in the underlying material

Inclusions

Contrasting:
• Stockade, Portsmouth, and Newholland soils that are on the outer edge of the map unit delineations and have a mineral surface layer
• Conaby soils that are on the outer edge of the map unit delineations and have more sand in the subsoil than the Wasda soil
• Pettigrew soils that are on the outer edge of the map unit delineations and have more clay in the subsoil than the Wasda soil
• Belhaven, Ponzer, and Scuppernong soils that are on the outer edge of the map unit delineations and have more than 16 inches of muck in the surface layer and subsoil
• Small intermingled areas that are in the northwestern part of the county and have sandy underlying material within a depth of 40 inches

• Small intermingled undrained areas that are ponded for very brief to long periods

Similar:
• Small intermingled areas that have a muck surface layer less than 8 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, acidity, soil blowing, and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Applying lime and fertilizer according to recommendations based on soil tests helps to increase productivity.
• Establishing windbreaks helps to control soil blowing.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: High
Native vegetation: Loblolly pine, sweetgum, swamp blackgum, pond pine, baldcypress, Atlantic white-cedar, water oak, willow oak, and swamp chestnut oak in the overstory; redbay, sweetbay, loblollybay, bitter gallberry, waxmyrtle, switchcane, fetterbush, titi, sweet pepperbush, highbush blueberry, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness, trafficability, and seedling mortality
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength, and high organic matter content
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

WeA—Weeksville loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flats, depressions, and lakewash rims of pocosin lakes
Shape of areas: Elongated
Size of areas: 5 to 1,800 acres

Composition

Weeksville soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

Surface layer:
0 to 6 inches—very dark brown loam

Subsoil:
6 to 13 inches—very dark brown loam
13 to 32 inches—dark grayish brown loam
32 to 38 inches—dark grayish brown loam that has strong brown mottles
38 to 45 inches—grayish brown loam that has yellowish brown mottles

Underlying material:
45 to 60 inches—gray loam that has light olive brown and dark reddish brown mottles
60 to 72 inches—olive gray fine sandy loam that has olive and yellowish red mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate to very high in the surface layer and the upper part of the subsoil; low

in the lower part of the subsoil and in the underlying material
Reaction: Very strongly acid or strongly acid in the surface layer and subsoil, except in limed areas; very strongly acid to moderately acid in the underlying material

Inclusions

Contrasting:
• Weeksville soils that are east of Alligator Lake and have organic layers below a depth of 40 inches
• Engelhard soils that are near the outer edge of the map unit delineations and have a dark surface layer less than 10 inches thick
• Hydeland and Brookman soils that are near the outer edge of the map unit delineations and have more clay in the subsoil than the Weeksville soil
• Gullrock and Roper soils that are near the outer edge of the map unit delineations and have more than 8 inches of muck in the surface layer
• Small intermingled undrained areas that are ponded for brief periods

Similar:
• Small intermingled areas that have less than 8 inches of muck in the surface layer

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, wheat, and soybeans
Management concerns: Wetness, ditchbanks caving, and piping
Management measures and considerations:
• Drainage systems should be installed and maintained.

Woodland

Suitability: Well suited in drained areas
Productivity: Very high
Native vegetation: Baldcypress, water tupelo, swamp blackgum, sweetgum, water oak, willow oak, swamp chestnut oak, yellow-poplar, loblolly pine, red maple, and pond pine in the overstory; bitter gallberry, sweet pepperbush, switchcane, fetterbush, redbay, sweetbay, highbush blueberry, greenbrier, American holly, Virginia chainfern, and various other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness, trafficability, seedling mortality, and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.
• Bedding helps to reduce seedling mortality rates.

Urban development

Suitability: Poorly suited
Management concerns: Wetness and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

WkA—Weeksville loam, 0 to 2 percent slopes, frequently flooded

Setting

Landscape position: Flood plains and lakewash rims of Lake Mattamuskeet
Shape of areas: Elongated
Size of areas: 98 to 1,800 acres

Composition

Weeksville soil and similar inclusions: 95 percent
Constrasting inclusions: 5 percent

Typical Profile

Surface layer:
0 to 6 inches—very dark brown loam

Subsoil:
6 to 13 inches—very dark brown loam
13 to 32 inches—dark grayish brown loam
32 to 38 inches—dark grayish brown loam that has strong brown mottles
38 to 45 inches—grayish brown loam that has yellowish brown mottles

Underlying material:
45 to 60 inches—gray loam that has light olive brown and dark reddish brown mottles
60 to 72 inches—olive gray fine sandy loam that has olive and yellowish red mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Very poorly drained
Permeability: Moderate throughout the profile
Available water capacity: Very high
High water table: Within a depth of 0.5 foot
Flooding: Frequent
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: High or very high in the surface layer and the upper part of the subsoil; low in the lower part of the subsoil and in the underlying material
Reaction: Very strongly acid to neutral throughout the profile due to flooding and saturation with slightly brackish water

Inclusions

Contrasting:
- Engelhard soils that are frequently flooded, are near the outer edge of the map unit delineations, and have a dark surface layer less than 10 inches thick
- Small areas that are near the outer edge of the map unit delineations and have a muck surface layer more than 8 inches thick
- Small intermingled areas that are ponded for brief to very long periods

Similar:
- Small intermingled areas that have less than 8 inches of muck in the surface layer

Use and Management

Major Uses: Woodland and wildlife habitat

Cropland

Suitability: Unsuited to conventional crops
Management concerns: Frequent flooding and saturation with slightly brackish water

Woodland

Suitability: Poorly suited
Productivity: Moderately high
Native vegetation: Baldcypress, water tupelo, swamp blackgum, black willow, tall reed, cattail, three square, and other herbaceous plants
Management concerns: Flooding
Management measures and considerations:
- The use of equipment should be restricted during wet periods.

Urban development

Suitability: Unsuited
Management concerns: Flooding

Interpretive Groups

Land capability classification: VIIw
Woodland ordination symbol: 7W, based on swamp blackgum as the indicator species

WyA—Wysocking very fine sandy loam, 0 to 3 percent slopes, rarely flooded

Setting

Landscape position: Lakewash rims of pocosin lakes (fig. 11)
Shape of areas: Elongated
Size of areas: 10 to 1,200 acres

Composition

Wysocking soil and similar inclusions: 90 percent
Constrasting inclusions: 10 percent

Typical Profile

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

Underlying material:
6 to 29 inches—grayish brown silt that has black organic layers
29 to 78 inches—dark reddish brown muck
78 to 93 inches—very dark brown mucky silt loam

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid in the surface layer and underlying mineral layers; moderately slow to moderately rapid in the underlying organic layers
Available water capacity: High or very high
High water table: Within a depth of 1.0 foot in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level or gently sloping
Organic matter content: Moderate or high in the surface layer; low in the upper part of the underlying material; very high in the lower part of the underlying material
Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

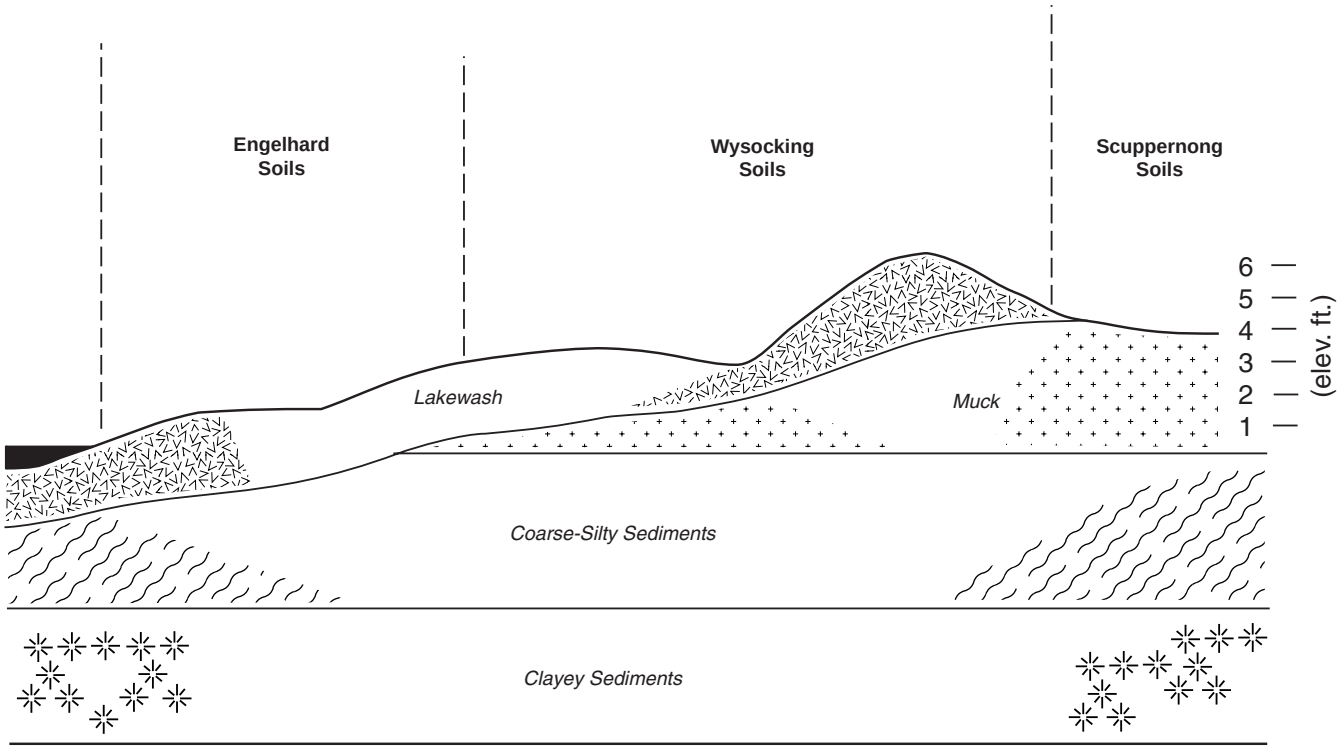


Figure 11.—Cross section showing relationship among soils of the lakewash rim on the northeast side of Lake Mattamuskeet.

Inclusions

Contrasting:
- Engelhard soils that are near the outer edge of the map unit delineations, have more than 40 inches of mineral material in the surface layer and underlying material, and are generally not underlain by muck
- Belhaven and Scuppernong soils that are near the outer edge of the map unit delineations and have more than 16 inches of muck in the upper 32 inches
- Small intermingled undrained areas that are ponded for brief to long periods

Similar:
- Small areas that have a muck surface layer less than 8 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness, ditchbanks caving, and piping
Management measures and considerations:
- Drainage systems should be installed and maintained.

Woodland

Suitability: Moderately suited
Productivity: High
Native vegetation: Loblolly pine, water oak, willow oak, swamp chestnut oak, red maple, swamp blackgum, sweetgum, baldcypress, and yellow-poplar in the overstory; sweetbay, redbay, American holly, sweet pepperbush, fetterbush, switchcane, waxmyrtle, bitter gallberry, Virginia chainfern, and various vines and herbaceous plants in the understory
Management concerns: Wetness, low bearing strength in the subsoil, seedling mortality, and ditchbanks caving
Management measures and considerations:
- Drainage systems should be installed and maintained.
- Bedding helps to reduce seedling mortality rates.
- The use of equipment should be restricted during wet periods.

Urban development

Suitability: Poorly suited
Management concerns: Wetness, low bearing strength in the subsoil, and ditchbanks caving
Management measures and considerations:
• Drainage systems should be installed and maintained.
• For the construction of heavy structures, removing the organic surface layer or installing pilings through this layer helps to overcome the low bearing strength.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 10W, based on loblolly pine as the indicator species

YeA—Yeopim silt loam, 0 to 3 percent slopes, rarely flooded

Setting

Landscape position: The upland edge of creeks and marshes along the Pungo River and its tributaries (fig. 12)
Shape of areas: Elongated
Size of areas: 10 to 200 acres

Composition

Yeopim soil and similar inclusions: 80 percent
Constrasting inclusions: 20 percent

Typical Profile

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

Subsoil:
3 to 9 inches—light yellowish brown silt loam
9 to 20 inches—light yellowish brown silt loam that has light gray and yellowish brown mottles
20 to 30 inches—yellowish brown silt loam that has strong brown and light brownish gray mottles
30 to 44 inches—light yellowish brown silt loam that has strong brown and gray mottles
44 to 54 inches—light brownish gray loam that has light yellowish brown and brownish yellow mottles

Underlying material:
54 to 65 inches—light yellowish brown fine sandy loam that has strong brown and light brownish gray mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Moderately well drained

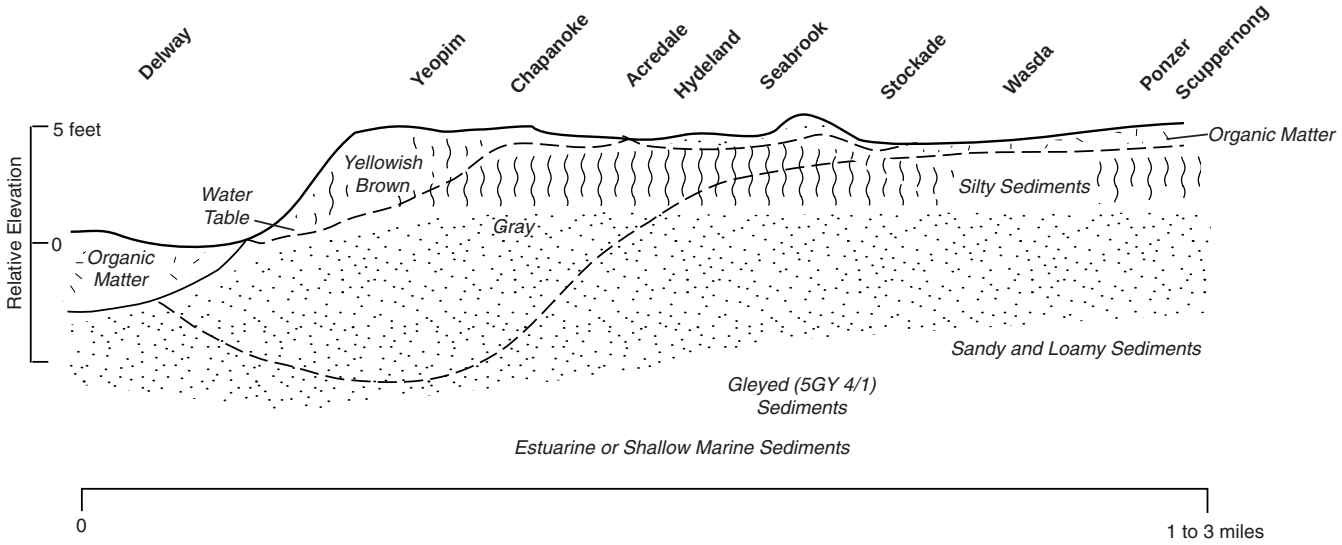


Figure 12.—Cross section of fine-silty soils. Yeopim and Chapanoke soils occur on the "dry edge," the area bordering flood plains and marshes.

Permeability: Moderately slow
Available water capacity: High
High water table: At a depth of 1.5 to 3.0 feet in undrained areas
Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level or gently sloping
Organic matter content: Moderate or high in the surface layer; low in the subsoil and underlying material
Reaction: Extremely acid to moderately acid throughout the profile, except in limed areas

Inclusions

Contrasting:
- The poorly drained Acredale soils in depressions and drainageways
- The somewhat poorly drained Chapanoke soils in depressions and at the edge of the map unit delineations

Similar:
- Small areas that have slopes of more than 3 percent
- Small areas that have a clayey subsoil

Use and Management

Major Uses: Woodland and cropland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness and trafficability
Management measures and considerations:
- Drainage systems should be installed and maintained.
- The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited
Productivity: High
Native vegetation: Loblolly pine, red maple, sweetgum, water oak, hickory, American beech, yellow-poplar, white oak, southern red oak, dogwood, and swamp blackgum in the overstory; American holly, sourwood, waxmyrtle, highbush blueberry, and sweet pepperbush in the understory
Management concerns: Wetness
Management measures and considerations:
- The use of equipment should be restricted during wet periods.

Urban development

Suitability: Moderately suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

YoA—Yonges loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Broad flat interstream areas and depressions
Shape of areas: Elongated
Size of areas: 5 to 200 acres

Composition

Yonges soil and similar inclusions: 85 percent
Constrasting inclusions: 15 percent

Typical Profile

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

Subsoil:
7 to 28 inches—grayish brown loam that has light yellowish brown and yellowish brown mottles
28 to 37 inches—dark gray loam that has yellowish brown, light yellowish brown, and strong brown mottles
37 to 43 inches—gray loam that has dark gray mottles
43 to 51 inches—grayish brown fine sandy loam that has yellowish brown and strong brown mottles
51 to 58 inches—gray fine sandy loam that has light olive brown, strong brown, and gray mottles

Underlying material:
58 to 65 inches—grayish brown loamy fine sand that has strong brown mottles

Soil Properties and Qualities

Depth: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Available water capacity: Moderate or high
High water table: Within a depth of 1.0 foot in undrained areas

Flooding: Rare
Shrink-swell potential: Low
Erosion: None or slight
Slope class: Nearly level
Organic matter content: Moderate or high in the surface layer; low in the subsoil and underlying material
Reaction: Very strongly acid to moderately alkaline throughout the profile

Inclusions

Contrasting:
• Stockade soils that are near the outer edge of the map unit delineations and have a surface layer more than 10 inches thick
• Acredale soils that are near the outer edge of the map unit delineations and have a siltier subsoil than the Yonges soil
• Argent soils that are near the outer edge of the map unit delineations and have more clay in the subsoil than the Yonges soil
• Fork soils that are near the outer edge of the map unit delineations and are somewhat poorly drained

Similar:
• Small intermingled areas that have a surface layer 7 to 10 inches thick

Use and Management

Major Uses: Cropland and woodland

Cropland

Suitability: Well suited in drained areas
Major crops: Corn, soybeans, and wheat
Management concerns: Wetness and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• The use of equipment should be restricted during wet periods.

Woodland

Suitability: Well suited in drained areas
Productivity: Very high
Native vegetation: Loblolly pine, sweetgum, red maple, yellow-poplar, swamp blackgum, water oak, willow oak, and swamp chestnut oak in the overstory; American holly, waxmyrtle, dangleberry, bitter gallberry, highbush blueberry, fetterbush, and other shrubs, vines, and herbaceous plants in the understory
Management concerns: Wetness, seedling mortality, and trafficability
Management measures and considerations:
• Drainage systems should be installed and maintained.
• Bedding helps to reduce seedling mortality rates.
• The use of equipment should be restricted during wet periods.

Urban development

Suitability: Moderately suited in drained areas
Management concerns: Wetness
Management measures and considerations:
• Drainage systems should be installed and maintained.

Interpretive Groups

Land capability classification: IIIw in drained areas; VIw in undrained areas
Woodland ordination symbol: 12W, based on loblolly pine as the indicator species

Use and Management of the Soils

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

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

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

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

Contractors can use this survey to locate sources of sand, roadfill, and topsoil. They can use it to identify areas where 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

Rufus Croom, District Conservationist, and Paul Lilly, Extension Soils Specialist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Natural Resources Conservation Service is explained, the estimated yields of the main crops and hay and pasture plants are listed for each soil, and prime farmland is described.

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

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

In 1993, according to the North Carolina Agricultural Statistics, Hyde County had more than 95,000 acres of crops and pasture. Of this total, 75,800 acres was used for row crops, mainly corn, soybeans, and cotton; 8,500 acres was used for close-growing crops, mainly wheat; and 2,100 acres was used for truck crops, such as tomatoes, broccoli, onions, cucumbers, bell peppers, squash, snap beans, and Irish potatoes. The rest of the acreage was idle cropland in conservation use or in other miscellaneous uses.

Tall fescue, some white clover, and annual grasses, particularly ryegrass, are the dominant pasture grasses. The acreage of pasture in the county is very small.

Many of the soils are well suited to vegetable crops. The latest information on growing specialty crops can be obtained from the local office of the Cooperative Extension Service or the Natural Resources Conservation Service.

Farming has historically been the principal enterprise in Hyde County. It continues to play an important role in the county's economy.

The soils suitable for farming in the survey area can be divided into two groups: soils that have a light-colored mineral surface layer and soils that have a

dark, highly organic surface layer. The soils that have a mineral surface layer are in the vicinity of Sladesville, Ponzer, Grassy Ridge, and Engelhard. The soils that have a dark surface layer are dominantly in the interior of the county and to the north, south, and west of Lake Mattamuskeet.

Soils that have a light-colored mineral surface layer. These soils include the poorly drained Acredale, Argent, Engelhard, Pasquotank, Wysocking, and Yonges soils; the somewhat poorly drained Chapanoke and Fork soils; and the moderately well drained Seabrook and Yeopim soils. The very poorly drained Brookman, Fortescue, Hydeland, Newholland, Portsmouth, Stockade, and Weeksville soils commonly have a mineral surface layer but may have as much as 8 inches of organic material in the surface layer. These soils have a dark surface layer and are therefore included the second group of soils for the purpose of crop management. The crops most commonly grown on the soils in the first group are corn, soybeans, and wheat. These soils are extremely acid to moderately acid in the surface layer, except in limed areas. The surface layer is commonly loam, silt loam, or fine sandy loam.

Caution is needed when tilling Argent soils during wet periods. These soils are clayey beneath the surface layer, and clods form if the soils are plowed when wet. Plowing when the soils are wet also destroys soil structure, which is important in the removal of excess surface water. This results in ponding and a poor seedbed. Timing is critical when planting on Argent and other clayey soils.

Wetness is a limitation in using the soils in the first group for pasture and hay. The carrying capacity of pastures can be increased by using artificial drainage, surface drainage, proper stocking rates, rotational and deferred grazing, and proper applications of lime and fertilizer. Overgrazing and grazing when soil is wet cause compaction of the surface layer and degradation of grass stands.

Soils that have a dark, highly organic surface layer. These soils are also known as the Blackland soils *(6)*. All soils in this group are very poorly drained and require artificial drainage for crop production. Without drainage, the high water table is at or near the surface for extended periods, generally during winter. For the purpose of crop production and management, these soils can be broken down into two subgroups. The first subgroup consists of the most highly productive soils having the fewest management problems. The second subgroup consists of the least productive soils.

The most highly productive soils include Brookman, Fortescue, Hydeland, Newholland, Portsmouth, Stockade, and Weeksville soils which are predominantly mineral in the surface layer; Conaby, Gullrock, Pettigrew, Portsmouth, Roper, Stockade, and Wasda soils which have a shallow organic surface layer (less than 16 inches thick) over a mineral subsoil; and Ponzer soils which have black noncolloidal muck less than 51 inches thick (in most areas it is less than 36 inches thick).

The least productive soils include Pungo soils which have more than 51 inches of colloidal muck and Belhaven and Scuppernong soils which have 16 to 51 inches of colloidal muck. Colloidal muck is a dusky red to dark reddish brown, sticky and pastelike, highly decomposed form of peat. It consists of very finely divided organic materials that have a very high moisture-holding capacity and very low drainage porosity. It is extremely acid (pH of less than 3.5 to 4.0) and commonly contains buried, decay-resistant logs and stumps. It has low bearing strength and therefore poor equipment flotation and has very poor internal drainage. High liming rates are necessary for crop production. Buried wood interferes severely with tillage. Equipment access is limited during certain periods, and subsurface drainage or irrigation is seldom possible. Colloidal muck flows under pressure and liquefies if agitated. When drained, it dries irreversibly and changes both chemically and physically. In addition, areas of these colloidal muck soils have a severe hazard of ground fire when dry *(6)*.

Corn and soybeans are the most commonly grown crops on the soils that have a dark, highly organic surface layer. Wheat is generally grown only on soils that do not have an organic surface layer because of the hazard of ground fire when wheat stubble is burned. These soils are also suited to the production of vegetable crops, such as tomatoes, squash, cucumbers, and beans.

Erosion

Surface runoff from high-intensity rains may cause soil loss, even on fields that are nearly level. Most of the runoff occurs around hoe drains, or cross drains, that are used across fields from ditch to ditch. The bulk of the eroded soil settles in the field ditches and canals, blocking outlets and necessitating frequent and costly cleaning. The hazard of erosion can be reduced by field shaping and smoothing, which reduces the number of cross drains, by conservation tillage, by managing crop residue (fig. 13), and by stabilizing ditch and canal banks with plant cover.

Soil blowing can occur if the soils are bare or free of surface roughness or if the surface is dry. Soil blowing

Figure 13.—Crop residue management on Roper soils. This practice helps to control soil blowing and prevent topsoil material from washing into ditches.

on cropland can be reduced by crop residue management and by bedding. Bedding leaves the surface rough and thus reduces the probability that soil particles will be transported across the surface when row direction is perpendicular to the wind. Windbreaks also help to control soil blowing. To be most effective, they should be established perpendicular to the wind. The area of effective control is about 10 times the height of the windbreak. Windbreaks provide good wildlife habitat and add esthetic value to large, cleared areas.

Other components of resource management systems that are effective in erosion control are field borders and winter cover crops. Soil blowing can also be controlled by ditchbank management. Mowing only one side per year allows tall plants to remain as a partial windbreak. The opposite side can be mowed the following year.

Drainage

Nearly all of the acreage of cropland in Hyde County and much of the acreage of woodland have been artificially drained because of the high water table. Since 1985, stricter regulations have restricted further drainage of hydric soils.

The artificial drainage systems commonly consist of a primary system of canals and a secondary system of field ditches that lower and remove ground water. Because of erratic and periodically heavy rainfall, surface drainage is almost always needed. Crowning fields is a method of surface drainage (fig. 14). Field ditches are generally 1/2 mile long and are 200 to 330 feet apart on farms and about 600 feet or more apart on woodland. Crowning generally does not make more than 1/2 percent slope from the ditch to the center of the field.

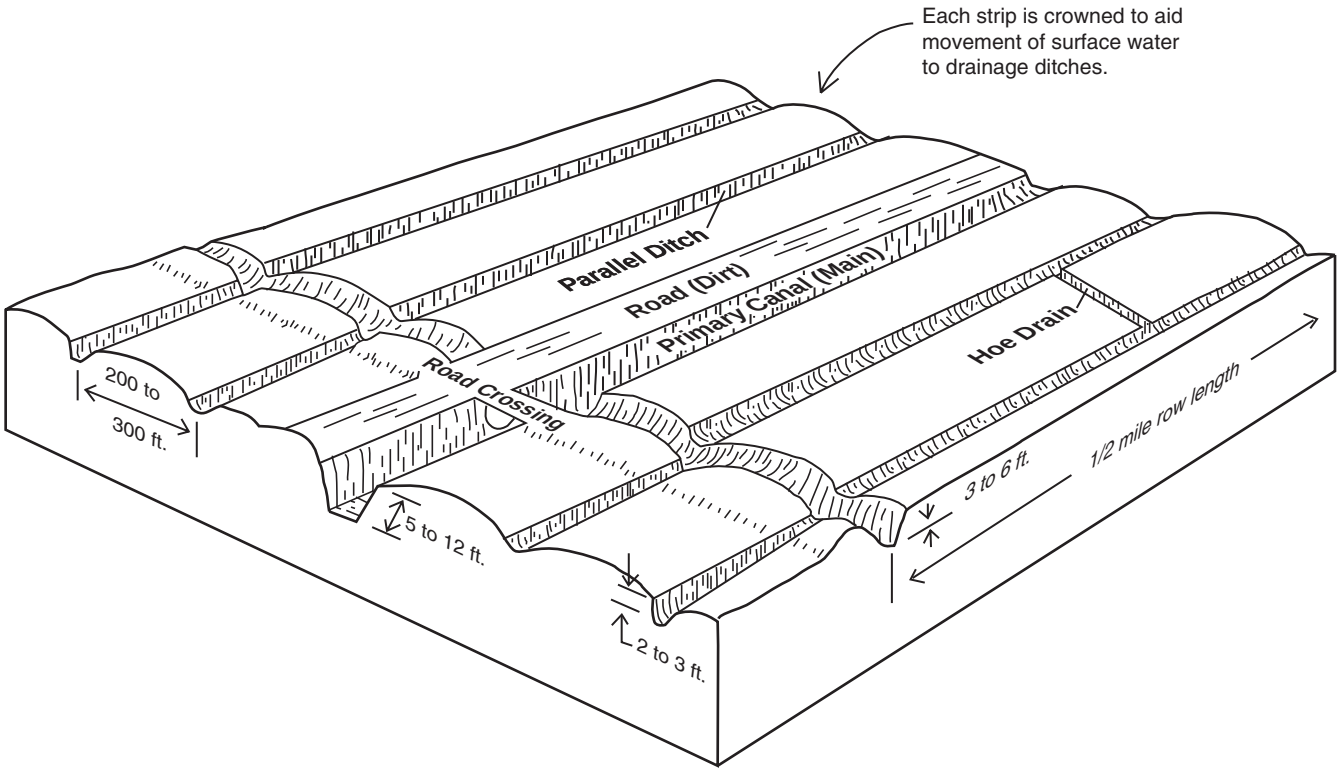


Figure 14.—A typical drainage system on cropland in Hyde County.

Hoe drains can be installed in low areas to improve the removal of surface water. A suitable outlet for water removal must also be available. In areas at low elevations, pumping is often needed. Generally, subsurface drainage tile can only be used for mineral soils that are not clayey and in areas that have a suitable outlet. Even on soils drained with tiles, a surface drainage system is needed during periods of heavy rainfall.

Drainage has increased the hazard of ground fire on organic soils. It has also increased the amount of agricultural runoff entering creeks and estuaries.

Soil Fertility

The soils in Hyde County generally are low in natural fertility. They are naturally acid. Additions of lime and fertilizer are needed for the production of most kinds of crops.

Liming requirements are a major concern on cropland. The acidity level in the soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime also neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil.

Lime should be applied according to recommendations based on soils tests. It should be incorporated to a depth of 8 inches. Plant roots normally grow only in limed organic soil and do not penetrate acid, unlimed soil. Areas should not be overlimed. The recommended target pH varies according to the organic matter content. Soils classified as mineral are limed to pH 6.0, soils classified as mineral-organic are limed to pH 5.5, and soils classified as organic are limed to pH 5.0.

Nitrogen fertilizer is required for most crops. It is generally not required, however, in some rotations of soybeans. A reliable soil test is not available for predicting nitrogen requirements. Appropriate rates of nitrogen application are described in the section "Yields per Acre."

Soil tests can indicate the need for phosphorus and potassium fertilizer. They are needed because phosphorus and potassium tend to build up in the soil.

Copper as a micronutrient is needed on all newly cleared organic soil. It is needed periodically on

previously cleared organic soil as determined by the results of soil tests.

Other nutrients should be applied according to the results of soil tests. Because of the unique qualities of organic soils in North Carolina, North Carolina soil test procedures and recommendations should be used. Some practices that are used outside the state may cause severe problems on these soils.

Chemical Weed Control

The use of herbicides for weed control is a common practice on the cropland in Hyde County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as organic matter content and texture of the surface layer, affect the rate of herbicide application. Estimates of both of these properties were determined for the soils in the county. Table 17 shows a general range of organic matter content in the surface layer of the soils. The texture of the surface layer is shown in the USDA texture column in table 16.

In some areas the organic matter content projected for the different soils is outside the range shown in table 17. The content can be higher in soils that have received high amounts of animal or manmade waste. Soils that have recently been brought into cultivation may have a higher content of organic matter in the surface layer than similar soils that have been cultivated for a long time. Conservation tillage can increase the content of organic matter in the surface layer. A lower content of organic matter is common where the surface layer has been partly or completely removed by erosion or land smoothing. Current soil tests should be used for specific organic matter content determinations.

The Cooperative Extension Service can be contacted for information on pest management and cultural practices. Appropriate, successful technology is available locally. Soils that have a high content of organic matter require special management. Many agricultural chemicals are ineffective on these soils or need to be used at higher rates or applied in special ways.

Water Quality

Agricultural practices are often cited as a source of the degradation of surface waters surrounding Hyde County. Sedimentation and nutrient runoff are the biggest problems. The detrimental effects of agricultural runoff can be minimized by several practices. No-till farming, conservation tillage, cover crops, crop residue management, fields borders, water-control structures, tide gates, and nutrient management help to improve the quality of ground and surface waters. The combined effects of these practices reduce the amounts of runoff of nutrients and soluble and sediment-attached substances into waterways.

No-till farming involves planting a cover crop, burning down the crop with a chemical herbicide, and planting a crop in the residue. The major benefits of this practice are better rainfall infiltration, nearly complete elimination of erosion, reduced fuel consumption, more earthworms and soil microbes, better soil aeration and drainage, and reduction of the spread of soil-borne diseases. In addition, more nutrients are available to plants. No-till farming has a positive effect on water quality by filtering and stabilizing sediments, pathogens, and soluble and sediment-attached substances carried by runoff.

Conservation tillage is defined as any tillage and planting system in which at least 30 percent of the soil surface is covered by plant residue after planting so that the hazard of soil erosion by water is reduced. This practice benefits water quality on all soil types. Conservation tillage minimizes the disturbance of the soil surface during planting; increases organic matter content, which is important on poorly drained, somewhat poorly drained, and moderately well drained soils; maintains good tilth; and increases the availability of nutrients to plants. It has a positive effect on water quality by filtering and stabilizing sediments, pathogens, and soluble and sediment-attached substances carried by runoff. It also provides food and cover for wildlife.

Cover crops are close-growing grasses, legumes, or small grains grown primarily for seasonal protection and soil improvement. They are usually grown for 1 year or less unless used as permanent cover. Cover crops control erosion during periods when the major crops do not furnish adequate cover, add organic material to the soil, and improve infiltration, aeration, and tilth. They improve water quality by removing sediments, pathogens, and dissolved and sediment-attached substances. Wildlife also benefits from the food and cover provided by cover crops.

Under crop residue management, plant residue is used to protect cultivated fields during critical erosion periods. This practice reduces the erosion hazard, increases water infiltration into the soil, and improves soil tilth. It filters sediments and dissolved and sediment-attached substances and prevents them from entering ditches and waterways. Crop residue also provides food and cover for wildlife.

Field borders are strips of perennial vegetation established at the edge of a field. They help to minimize erosion and runoff in ditches at the edge of fields. They are also used as turn rows and travel

Figure 15.—A grass filter strip on Argent loam, 0 to 2 percent slopes, rarely flooded, helps to improve water quality by filtering runoff carrying excess nutrients and pesticides.

lanes for farm machinery. They prevent sediments and dissolved and sediment-attached substances from entering ditches and waterways (fig. 15). They can also provide food and cover for wildlife.

Water-control structures, such as flashboard risers, are structures which control the amount and rate of runoff (fig. 16). These structures improve water quality by reducing the amount of soluble and sediment-attached substances entering waterways.

Tide gates help to control the intrusion of salt water into farm field ditches (fig. 17). They are only used at low elevations in areas subject to the intrusion of brackish water into ditches as a result of wind tides. Tide gates allow excess water to leave the ditches but prevent brackish water from entering. They help to ensure that salinity levels in the soil do not become restrictive to plant growth.

Nutrient management includes managing the amount, form, placement, and timing of nutrient applications. The plant nutrients are those associated with organic waste, commercial fertilizer, legume crops, and crop residues. Under this practice, enough plant nutrients are applied for optimum crop yield. Nutrient management improves water quality by controlling the entry of nutrients into surface and ground water.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil

and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

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

Figure 16.—Water-control structures in drainage ditches help to maintain soil moisture during dry periods. They also help to prevent the flow of excess nutrients and pesticides into drainageways.

Figure 17.—Tide gates prevent the intrusion of salt water into agricultural drainage ditches. They also help to prevent the flow of excess nutrients and pesticides into brackish water systems.

developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(10)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class I soils have few limitations that restrict their use.

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

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

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

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

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

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

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

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

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, s,* or *c* 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 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. Generally, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

The map units in the survey area that are considered prime farmland are listed in table 8. This list does not constitute a recommendation for a particular land use. Drainage is needed on all of the soils listed. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Woodland Management and Productivity

Albert Coffey, Forester, Natural Resources Conservation Service, helped prepare this section.

Owners of woodland in Hyde County have many objectives. These objectives include producing timber; conserving wildlife, soil, and water; preserving esthetic values; and providing opportunities for recreational activities, such as commercial hunting. Public demand for clean water and recreational areas creates pressures and opportunities for owners of woodland.

For purposes of forest inventory, the predominant forest types identified in Hyde County are as described in the following paragraphs *(9)*.

Loblolly-shortleaf. This forest type covers 113,084 acres. Loblolly pine and shortleaf pine make up more than 50 percent of the stand. Commonly included trees are swamp chestnut, willow oak, water oak, sweetgum, blackgum, hickory, and yellow-poplar.

Oak-pine. This forest type covers 26,096 acres.

Hardwoods make up more than 50 percent of the stand, and pines make up 25 to less than 50 percent. Commonly included trees are oaks, gum, hickory, and yellow-poplar.

Oak-hickory. This forest type covers 9,868 acres. Oaks and hickory make up more than 50 percent of the stand. Commonly included trees are elm, red maple, and yellow-poplar.

Oak-gum-cypress. This forest type covers 66,071 acres. It is predominantly tupelo, blackgum, red maple, cypress, or a combination of these species. Commonly included trees are sweetgum, cottonwood, willow, ash, and elm.

The landowner interested in timber production is faced with the challenge of producing greater yields from smaller areas. Meeting this challenge requires intensive management and silvicultural practices. Many modern silvicultural techniques resemble those long practiced in agriculture. They include establishing, weeding, and thinning a desirable young stand; propagating the more productive species and genetic varieties; providing short rotations and complete fiber utilization; controlling insects, diseases, and weeds; and improving tree growth by applications of fertilizer and the installation of a drainage system. Even though timber crops require decades to grow, the goal of intensive management is similar to the goal of intensive agriculture. This goal is to produce the greatest yield of the most valuable crop as quickly as possible.

Commercial forests cover about 235,119 acres, or about 59 percent of the land area of Hyde County. Commercial forest is land that is producing or is capable of producing crops of industrial wood and that has not been withdrawn from timber production. Loblolly pine is the most important timber species in the county because it grows fast, is adapted to the soil and climate, brings the highest average sale value per acre, and is easy to establish and manage.

One of the first steps in planning intensive woodland management is to determine the potential productivity of the soil for several alternative tree species. The most productive and valued trees are then selected for each soil type. Site and yield information enables a forest manager to estimate future wood supplies. These estimates are the basis of realistic decisions concerning expenses and profits associated with intensive woodland management, land acquisition, or industrial investments.

The potential productivity of woodland depends on physiography, soil properties, climate, and the effects of past management. Specific soil properties and site characteristics, including soil depth, texture, structure, and depth to the water table, affect forest productivity primarily by influencing available water capacity, aeration, and root development. The net effects of the interaction of these soil properties and site characteristics determine the potential site productivity.

Other site factors are also important. The gradient and length of slopes affect water movement and availability. The amount of rainfall and length of growing season influence site productivity.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. The common forest understory plants also are listed. Table 9 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in management.

Table 9 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare per year. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by a hardpan or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: W, T, D, C, and S.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or

seasonal, because of such soil characteristics as wetness and susceptibility of the surface layer to compaction. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if wetness restricts equipment use from 2 to 6 months per year. The rating is *severe* if wetness restricts equipment use for more than 6 months per year or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of the naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a high water table and the length of the period when the water table is high, and rooting depth. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table or by a combination of such factors as soil wetness, texture, structure, and depth. The risk is *slight* if strong winds break trees but do not uproot them; *moderate* if strong winds blow a few trees over and break many trees; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers should plan site preparation measures to ensure timely reforestation.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *volume* number. The predominant common trees are listed in table 9 in the order of their observed occurrence. Additional species that commonly occur on the soils may be listed in the detailed soil map unit descriptions. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

For soils that are commonly used for timber production, the yield is predicted in cubic feet per acre per year. It is predicted at the point where mean annual increment culminates. The estimates of the productivity of the soils in this survey are based mainly on loblolly pine and pond pine.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years (50 years in this survey). This index applies to fully stocked, even-aged, unmanaged stands. Productivity of a site can be improved through management practices, such as bedding, ditching, managing water, applying fertilizer, and planting genetically improved species.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet

area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

Hyde County provides a wide variety of recreational opportunities. Hunting, fishing, and bird-watching are very popular on the mainland. Ocracoke Island provides over 20 miles of beaches for swimming, surf fishing, bird-watching, and other beach activities. The county also has four National wildlife refuges, including the Lake Mattamuskeet, Swanquarter, Alligator River, and Pocosin Lakes National Wildlife Refuges. These refuges consist of vast areas of swamp, pocosin, rivers, lakes, and woodland. Hunting for ducks, geese, and swan is allowed by permit. Large sections of the Swanquarter National Wildlife Refuge are designated as wilderness area and are only accessible by foot. Gull Rock Game Lands, which are owned by the North Carolina Wildlife Resources Commission, allow hunting by permit and are a bear sanctuary. Most of Ocracoke Island is National Seashore.

The soils of the survey area are rated in table 10 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, and potential water impoundment sites. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 10, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 10 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 13 and interpretations for dwellings without basements and for local roads and streets in table 12.

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 are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, and are not subject to flooding during the period of use.

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

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use.

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

Wildlife Habitat

John P. Edwards, Biologist, Natural Resources Conservation Service, helped prepare this section.

The combination of woodland, cropland, marshes, and open water areas in Hyde County supports a wide variety of wildlife species. The water areas range from salt water, at Ocracoke Island, to brackish water, surrounding the mainland part of the county, and to fresh water, at Pungo Lake, Alligator Lake, and Lake Mattamuskeet. Many different wildlife species are indigenous to these water areas. The county has several State and Federal wildlife refuges which provide management and protection for these species. These refuges include the Lake Mattamuskeet National Wildlife Refuge, the Alligator River National Wildlife Refuge, the Pocosin Lakes National Wildlife Refuge, the Swan Quarter National Wildlife Refuge,

Cape Hateras National Seashore, and Gull Rock Game Lands. These refuges have a total of about 90,000 acres of land.

Wildlife populations depend directly on soil for sustenance because of the relationship of soils to native plant communities. Proper management of soil, water, and plants can produce suitable habitat and thus effectively maintain and improve wildlife populations. Interpretations for wildlife areas are based on the relationship of wildlife to plants and the relationship of plants to soils.

The soils in Hyde County produce a wide variety of plants. The plants provide the unique needs of each wildlife species for food, cover, and protection. The county has medium or high populations of big game, such as bear and deer. Upland game, such as squirrel, rabbit, quail, mourning dove, fox, and songbirds, inhabit areas throughout the county. Furbearers, such as raccoon, mink, otters, muskrat, and opossum, are abundant. Waterfowl, such as ducks, geese, and swans, are abundant in wildlife refuges during migration.

Land use trends since the 1970's have significantly impacted the fish and wildlife resources. Drainage and clearing of large tracts of land have had varying effects on different wildlife species. Many of the soils became highly productive after the land was cleared and drained. The major soils that were converted from woodland to cropland are Roper, Ponzer, Belhaven, Scuppernong, Hydeland, Wasda, and Newholland soils. Large areas of Pungo soils were also cleared and drained but were later abandoned due to low productivity, poor trafficability, and high wood content. Many of these areas have reverted back to pocosin vegetation or have been planted to pine plantations.

The effect of the large scale conversion on fish and wildlife resources varies greatly and depends on many factors, such as the size of clearings, the presence of windbreaks, the inclusion of pumps in the drainage system, and, if pumps are used, the location of outlets. Drainage canals having direct outlets that rapidly expel large volumes of water into rivers and sounds are generally more detrimental to aquatic resources than the natural, gradual overland flow of water through swampy terrain, such as in areas of the frequently flooded Dorovan and Belhaven soils.

Generally, the larger the clearings, the more adverse the effects on wildlife populations. Black bear are probably the most adversely affected by the land clearing because of the loss of cover. Other wildlife, such as quail and rabbit, are not so adversely affected. Some species, such as deer, dove, and migratory birds, have benefited from the clearing.

Populations of white-tailed deer have increased dramatically in some areas due to an increased food supply (fig. 18). Some landowners install dikes around fields to impound water and attract waterfowl during fall and winter. The total impact of land clearing on fish and wildlife depends largely on the degree of wildlife management planning on the individual tract.

Drainage and conversion of woodland tracts from mixed pine and deciduous trees to pine plantation have decreased the diversity of wildlife populations in those areas. Drainage of these areas of pine plantation has also increased the rate of freshwater runoff into estuaries.

In table 11, 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 ratings in table 11 are intended to be used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes

Figure 18.—White-tailed deer in an area of Brookman soils. The deer are common throughout the survey area.

are depth of the root zone, texture of the surface layer, available water capacity, wetness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

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

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

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

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

Shallow water areas have an average depth of less than 5 feet. Some are naturally ponded areas. Others are created by dams, levees, or other water-control

structures. Soil properties and features affecting shallow water areas are soil texture, slope, and permeability. Examples of shallow water areas are marshes, waterfowl impoundments, and pocosin lakes.

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

Habitat for openland wildlife consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, field sparrow, cottontail rabbit, 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, bobcat, white-tailed deer, and black bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are alligator, ducks, geese, swans, herons, shore birds, muskrat, nutria, mink, otter, beaver, and young fin and shellfish.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building Site Development

Table 12 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, dense layer; soil texture; and depth to muck. The time of the year that excavations can be made is affected by the depth to a high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the high 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, shrinking and swelling, and organic layers can cause the movement of footings. Depth to 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 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to 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, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Hyde County Soil and Water Conservation District or the local office of the Cooperative Extension Service.

Sanitary Facilities

Table 13 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 13 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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

soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in the table and rely on anaerobic bacteria to decompose waste materials.

Table 13 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 permeability, depth to a high water table, flooding, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity.

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

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

The ratings in table 13 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to 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 landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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

Soil texture, wetness, 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 the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 14 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

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

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by depth to a high

water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

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

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 14, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or a layer of sand that is up to 12 percent silty fines. This material must be at least 3 feet thick. All other soils are rated as an improbable source.

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

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a high water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a high 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, or soils that have only 20 to 40 inches of suitable material. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have buried organic layers, or have a high water table at or near the surface.

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

Water Management

Table 15 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 excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to permeable material. Ponds that are less than about 2 acres in size are not shown on the maps because of the scale of mapping.

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

The ratings do not indicate the ability of the natural

soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

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

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

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 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 the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to a high water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Wetness affects the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing 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 affects the construction of grassed waterways. A hazard of soil blowing, a low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed *(12)*. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

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

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

Engineering Index Properties

Table 16 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(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.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074

millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

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

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

Physical and Chemical Properties

Table 17 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

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

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

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.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling

of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

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

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

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 17, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 18 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very 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 to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

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

If a soil is assigned to two hydrologic groups in table 18, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 18 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 18 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent;* and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 18.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the high water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. Table 18 shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors. Not shown in the table is subsidence caused by an imposed surface load or by the withdrawal of ground water throughout an extensive area as a result of lowering the water table.

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

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

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(11)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aqualf (*Aqu*, meaning water, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Endoaqualfs (*Endo*, meaning internal saturation with water, plus *aqualf*, the suborder of the Alfisols that has an aquic moisture regime).

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

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the underlying material within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. 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 location of the typical pedon is described, and coordinates generally are identified by longitude and latitude. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(13)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(11)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Acredale Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow

Figure 19.—Profile of Acredale silt loam. Acredale and the similar Argent soils are dominantly in the Sladesville area of Hyde County. Acredale soils have a lower content of clay and better permeability in the subsoil than the Argent soils. Most areas of Acredale soils are cropland while most areas of Argent soils are woodland.

Parent material: Loamy and silty marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats and interstream divides (fig. 19)
Commonly associated soils: Argent, Yonges, Hydeland, and Brookman soils
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, thermic Typic Endoaqualfs

Typical Pedon

Acredale silt loam, 0 to 2 percent slopes, rarely flooded; about 2.0 miles southwest of Sladesville, 1.0 mile east of the intersection of Secondary Roads 1146 and 1145, about 150 feet south of Secondary Road 1145, in a cultivated field; Pamlico Beach USGS topographic quadrangle; lat. 35 degrees 12 minutes 27 seconds N. and long. 76 degrees 30 minutes 38 seconds W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; common fine roots; few fine pores; moderately acid; clear wavy boundary.
Btg1—7 to 13 inches; light brownish gray (2.5Y 6/2) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common very fine pores; common medium distinct yellowish brown (10YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.
Btg2—13 to 30 inches; gray (10YR 6/1) silty clay loam; moderate medium subangular blocky structure; friable; many medium distinct brownish yellow (10YR 6/8) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.
Btg3—30 to 42 inches; gray (10YR 6/1) clay loam; moderate medium subangular blocky structure; friable; common medium distinct strong brown (7.5YR 5/8) and brownish yellow (10YR 6/8) rounded masses of iron accumulation with clear boundaries in the matrix; slightly acid; clear wavy boundary.
BCg—42 to 51 inches; gray (10YR 5/1) loam; moderate medium subangular blocky structure; friable; moderate medium distinct strong brown (7.5YR 5/8) and few fine distinct yellowish red (5YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; slightly acid; gradual smooth boundary.
Cg—51 to 62 inches; gray (10YR 6/1) loamy sand; massive; very friable; common coarse distinct light yellowish brown (10YR 6/4) irregularly shaped masses of iron accumulation with diffuse boundaries in the matrix; slightly acid.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Reaction: Extremely acid to moderately acid in the A, E, and B horizons, except in limed areas; very strongly acid to neutral in the C horizon

Ap or A horizon:
Color—hue of 10YR to 5Y, value of 2 to 6, and chroma of 1 or 2
Texture—silt loam

Btg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—silt loam, silty clay loam, clay loam, or loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

BCg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—loam, clay loam, sandy loam, fine sandy loam, or sandy clay loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—sand, loamy sand, or fine sandy loam that has thin strata of finer textured material
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Argent Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Parent material: Clayey marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats
Slope: 0 to 2 percent
Commonly associated soils: Brookman, Acredale, and Hydeland soils
Taxonomic class: Fine, mixed, thermic Typic Endoaqualfs

Typical Pedon

Argent loam, 0 to 2 percent slopes, rarely flooded; about 1.5 miles northeast of Germantown, 0.6 mile south of the intersection of Secondary Roads 1142 and 1139, about 200 feet east of Secondary Road 1139 on a logging path, 75 feet south of the logging path, in a wooded area; Scranton USGS topographic quadrangle; lat. 35 degrees 26 minutes 28 seconds N. and long. 76 degrees 26 minutes 25 seconds W.

Oe—5 inches to 0; partially decomposed roots, leaves, and twigs; many fine and medium live roots.

A—0 to 5 inches; very dark brown (10YR 2/2) loam; weak fine and medium granular structure; friable; common fine and medium roots; extremely acid; clear wavy boundary.

Eg—5 to 14 inches; grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; very dark brown (10YR 2/2) material from A horizon in old root channels; few fine vesicular pores; many medium distinct yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; gradual smooth boundary.

Btg1—14 to 32 inches; grayish brown (10YR 5/2) silty clay; weak fine subangular blocky structure; firm, sticky, plastic; few fine and medium roots throughout the horizon; very dark brown (10YR 2/2) material from A horizon in root channels; few fine vesicular pores; many medium distinct yellowish brown (10YR 5/8) and common medium distinct strong brown (7.5YR 5/8) irregular masses of iron accumulation with clear boundaries in the matrix; few faint gray (10YR 5/1) clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btg2—32 to 36 inches; gray (10YR 5/1) clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; few fine vesicular pores; few medium distinct strong brown (7.5YR 5/8) irregular masses of iron accumulation with clear boundaries in the matrix; few faint gray (N 5/0) clay films on faces of peds; moderately acid; gradual smooth boundary.

Btg3—36 to 58 inches; gray (N 5/0) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common medium distinct light olive brown (2.5Y 5/4) rounded masses of iron accumulation with clear boundaries in the matrix; few faint gray (N 4/0) clay films on faces of peds; moderately acid; clear smooth boundary.

Cg—58 to 65 inches; gray (N 5/0) silty clay; massive; firm, sticky, plastic; common medium distinct light olive brown (2.5Y 5/4) irregularly shaped masses of iron accumulation with diffuse boundaries in the matrix; few fine distinct grayish brown (10YR 5/2) irregularly shaped iron depletions with clear boundaries in the matrix; slightly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches

Reaction: Extremely acid to moderately acid in the A and E horizons and the upper part of the B horizon, except in limed areas; very strongly acid to moderately alkaline in the lower part of the B horizon and in the C horizon

A or Ap horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 5, and has chroma of 0 to 2
- Texture—loam

Eg horizon:
- Color—hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 1 or 2
- Texture—fine sandy loam, loam, silt loam, silty clay loam, or clay loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Btg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—clay, silty clay, silty clay loam, sandy clay, or clay loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red

BCg horizon (if it occurs):
- Color—horizon has hue of 10YR, 2.5Y, 5Y, or 5G or is neutral in hue, has value of 5 to 7, and has chroma of 0 to 2
- Texture—clay loam, silty clay loam, or sandy clay loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red

Cg horizon:
- Color—horizon has hue of 10YR to 5B or is neutral in hue, has value of 5 to 7, and has chroma of 0 to 2
- Texture—variable, ranging from sand to clay
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red

Backbay Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate and moderately slow
Parent material: Loamy fluvial sediments
Landscape: Lower Coastal Plain
Landform: Brackish to freshwater marshes along the outer edge of uplands
Commonly associated soils: Delway, Brookman, and Hydeland soils
Slope: 0 to 1 percent
Taxonomic class: Fine-loamy, mixed, nonacid, thermic Histic Humaquepts

Typical Pedon

Backbay mucky peat, 0 to 1 percent slopes, very frequently flooded; about 0.2 mile southwest of Oyster Creek Landing, 0.2 mile southwest of the intersection of Secondary Roads 1127 and 1128, about 100 feet south of Secondary Road 1128, between a canal and a fishing center, in a marsh; Swanquarter USGS topographic quadrangle; lat. 35 degrees 23 minutes 30 seconds N. and long. 76 degrees 18 minutes 47 seconds W.

Oe—0 to 4 inches; dark brown (7.5YR 3/2, broken face and rubbed) mucky peat; about 85 percent fiber unrubbed, about 30 percent fiber rubbed; massive; friable; slightly fluid; common fine and medium roots; strong sulfur odor; very strongly acid; clear smooth boundary.

Oa—4 to 14 inches; very dark brown (10YR 2/2, broken face and rubbed) muck; about 50 percent fiber unrubbed, about 15 percent fiber rubbed; massive; friable; slightly fluid; few fine and medium roots; strong sulfur odor; very strongly acid; clear smooth boundary.

A—14 to 21 inches; black (10YR 2/1) sandy loam; massive; friable; few fine and medium roots; strong sulfur odor; slightly acid; clear smooth boundary.

Cg1—21 to 29 inches; dark bluish gray (5B 4/1) sandy loam, dark gray (N 4/0) upon exposure to air; massive; friable; few medium partially decomposed roots; common medium faint gray (5Y 5/1) rounded iron depletions with clear boundaries in the matrix; strong sulfur odor; slightly acid; clear smooth boundary.

Cg2—29 to 41 inches; greenish gray (5BG 5/1) sandy clay loam, gray (5Y 5/1) upon exposure to air; massive; friable, slightly sticky, slightly plastic; few medium partially decomposed roots; common medium distinct yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; strong sulfur odor; neutral; gradual wavy boundary.

Cg3—41 to 62 inches; dark greenish gray (5G 4/1) sandy clay loam, dark gray (5Y 4/1) upon exposure to air; massive; friable, slightly sticky, slightly plastic; common medium distinct dark yellowish brown (10YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; strong sulfur odor; neutral.

Range in Characteristics

Thickness of underlying material: Organic surface layers—8 to 16 inches; loamy mineral sediments—more than 60 inches
Reaction: Very strongly acid to moderately acid in the O horizon; strongly acid to neutral in the A and C horizons

O horizon:
Color—hue of 5YR to 10YR, value of 2 to 3, and chroma of 1 to 4
Texture—mucky peat or muck

A horizon:
Color—horizon has hue of 7.5YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—sandy loam, silt loam, or loam

Cg horizon:
Color—horizon has hue of 10YR to 5B or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam; some layers may be stratified with thin layers of sandy or clayey materials
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray (color changes upon exposure to air)

Belhaven Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid
Parent material: Organic materials underlain by marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Pocosins, upland depressions, and flood plains
Commonly associated soils: Wasda, Conaby, Ponzer, Scuppernong, and Pungo soils
Slope: 0 to 2 percent
Taxonomic class: Loamy, mixed, dysic, thermic Terric Medisaprists

Typical Pedon

Belhaven muck, 0 to 2 percent slopes, rarely flooded; about 1.5 miles south of Pungo Lake, 1.5 miles north of the Pungo Lake Refuge office on Wildlife Road, about 1.1 miles east on a dirt path to a bridge on the north side of the path, about 200 feet north of the bridge, in an overgrown field; Pungo USGS topographic quadrangle; lat. 35 degrees 40 minutes 54 seconds N. and long. 76 degrees 33 minutes 53 seconds W.

Oa—0 to 40 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 15 percent fiber unrubbed, less than 1 percent fiber rubbed; massive; very friable, slightly sticky and pastelike; moderately fluid; many fine roots and stems; common logs and stumps; few fragments of charcoal; extremely acid; clear smooth boundary.
A—40 to 53 inches; very dark grayish brown (10YR 3/2) mucky sandy loam; massive; friable; nonfluid; extremely acid; clear smooth boundary.
Cg—53 to 65 inches; dark grayish brown (2.5Y 4/2) sandy clay loam, dark grayish brown (10YR 4/2) upon exposure to air; massive; nonfluid; few fine flakes of mica; extremely acid.

Range in Characteristics

Thickness of underlying material: 16 to 51 inches of organic materials over loamy sediments having less than 30 percent silt
Reaction: Extremely acid in the O horizon, except in limed areas; extremely acid to slightly acid in A and C horizons

Oa horizon:
Color—horizon has hue of 5YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—muck that has few to many logs, stumps, and fragments of wood and few or common fragments of charcoal

A horizon:
Color—hue of 2.5YR to 5Y, value of 2 to 3, and chroma of 1 or 2
Texture—fine sandy loam, sandy loam, mucky sandy loam, mucky loam, or loam

Cg horizon (upper part):
Color—horizon has hue of 2.5YR to 5Y or is neutral in hue, has value of 3 to 7, and has chroma of 0 to 3
Texture—sandy loam, loam, clay loam, or sandy clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray (color changes upon exposure to air)

Cg horizon (lower part):
Color—horizon has hue of 2.5YR to 5Y, 5GY, or 5G or is neutral in hue; has value of 4 to 7; and has chroma of 0 to 2
Texture—variable, ranging from sand to clay

Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray (color changes upon exposure to air)

Bolling Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Loamy marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Smooth to slightly rounded ridges along the edge of creeks and marshes bordering the Pungo River
Commonly associated soils: Fork, Yonges, and Dorovan soils
Slope: 0 to 3 percent
Taxonomic class: Fine-loamy, mixed, thermic Aquic Hapludalfs

Typical Pedon

Bolling loamy fine sand, 0 to 3 percent slopes, rarely flooded; about 1.2 miles west of Ponzer, 0.3 mile southwest of the intersection of North Carolina Highway 45 and Secondary Road 1344, about 50 feet east of Secondary Road 1344, in a playground at the Riverside Campground; Belhaven USGS topographic quadrangle; lat. 35 degrees 35 minutes 05 seconds N. and long. 76 degrees 30 minutes 56 seconds W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) loamy fine sand; moderate medium granular structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.
E—6 to 17 inches; light yellowish brown (10YR 6/4) loamy fine sand; weak medium granular structure; friable; few fine roots; common medium faint brownish yellow (10YR 6/6) rounded masses of iron accumulation with clear boundaries in the matrix; common fine opaque minerals; strongly acid; gradual smooth boundary.
Bt1—17 to 22 inches; light yellowish brown (10YR 6/4) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; common medium faint yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common fine opaque minerals; strongly acid; gradual smooth boundary.
Bt2—22 to 31 inches; light yellowish brown (10YR 6/4) sandy clay loam; moderate medium subangular blocky structure; slightly sticky; few fine tubular pores; common medium faint strong brown (7.5YR 4/6 and 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix and common coarse distinct gray (10YR 6/1) rounded iron depletions with clear boundaries in the matrix; common fine opaque minerals; very strongly acid; gradual smooth boundary.
Btg—31 to 48 inches; gray (10YR 6/1) sandy loam; moderate medium subangular blocky structure; friable; few fine tubular pores; common coarse distinct strong brown (7.5YR 5/8) and common medium distinct light yellowish brown (10YR 6/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common fine opaque minerals; very strongly acid; gradual smooth boundary.
BC—48 to 55 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium subangular blocky structure; very friable; common fine opaque minerals; common medium distinct gray (10YR 6/1) rounded iron depletions with clear boundaries in the matrix and common fine distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; gradual smooth boundary.
C—55 to 70 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; common coarse faint strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common fine opaque minerals; very strongly acid.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Reaction: Very strongly acid to neutral

A horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4
Texture—loamy fine sand

E horizon:
Color—hue of 10YR to 2.5Y, value of 6 or 7, and chroma of 3 or 4
Texture—fine sandy loam, loamy fine sand, loam, or silt loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture—sandy clay loam, loam, or clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Btg horizon:
- Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 or 2
- Texture—sandy clay loam, clay loam, loam, or fine sandy loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

BC horizon:
- Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
- Texture—sandy loam, loamy sand, loam, or silt loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

C horizon:
- Color—variable
- Texture—stratified, ranging from sand to clay
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

The Bolling soils in Hyde County are considered taxadjuncts to the series because they have base saturation less than that defined for the range of the series. In this survey, the Bolling soils are Aquultic Hapludalfs. This difference, however, does not significantly affect the use and management of the soils.

Brookman Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats, depressions, and the outer edge of pocosins
Commonly associated soils: Argent, Hydeland, and Pettigrew soils
Slope: 0 to 2 percent
Taxonomic class: Fine, mixed, thermic Typic Umbraqualfs

Typical Pedon

Brookman loam, 0 to 2 percent slopes, rarely flooded; about 1.7 miles south of Middletown, about 0.25 mile south of the intersection of Secondary Roads 1169 and 1108, about 170 feet northeast of the end of Secondary Road 1169, in a field; Middletown USGS topographic quadrangle; lat. 35 degrees 27 minutes 12 seconds N. and long. 76 degrees 01 minute 13 seconds W.

Ap—0 to 7 inches; very dark gray (10YR 3/1) loam, dark grayish brown (10YR 4/2) dry; moderate medium and coarse granular structure; common fine and very fine roots; few very fine flakes of mica; very strongly acid; clear smooth boundary.

Btg1—7 to 13 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; common medium faint very dark grayish brown (10YR 3/2) material from A horizon lining old root channels; common medium distinct dark yellowish brown (10YR 4/4) rounded masses of iron accumulation with clear boundaries in the matrix; few faint clay films on faces of peds; 10 percent, by volume, pebble-sized fragments of charcoal; few very fine flakes of mica; very strongly acid; gradual smooth boundary.

Btg2—13 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; common fine distinct dark brown (7.5YR 5/4) material lining old root channels; common medium distinct light olive brown (2.5Y 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common medium distinct dark gray (10YR 4/1) rounded iron depletions with clear boundaries in the matrix; few faint clay films on faces of peds; few very fine flakes of mica; very strongly acid; clear wavy boundary.

Btg3—18 to 31 inches; gray (5Y 5/1) clay; moderate medium subangular blocky structure; firm, sticky, plastic; common fine distinct pockets of dark brown (7.5YR 3/4) soil material lining old root channels; common coarse distinct strong brown (7.5YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix, decreasing in abundance as depth increases; few faint clay films on faces of peds; few very fine flakes of mica; very strongly acid; clear wavy boundary.

BCg—31 to 42 inches; gray (5Y 5/1) fine sandy loam; weak medium subangular blocky structure; friable; few medium distinct strong brown (7.5YR 5/6) and dark brown (7.5YR 3/4) reticulate masses of iron accumulation with clear boundaries throughout the horizon; few very fine flakes of mica; very strongly acid; gradual wavy boundary.

Cg1—42 to 58 inches; dark greenish gray (5GY 4/1) fine sandy loam; massive; friable; few medium distinct olive brown (2.5Y 4/4) irregularly shaped masses of iron accumulation with clear

boundaries in the matrix and few medium distinct strong brown (7.5YR 4/6) masses of iron accumulation with clear boundaries lining old root channels; few very fine flakes of mica; very strongly acid; clear wavy boundary.
Cg2—58 to 70 inches; dark gray (N 4/0) loam; massive; friable; few medium distinct strong brown (7.5YR 4/6) masses of iron accumulation lining old root channels; common very fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: More than 40 inches
Reaction: Very strongly acid to slightly acid in the A and Btg horizons; very strongly acid to slightly alkaline in the BCg and Cg horizons

A horizon:
Color—horizon has hue of 7.5YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—loam

Btg horizon:
Color—hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 or 2
Texture—clay, silty clay, silty clay loam, or clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

BCg horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—sandy clay loam, fine sandy loam, or clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
Color—horizon has hue of 10YR, 2.5Y, 5Y, 5GY, or 5BG or is neutral in hue; has value of 4 to 7; and has chroma of 0 to 2
Texture—fine sandy loam, loam, sandy clay loam, or loamy sand

Carteret Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid and very rapid
Parent material: Marine sediments and eolian sands
Landscape: Lower Coastal Plain
Landform: Salt marshes on Ocracoke Island
Commonly associated soils: Duckston, Corolla, and Newhan soils
Slope: 0 to 2 percent
Taxonomic class: Mixed, thermic Typic Psammaquents

Typical Pedon

Carteret sand, low, 0 to 1 percent slopes, very frequently flooded; on Ocracoke Island, about 0.5 mile northeast of the intersection of North Carolina Highway 12 and Secondary Road 1337, about 1.3 miles south of the highway on a dirt path, 25 feet east of the dirt path, on a tidal flat; Ocracoke USGS topographic quadrangle; lat. 35 degrees 05 minutes 38 seconds N. and long. 75 degrees 58 minutes 56 seconds W.

A—0 to 2 inches; dark brown (10YR 3/3) sand; single grain; loose; common fine and medium roots; 10 percent, by volume, pebble-sized shell fragments; slightly alkaline; clear smooth boundary.
Cg1—2 to 9 inches; gray (10YR 5/1) sand; single grain; loose; few fine roots; common fine opaque minerals; 10 percent, by volume, pebble-sized shell fragments; slightly alkaline; clear smooth boundary.
Cg2—9 to 60 inches; olive gray (5Y 5/2) sand; single grain; loose; common fine opaque minerals; 10 percent, by volume, pebble-sized shell fragments; slightly alkaline.

Range in Characteristics

Thickness of underlying material: More than 80 inches
Reaction: Moderately acid to moderately alkaline

A horizon:
Color—hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 3
Texture—sand

Cg horizon:
Color—horizon has hue of 10YR to 5G, value of 4 to 6, and chroma of 1 or 2 or is neutral in hue and has value of 4 to 7
Texture—sand or fine sand; thin intermittent layers of clay loam or silty clay loam or layers of shells in some pedons

Chapanoke Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: The edge of divides along the Pungo River

Commonly associated soils: Acredale, Yeopim, and Argent soils
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, thermic Aeric Endoaquults (fig. 20)

Typical Pedon

Chapanoke silt loam, 0 to 2 percent slopes, rarely flooded; about 2 miles northwest of Sladesville, about 1.1 miles northwest of the intersection of Secondary Roads 1143 and 1149, about 50 feet west of Secondary Road 1149, in a wooded area; Pamlico Beach USGS topographic quadrangle; lat. 35 degrees 28 minutes 44 seconds N. and long. 76 degrees 31 minutes 05 seconds W.

Oe—1 inch to 0; partially decomposed leaf litter.
A—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; weak medium and coarse granular structure; friable; common fine and medium roots; extremely acid; clear smooth boundary.
E—3 to 5 inches; light brownish gray (10YR 6/2) silt loam; moderate medium platy structure; friable; few fine roots; common medium faint pale brown (10YR 6/3) rounded clay depletions and yellowish brown (10YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; abrupt smooth boundary.
Bt—5 to 13 inches; light olive brown (2.5Y 5/4) silt loam; weak coarse subangular blocky structure parting to weak medium subangular blocky; friable; few very fine, fine, and medium roots; common very fine pores; common medium distinct light brownish gray (2.5Y 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; few medium distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.
Btg—13 to 40 inches; light brownish gray (2.5Y 6/2) clay loam; moderate coarse subangular blocky structure; friable, slightly sticky; few very fine roots; common very fine pores; few pockets of silty clay loam; many medium distinct yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; common medium distinct gray (10YR 5/1) irregularly shaped iron depletions with clear boundaries in the matrix; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.
BCg—40 to 50 inches; gray (10YR 5/1) loam; weak coarse subangular blocky structure; friable; few very fine roots; common medium distinct strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; moderately acid; gradual smooth boundary.
Cg1—50 to 58 inches; gray (5Y 5/1) sandy loam; massive; friable; common medium distinct light olive brown (2.5Y 5/4) and few fine distinct yellowish brown (10YR 5/8) rounded masses of iron accumulation with diffuse boundaries in the matrix; slightly acid; clear smooth boundary.
Cg2—58 to 72 inches; gray (5Y 6/1) stratified clay loam, sandy clay loam, and clay; massive; friable to firm; common medium distinct light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation with diffuse boundaries in the matrix; slightly acid.

Figure 20.—Profile of Chapanoke silt loam. Chapanoke soils are nonhydric, as seen by the yellowish brown color of material below the surface layer.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Reaction: Extremely acid to slightly acid

A horizon:
Color—horizon has hue of 10YR to 5Y, value of 4

to 7, and chroma of 2 to 6 or is neutral in hue and has value of 4 to 7
Texture—silt loam

E horizon:
Color—hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 1 to 3
Texture—silt loam, loam, fine sandy loam, or very fine sandy loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Bt horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 3 to 8
Texture—loam, silt loam, silty clay loam, or clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Btg horizon:
Color—horizon has hue of 10YR to 5GY or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—loam, silt loam, silty clay loam, or clay loam; thin strata of finer or coarser material in some pedons
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

BCg horizon:
Color—hue of 10YR to 5GY, value of 4 to 7, and chroma of 1 or 2
Texture—stratified loamy sand to loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
Color—horizon has hue of 7.5YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 8
Texture—stratified sand to loam; thin strata of clay in some pedons
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

The Chapanoke soils in Hyde County are considered taxadjuncts to the series because they have base saturation slightly higher than that defined for the range of the series. In this survey, the Chapanoke soils are Aeric Endoaqualfs. This difference, however, does not significantly affect the use and management of the soils.

Conaby Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate and moderately slow in the organic layers; moderately rapid in the mineral layers
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Depressions, broad upland flats, and the outer edge of pocosins
Commonly associated soils: Newholland, Wasda, Belhaven, and Ponzer soils
Slope: 0 to 2 percent
Taxonomic class: Coarse-loamy, mixed, nonacid, thermic Histic Humaquepts

Typical Pedon

Conaby muck, 0 to 2 percent slopes, rarely flooded; about 1.5 miles west of Lake Comfort, 0.6 mile south of the intersection of Secondary Road 1124 and U.S. Highway 264, about 50 feet east of Secondary Road 1124, in a field; New Holland USGS topographic quadrangle; lat. 35 degrees 26 minutes 20 seconds N. and long. 76 degrees 14 minutes 25 seconds W.

Oap—0 to 9 inches; black (10YR 2/1, broken face and rubbed) muck; moderate medium granular structure; very friable; nonfluid; common fine roots; 15 percent fine sand grains; very strongly acid; abrupt smooth boundary.
Oa—9 to 13 inches; very dark brown (7.5YR 2.5/2, broken face and rubbed) muck; moderate coarse subangular blocky structure; very friable; nonfluid; few fine roots; 15 percent clean sand grains; 1 percent, by volume, fine charcoal fragments in root channels; very strongly acid; clear smooth boundary.
A—13 to 27 inches; dark brown (7.5YR 3/2) fine sandy loam; moderate medium subangular blocky structure; friable; 1 percent clean fine sand grains; very strongly acid; clear smooth boundary.
C—27 to 42 inches; brown (10YR 5/3) fine sand; single grain; loose; common medium faint light brownish gray (10YR 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; few fine distinct very dark gray (10YR 3/1) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine opaque minerals; moderately acid; gradual wavy boundary.

Cg1—42 to 51 inches; light gray (2.5Y 6/2) fine sand; single grain; loose; common medium distinct very dark gray (10YR 3/1) and light yellowish brown (10YR 6/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine bedding planes of sandy loam; moderately acid; clear wavy boundary.
Cg2—51 to 70 inches; gray (5Y 5/1) fine sand; single grain; loose; few fine bedding planes of sandy loam; many very fine flakes of mica in bedding planes; strongly acid.

Range in Characteristics

Thickness of underlying material: 20 to 40 inches to sandy stratified layers
Reaction: Extremely acid to strongly acid within a depth of about 30 inches, except in limed areas; moderately acid to slightly alkaline below a depth of 30 inches

Oap or Oa horizon:
Color—hue of 5YR to 2.5Y, value of 2 to 3, and chroma of 1 or 2
Texture—muck; 2 to 15 percent fiber unrubbed, less than 2 percent fiber rubbed; none to common fragments of wood and charcoal and pockets of ash

A horizon:
Color—hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 1 to 3
Texture—fine sandy loam, loamy fine sand, loamy sand, fine sand, or sand or the mucky analogues of these textures

B or Bg horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3
Texture—sandy loam, fine sandy loam, or loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

C horizon:
Color—hue of 10YR to 5Y, value of 4 or 5, and chroma of 3 or 4
Texture—sand, loamy sand, or sandy loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
Color—hue of 10YR to 5G, value of 4 or 5, and chroma of 1 or 2
Texture—sand or loamy sand; commonly stratified with thin layers or strata of sandy loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Corolla Series

Depth class: Very deep
Drainage class: Moderately well drained and somewhat poorly drained
Permeability: Very rapid
Parent material: Marine sediments and eolian sands
Landscape: Lower Coastal Plain
Landform: Interdunes on Ocracoke Island
Commonly associated soils: Newhan, Duckston, and Carteret soils
Slope: 0 to 6 percent
Taxonomic class: Thermic, uncoated Aquic Quartzipsamments

Typical Pedon

Corolla sand, 0 to 6 percent slopes, rarely flooded; on Ocracoke Island, about 7.3 miles north of the intersection of Secondary Road 1337 and North Carolina Highway 12, about 80 feet south of the highway, near the beach parking lot; Green Island USGS topographic quadrangle; lat. 35 degrees 09 minutes 07 seconds N. and long. 75 degrees 51 minutes 34 seconds W.

A—0 to 1 inch; dark grayish brown (10YR 4/2) sand; single grain; loose; few fine roots; common fine and medium shell fragments; neutral; clear smooth boundary.
C—1 to 22 inches; brown (10YR 5/3) sand; single grain; loose; common fine opaque minerals; common fine and medium shell fragments; neutral; clear smooth boundary.
Cg—22 to 36 inches; grayish brown (10YR 5/2) sand; single grain; loose; few bedding planes of strong brown (7.5YR 4/6) coarse sand; common fine opaque minerals; common fine shell fragments; moderately alkaline; clear smooth boundary.
Ab—36 to 40 inches; very dark grayish brown (10YR 3/2) sand; single grain; loose; common fine opaque minerals; common fine shell fragments; slightly alkaline; clear smooth boundary.
C´g—40 to 62 inches; dark gray (5Y 4/1) sand; single grain; loose; common fine opaque minerals; common fine shell fragments; slightly alkaline.

Range in Characteristics

Thickness of underlying material: More than 72 inches
Reaction: Moderately acid to moderately alkaline

A horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 1 to 3
Texture—sand

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 3 or 4
Texture—sand, coarse sand, or fine sand
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—sand, coarse sand, or fine sand
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Ab horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 1 to 3
Texture—sand, coarse sand, or fine sand

Delway Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid and rapid in the organic layers; moderately slow in the mineral horizons
Parent material: Organic soil materials underlain by marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Brackish marshes
Commonly associated soils: Longshoal, Backbay, Brookman, Hydeland, Argent, and Acredale soils
Slope: 0 to 1 percent
Taxonomic class: Loamy, mixed, euic, thermic Terric Medisaprists

Typical Pedon

Delway muck, 0 to 1 percent slopes, very frequently flooded; in Swan Quarter, about 0.1 mile west of the intersection of Secondary Road 1136 and North Carolina Highway 45, about 200 feet south of Secondary Road 1136, in a marsh; Swanquarter USGS topographic quadrangle; lat. 35 degrees 24 minutes 22 seconds N. and long. 76 degrees 19 minutes 55 seconds W.

Oa1—0 to 28 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 30 percent fiber unrubbed, about 10 percent fiber rubbed; massive; very friable; moderately fluid; many fine and medium roots; strong sulfur odor; very strongly acid; gradual smooth boundary.
Oa2—28 to 36 inches; black (5YR 2/1, broken face and rubbed) muck; about 10 percent fiber unrubbed, about 2 percent fiber rubbed; massive; friable; moderately fluid; many fine and medium roots; strong sulfur odor; very strongly acid; gradual smooth boundary.
Ag—36 to 48 inches; black (10YR 2/1) loam; massive; slightly sticky, slightly plastic; few fine roots; strong sulfur odor; strongly acid; gradual smooth boundary.
Cg—48 to 80 inches; greenish gray (5GY 6/1) loam; massive; firm; common medium distinct dark gray (5Y 4/1) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; strong sulfur odor; slightly alkaline.

Range in Characteristics

Thickness of underlying material: More than 60 inches; 16 to 51 inches of organic horizons over loamy mineral horizons
Reaction: Extremely acid to strongly acid in the O horizon; very strongly acid to slightly alkaline in the A and C horizons

O horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 or 2 or is neutral in hue and has value of 2 to 3
Texture—muck

Ag horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—loam, silt loam, or silty clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
Color—horizon has hue of 10YR to 5GY or is neutral in hue, has value of 4 to 6, and has chroma of 0 to 2
Texture—loam, silt loam, silty clay loam, sandy clay loam, or clay loam
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray (color changes after exposure to air)

Dorovan Series

Depth class: Very deep
Drainage class: Very poorly drained

Permeability: Moderate
Parent material: Organic materials underlain by marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Flood plains
Commonly associated soils: Longshoal and Belhaven soils
Slope: 0 to 2 percent
Taxonomic class: Dysic, thermic Typic Medisaprists

Typical Pedon

Dorovan muck, 0 to 1 percent slopes, frequently flooded; about 3.5 miles southeast of Ponzer, about 0.05 mile southeast of the intersection of Secondary Roads 1302 and 1303, about 90 feet southwest of Secondary Road 1302, about 35 feet southeast of Rutman Creek; Ponzer USGS topographic quadrangle; lat. 35 degrees 34 minutes 14 seconds N. and long. 76 degrees 26 minutes 25 seconds W.

Oa1—0 to 5 inches; very dark brown (10YR 2/2, broken face and rubbed) muck; about 15 percent fiber unrubbed, less than 5 percent fiber rubbed; weak medium subangular blocky structure; very friable, nonplastic, slightly sticky; moderately fluid; common fine roots; strong sulfur odor; extremely acid; gradual smooth boundary.
Oa2—5 to 70 inches; dark reddish brown (5YR 2.5/2 broken face) and very dark brown (10YR 2/2 rubbed) muck; about 15 percent fiber unrubbed, less than 2 percent fiber rubbed; massive; friable, nonplastic, slightly sticky; very fluid; common fine and medium roots; strong sulfur odor; extremely acid.

Range in Characteristics

Thickness of underlying material: 51 to more than 80 inches of organic materials over mineral layers
Reaction: Extremely acid or very strongly acid in the O horizon; very strongly acid or strongly acid in the C horizon

Oe horizon:
Color—horizon has hue of 7.5YR to 10YR or is neutral in hue, has value of 2 to 4, and has chroma of 0 to 3
Texture—mucky peat; 40 to 90 percent fiber unrubbed, 20 to 60 percent fiber rubbed

Oa horizon:
Color—horizon has hue of 5YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 3
Texture—muck; 10 to 40 percent fiber unrubbed, less than 17 percent fiber rubbed

Cg horizon:
Color—horizon has hue of 10YR to 5GY or is neutral in hue, has value of 3 to 5, and has chroma of 0 to 2
Texture—sand, fine sand, loamy fine sand, sandy loam, fine sandy loam, sandy clay loam, or clay
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Duckston Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Very rapid
Parent material: Marine sediments and eolian sands
Landscape: Lower Coastal Plain
Landform: Flats, depressions, and interdunes
Commonly associated soils: Carteret, Corolla, and Newhan soils
Slope: 0 to 2 percent
Taxonomic class: Siliceous, thermic Typic Psammaquents

Typical Pedon

Duckston sand, 0 to 2 percent slopes, rarely flooded; on Ocracoke Island, about 0.4 mile north of the intersection of North Carolina Highway 12 and Airport Road, 100 feet east of the highway; Ocracoke USGS topographic quadrangle; lat. 35 degrees 06 minutes 29 seconds N. and long. 75 degrees 57 minutes 17 seconds W.

A—0 to 12 inches; brown (10YR 5/3) sand; single grain; loose; few fine and medium roots; common fine opaque minerals; common fine shell fragments; neutral; clear smooth boundary.
Cg1—12 to 24 inches; grayish brown (10YR 5/2) sand; single grain; loose; common fine opaque minerals; common fine shell fragments; neutral; clear smooth boundary.
Cg2—24 to 60 inches; greenish gray (5GY 5/1) sand; single grain; loose; common fine and medium roots; slight sulfur odor; common fine opaque minerals; neutral.

Range in Characteristics

Thickness of underlying material: More than 80 inches
Reaction: Extremely acid to moderately alkaline

A horizon:
Color—horizon has hue of 10YR to 5Y or is

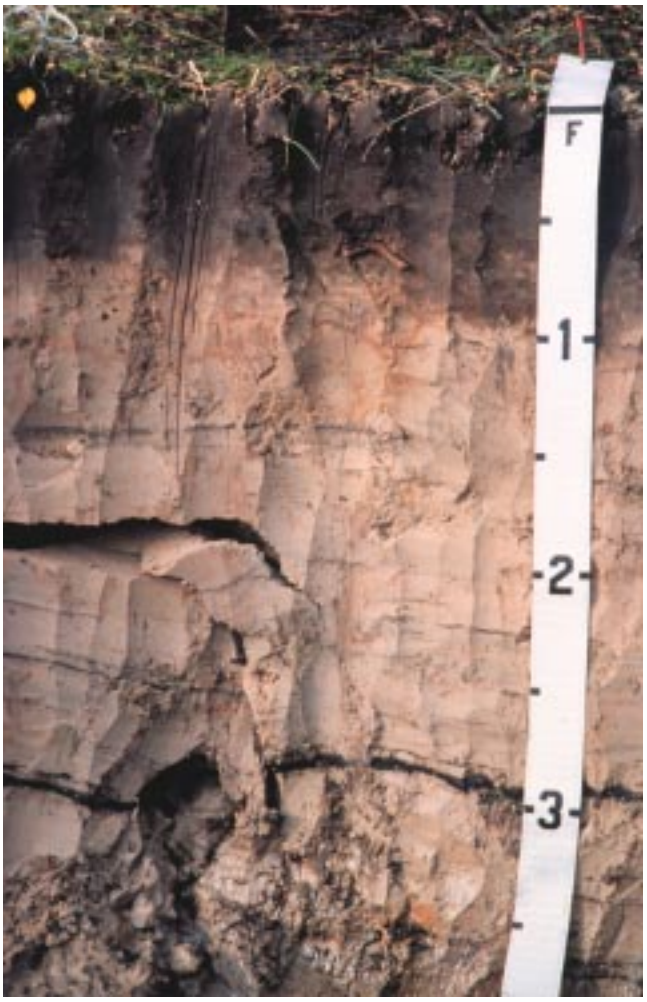


Figure 21.—Typical profile of Engelhard loamy very fine sand, 0 to 2 percent slopes, rarely flooded. The dark layers are thin buried A horizons. Piping and ditchbanks caving are severe problems. Engelhard soils consist of lakewash and possibly eolian silt and very fine sand referred to locally as "grit."

neutral in hue, has value of 3 to 5, and has chroma of 0 to 3
Texture—sand

Cg horizon:
Color—horizon has hue of 10YR to 5GY, value of 5 to 8, and chroma of 1 or 2 or is neutral in hue and has value of 4 to 7
Texture—sand or fine sand; few or common shell fragments and few or common grains of black, red, dark brown, and white minerals in some pedons
Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Engelhard Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid
Parent material: Lacustrine sediments
Landscape: Lower Coastal Plain
Landform: Lake terraces mainly on the east side of Lake Mattamuskeet
Slope: 0 to 2 percent
Commonly associated soils: Wysocking, Weeksville, Fortescue, and Scuppernong soils
Taxonomic class: Coarse-silty, mixed, acid, thermic Humaqueptic Fluvaquents

Typical Pedon

Engelhard loamy very fine sand, 0 to 2 percent slopes, rarely flooded (fig. 21); about 2.5 miles northwest of Engelhard, 0.3 mile east of the intersection of Secondary Roads 1311 and 1313 to the end of Secondary Road 1313, about 0.2 mile east on a farm path, 150 feet south of the path, in a field; Engelhard West USGS topographic quadrangle; lat. 35 degrees 31 minutes 55 seconds N. and long. 76 degrees 02 minutes 55 seconds W.

Ap—0 to 8 inches; very dark brown (10YR 2/2) loamy very fine sand; weak medium granular structure; very friable; common fine and medium roots; few very fine and fine tubular pores; few fine quartz pebbles; few fine flakes of mica; strongly acid; clear wavy boundary.

Cg1—8 to 16 inches; grayish brown (2.5Y 5/2) loamy very fine sand; massive; very friable; few fine roots; few medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Cg2—16 to 33 inches; light brownish gray (2.5Y 6/2) loamy very fine sand; massive with few pockets of weak fine platy structure; very friable; few very fine and fine tubular pores; few medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Cg3—33 to 49 inches; light brownish gray (2.5Y 6/2) loamy very fine sand; massive with pockets of weak coarse platy structure; very friable; few medium distinct yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common black

(N 2/0) wavy discontinuous strata of mucky loamy very fine sand 0.1 to 1.0 inch thick with thickest strata at the base of the horizon; yellowish brown (10YR 5/8) stains along the top of some strata; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Cg4—49 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; massive with pockets of weak coarse platy structure; very friable; few medium distinct yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common black (N 2/0) wavy discontinuous strata of mucky loamy very fine sand 0.1 to 1.0 inch thick; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Ab—60 to 67 inches; dark brown (7.5YR 3/2) silt loam; massive; friable; few medium faint pockets of dark reddish brown (5YR 3/2) muck; common pieces of wood; few fine flakes of mica; strongly acid; abrupt smooth boundary.

C´g—67 to 73 inches; dark grayish brown (2.5Y 4/2) silt loam; massive; friable; few fine relict roots; few fine tubular pores; few medium distinct pockets of very dark brown (10YR 2/2) muck; strongly acid.

Range in Characteristics

Thickness of underlying material: 40 to more than 60 inches of silty materials over sandy or organic materials

Reaction: Extremely acid to strongly acid in the A horizon and the upper part of the C horizon, except in limed areas; very strongly acid to neutral in the lower part of the C horizon

Ap or A horizon:

Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 4, and has chroma of 0 to 2

Texture—loamy very fine sand

Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2

Texture—loamy very fine sand, very fine sandy loam, silt loam, or silt

Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Ab horizon (if it occurs):

Color—horizon has hue of 7.5YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2

Texture—very fine sandy loam, silt loam, or silty clay loam

Fork Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: The edge of divides along the Pungo River
Commonly associated soils: Bolling, Yonges, and Chapanoke soils
Slope: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Aeric Endoaqualfs

Typical Pedon

Fork fine sandy loam, 0 to 2 percent slopes, rarely flooded; about 1.5 miles west of Ponzer, about 0.15 mile northwest of the intersection of North Carolina Highway 45 and Secondary Road 1353, about 150 feet northeast of the highway, in a small field; Belhaven USGS topographic quadrangle; lat. 35 degrees 35 minutes 39 seconds N. and long. 76 degrees 31 minutes 13 seconds W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; common very fine roots; very strongly acid; clear wavy boundary.

BE—8 to 12 inches; light yellowish brown (2.5Y 6/4) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; common medium faint brownish gray (2.5Y 6/2) irregularly shaped clay depletions with clear boundaries in the matrix; very strongly acid; clear wavy boundary.

Bt—12 to 17 inches; light yellowish brown (2.5Y 6/4) fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots; common medium faint light brownish gray (2.5Y 6/2) rounded iron depletions with clear boundaries in the matrix and yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.

Btg1—17 to 30 inches; light brownish gray (2.5Y 6/2) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common medium distinct yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; common skeletans on faces of peds; very strongly acid; clear wavy boundary.

Btg2—30 to 41 inches; gray (5Y 6/1) clay loam; moderate medium subangular blocky structure; friable; many medium distinct strong brown (7.5YR

5/8) and common medium distinct brownish yellow (10YR 6/6) rounded masses of iron accumulation with clear boundaries in the matrix; strongly acid; clear wavy boundary.

BCg—41 to 46 inches; gray (10YR 6/1) fine sandy loam; weak medium subangular blocky structure; very friable; common coarse distinct brownish yellow (10YR 6/6) rounded masses of iron accumulation with clear boundaries in the matrix; moderately acid; clear wavy boundary.

Cg—46 to 62 inches; gray (10YR 6/1) loamy sand; massive; very friable; common coarse distinct yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation; few fine bedding planes of sandy loam and sandy clay loam; moderately acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches

Reaction: Very strongly acid to moderately acid in the A horizon and the upper part of the Bt horizon, except in limed areas; very strongly acid to neutral in the lower part of the Bt horizon and in the C horizon

Ap or A horizon:
- Color—hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4
- Texture—fine sandy loam

BE horizon:
- Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
- Texture—fine sandy loam or loamy fine sand
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Bt horizon:
- Color—hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 3 to 6
- Texture—sandy clay loam, clay loam, or loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Btg horizon:
- Color—hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2
- Texture—sandy clay loam, clay loam, or loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

BCg horizon:
- Color—hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2
- Texture—fine sandy loam or loam
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Cg horizon:
- Color—hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 or 2
- Texture—loamy sand, sandy loam, or sand; commonly stratified
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red and iron depletions in shades of gray

Fortescue Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderately slow in the mineral layers; moderately slow to moderately rapid in the organic layers

Parent material: Lacustrine sediments over organic material

Landscape: Lower Coastal Plain

Landform: Lake rim terraces around the edge of pocosin lakes (fig. 22)

Commonly associated soils: Wysocking, Hydeland, Gullrock, Roper, Belhaven, Scuppernong, Ponzer, Weeksville, and Engelhard soils

Slope: 0 to 2 percent

Taxonomic class: Fine-silty, mixed, acid, thermic Cumulic Humaquepts

Typical Pedon

Fortescue silt loam, 0 to 2 percent slopes, rarely flooded; about 0.3 mile east of the intersection of State Roads 1305 and 1311, about 240 feet north of State Road 1311 on a farm path, 50 feet west of the farm path, on the north bank of a ditch running east and west; Fairfield Northwest USGS topographic quadrangle; lat. 35 degrees 32 minutes 12 seconds N. and long. 76 degrees 10 minutes 12 seconds W.

Ap—0 to 10 inches; black (10YR 2/1) silt loam; moderate medium granular structure; friable; common fine and medium roots; few fine pores; extremely acid; clear smooth boundary.

AB—10 to 21 inches; black (10YR 2/1) silt loam; moderate medium and coarse subangular blocky structure; friable; common fine and medium roots; few fine vesicular pores; extremely acid; gradual smooth boundary.

B—21 to 31 inches; black (10YR 2/1) clay loam; moderate coarse prismatic structure parting to strong medium subangular blocky; friable, slightly

sticky, slightly plastic; common fine and medium roots; few fine vesicular pores; few fine pockets of very pale brown (10YR 8/4) wood ash; extremely acid; clear wavy boundary.

2Oa1—31 to 39 inches; black (10YR 2/1, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; moderate medium subangular blocky structure; friable; slightly fluid; few fine and medium roots; many very pale brown (10YR 7/4) pockets and discontinuous layers of wood ash; common logs and stumps; extremely acid; gradual wavy boundary.

2Oa2—39 to 55 inches; dark brown (7.5YR 3/2, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; moderate medium subangular blocky structure; friable, slightly sticky; moderately fluid; common medium and coarse roots; common logs and stumps; extremely acid; clear smooth boundary.

3Ab—55 to 61 inches; black (10YR 2/1) very fine sandy loam; massive; friable; extremely acid.

Range in Characteristics

Thickness of the solum: Mineral horizons—16 to 40 inches; underlying organic horizons—8 to more than 52 inches

Reaction: Extremely acid to strongly acid

A horizon:

Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2

Texture—silt loam or silty clay loam

AB, BA, or B horizon:

Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2

Texture—silt loam, loam, clay loam, silty clay loam, or silty clay

2Oa horizon:

Color—horizon has hue of 2.5YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2

Texture—muck that commonly contains stumps, logs, charcoal fragments, and pockets of wood ash

3Ab horizon:

Color—hue of 5YR to 10YR, value of 2 to 3, and chroma of 1 or 2

Texture—loamy fine sand, fine sandy loam, very fine sandy loam, silt loam, loam, or silty clay loam or the mucky analogues of these textures

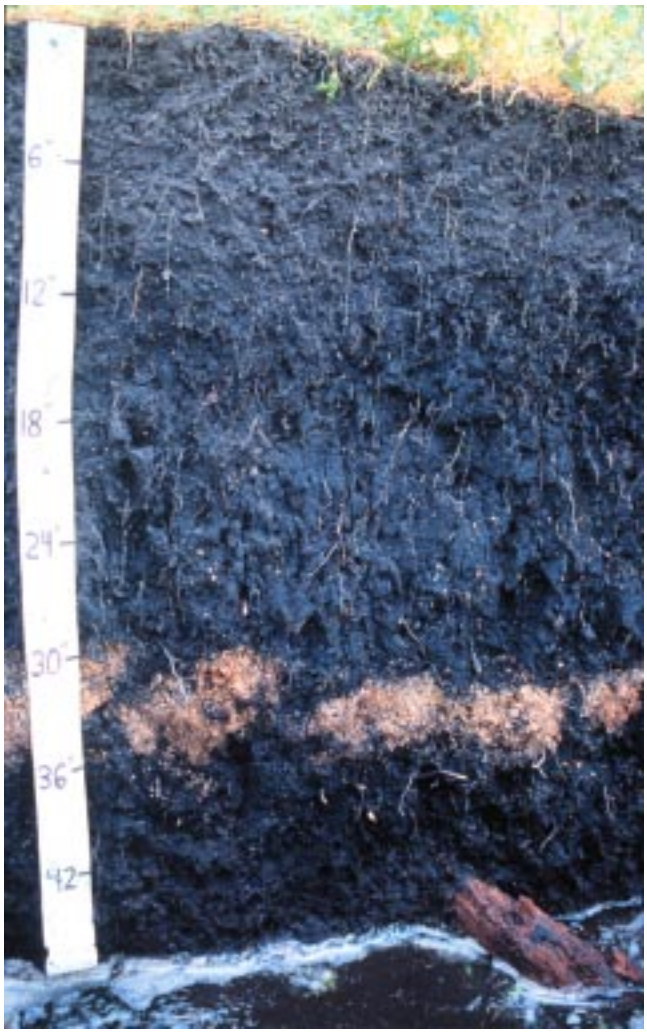


Figure 22.—Profile of Fortescue silt loam. Fortescue soils are dominantly on lakewash rims of Lake Mattamuskeet. The 4-inch layer of wood ash is beneath silt sediments and above muck. This ash layer is evidence that Lake Mattamuskeet formed from a burned out pocosin in which silty sediments were scoured from the bottom and deposited by wave action on the edge.

3Cg horizon:

Color—hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 3

Texture—sand to silty clay loam

Gullrock Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderately slow to moderately rapid

Parent material: Organic soil material over coarse-silty marine and fluvial sediments

Figure 23.—Typical profile of Gullrock muck, 0 to 2 percent slopes, rarely flooded. This soil has a thin layer of wood ash. Gullrock soils have a shallow organic surface layer over coarse silty sediments referred to locally as "grit."

Landscape: Lower Coastal Plain
Landform: Broad upland flats and the outer edge of pocosins
Slope: 0 to 2 percent
Commonly associated soils: Roper, Wasda, Conaby, Weeksville, Hydeland, Ponzer, Scuppernong, Fortescue, and Pasquotank soils
Taxonomic class: Coarse-silty, mixed, nonacid, thermic Histic Humaquepts

Typical Pedon

Gullrock muck, 0 to 2 percent slopes, rarely flooded (fig. 23); in Fairfield, about 0.5 mile north of the intersection of Secondary Roads 1311 and 1305, about 100 feet east of Secondary Road 1305, in a cultivated field; Fairfield USGS topographic quadrangle; lat. 35 degrees 32 minutes 46 seconds N. and long. 76 degrees 11 minutes 12 seconds W.

Oap—0 to 6 inches; black (10YR 2/1, broken face and rubbed) muck; about 15 percent fiber unrubbed, less than 5 percent fiber rubbed; weak medium granular structure; very friable; nonfluid; common very fine and fine roots; very strongly acid; abrupt smooth boundary.

Oa—6 to 13 inches; dark reddish brown (5YR 3/2, broken face and rubbed) muck; about 10 percent fiber unrubbed, less than 2 percent fiber rubbed; moderate coarse subangular blocky structure; friable, firm in some peds; nonfluid; few very fine and fine roots; few very fine quartz sand grains; few medium fragments of charcoal; 2-inch-thick continuous layer of strong brown (7.5YR 5/6) wood ash; extremely acid; clear wavy boundary.

A—13 to 18 inches; dark brown (7.5YR 3/4) loamy very fine sand; weak medium subangular blocky structure; friable; few fine roots; common fine and very fine tubular pores; common medium faint dark brown (7.5YR 3/2) and common medium faint very dark brown (7.5YR 2.5/2) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.

AC—18 to 33 inches; brown (10YR 4/3) loamy very fine sand; massive; friable; few fine roots; few fine tubular pores; common medium faint yellowish brown (10YR 5/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; clear wavy boundary.

Cg1—33 to 50 inches; dark grayish brown (2.5Y 4/2) loamy very fine sand; massive; very friable; few fine partially decomposed roots; few fine tubular pores; common medium distinct dark yellowish brown (10YR 3/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; strongly acid; clear wavy boundary.

Cg2—50 to 64 inches; grayish brown (2.5Y 5/2) loamy very fine sand; massive; very friable; few fine distinct dark yellowish brown (10YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; few fine opaque minerals; very strongly acid; abrupt wavy boundary.

Ab—64 to 70 inches; dark brown (10YR 3/3) loamy very fine sand; massive; very friable; few fine flakes of mica; few fine opaque minerals; very strongly acid.

Range in Characteristics

Thickness of underlying material: 50 to more than 60 inches of muck and loamy materials over sandy sediments
Reaction: Extremely acid to moderately acid within a depth of about 40 inches, except in limed areas; extremely acid to slightly alkaline below a depth of 40 inches

Oa horizon:
Color—horizon has hue of 5YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 4
Texture—muck; 2 to 15 percent fiber unrubbed, less than 5 percent fiber rubbed; horizon

commonly includes fragments of charcoal, wood, and thin layers or pockets of wood ash

A horizon:
Color—horizon has hue of 7.5YR to 10YR or is neutral in hue, has value of 2 to 4, and has chroma of 0 to 4
Texture (fine-earth fraction)—loamy very fine sand, loam, very fine sandy loam, or silt loam

AC horizon:
Color—hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4
Texture—loamy very fine sand, very fine sandy loam, loam, or silt loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, yellow, or olive

Cg horizon:
Color—horizon has hue of 10YR to 5G or is neutral in hue, has value of 3 to 7, and has chroma of 0 to 2
Texture—loamy very fine sand, loam, silt loam, or silt
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, yellow, or olive

Ab horizon:
Color—hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 4
Texture—loamy very fine sand, very fine sandy loam, loam, or silt loam

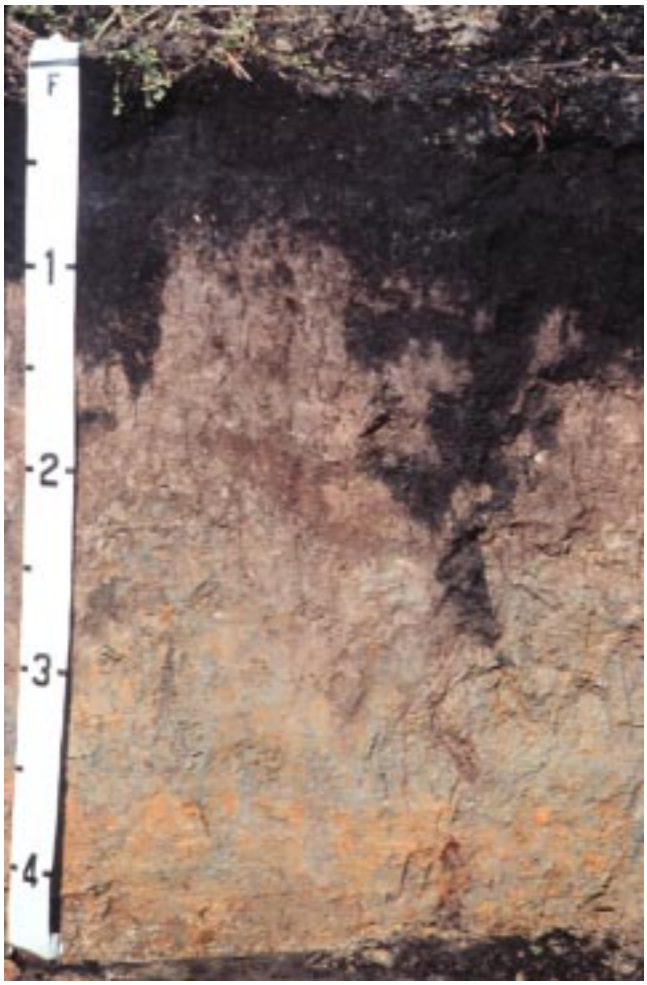


Figure 24.—Typical profile of Hydeland silt loam, 0 to 2 percent slopes, rarely flooded. If drained, Hydeland soils are among the best soils in Hyde County for agricultural uses.

Hydeland Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow and slow
Parent material: Loamy marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats, depressions, and the outer edge of pocosins
Commonly associated soils: Acredale, Argent, Brookman, Stockade, Roper, Gullrock, and Weeksville soils
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, thermic Typic Umbraqualfs

Typical Pedon

Hydeland silt loam, 0 to 2 percent slopes, rarely flooded (fig. 24); about 2.0 miles south of Sladesville, 0.15 mile north of the intersection of Secondary Roads 1143 and 1144, about 0.35 mile east of Secondary Road 1143 on a farm path, 100 feet north of the farm path, in a field; Scranton USGS topographic quadrangle; lat. 35 degrees 26 minutes 04 seconds N. and long. 76 degrees 28 minutes 39 seconds W.

Ap—0 to 6 inches; black (10YR 2/1) silt loam; moderate medium granular structure; friable; few very fine and fine roots; strongly acid; clear smooth boundary.

AB—6 to 11 inches; black (10YR 2/1) silt loam; weak medium subangular blocky structure with weak fine platy structure at the top of horizon; friable; common fine roots; few coarse or very coarse pockets of light brownish gray material from B

horizon mixed by cultivation; few old root channels filled with material from A horizon; very strongly acid; clear wavy boundary.

Btg1—11 to 17 inches; grayish brown (10YR 5/2) silt loam; moderate medium subangular blocky structure; friable; few very fine roots; few old root channels filled with material from A horizon; common very fine tubular pores; common medium distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; few very fine flakes of mica; very strongly acid; clear smooth boundary.

Btg2—17 to 31 inches; light brownish gray (2.5Y 6/2) silt loam; moderate medium subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common coarse faint grayish brown (2.5Y 5/2) irregularly shaped iron depletions with clear boundaries in the matrix; common medium distinct yellowish brown (10YR 5/8) and common medium faint light yellowish brown (2.5Y 5/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few distinct clay films on faces of peds; few gray (5Y 5/1) skeletans (sand or silt); common very fine flakes of mica; very strongly acid; clear smooth boundary.

Btg3—31 to 41 inches; gray (5Y 5/1) loam; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; friable; few fine and very fine roots; common very fine tubular pores; common fine distinct strong brown (7.5YR 5/8) and common medium distinct light olive brown (2.5Y 5/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common very fine flakes of mica; few distinct clay films on faces of peds; few gray (5Y 5/1) skeletans (sand or silt); moderately acid; clear smooth boundary.

Btg4—41 to 58 inches; grayish brown (2.5Y 5/2) loam; moderate coarse subangular blocky structure; friable; few very fine relict roots; few fine tubular pores; common fine distinct yellowish brown (10YR 5/8) and common medium distinct yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common fine flakes of mica; neutral; clear smooth boundary.

Cg—58 to 66 inches; gray (5Y 5/1) loam; massive; friable; few very fine relict roots; few very fine tubular pores; few medium distinct olive (5Y 5/3) and common medium distinct yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common very fine flakes of mica; neutral.

Range in Characteristics

Thickness of the solum: 40 to more than 60 inches
Reaction: Extremely acid to strongly acid in the surface layer, except in limed areas; extremely acid to neutral in the lower part of the subsoil and in the underlying material

A or AB horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
- Texture—silt loam

Btg horizon:
- Color—horizon has hue of 10YR to 5Y or 5GY to 5BG or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—clay loam, silty clay loam, silt loam, or loam
- Redoximorphic features—masses of iron accumulation in shades of red, brown, or yellow

Cg or 2Cg horizon:
- Color—hue of 10YR to 5Y or 5GY to 5BG, value of 4 to 7, and chroma of 1 or 2
- Texture—stratified sand to clay
- Redoximorphic features—masses of iron accumulation in shades of red, brown, or yellow

Longshoal Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid and rapid
Parent material: Organic material over marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Brackish marshes
Commonly associated soils: Delway and Dorovan soils
Slope: 0 to 1 percent
Taxonomic class: Euic, thermic Typic Medisaprists

Typical Pedon

Longshoal mucky peat, 0 to 1 percent slopes, very frequently flooded; in Swan Quarter, about 0.7 mile west of the intersection of Secondary Road 1136 and North Carolina Highway 45, about 100 feet north of Secondary Road 1136, in a marsh; Swanquarter USGS topographic quadrangle; lat. 35 degrees 24 minutes 15 seconds N. and long. 76 degrees 20 minutes 20 seconds W.

Oe—0 to 12 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) mucky peat; about 54 percent fiber unrubbed, 32 percent fiber rubbed;

massive; friable; slightly fluid; many fine and medium roots; strong sulfur odor; moderately acid; gradual smooth boundary.
Oa1—12 to 30 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 40 percent fiber unrubbed, 14 percent fiber rubbed; massive; slightly sticky; moderately fluid; many fine and medium roots; strong sulfur odor; neutral; gradual smooth boundary.
Oa2—30 to 72 inches; very dark brown (10YR 2/2, broken face and rubbed) muck; about 46 percent fiber unrubbed, 8 percent fiber rubbed; massive; friable; moderately fluid; few fine and medium roots; strong sulfur odor; neutral.

Range in Characteristics

Thickness of the solum: More than 51 inches to mineral horizons
Reaction: Very strongly acid to moderately alkaline

Oa horizon (surface tier):
Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 or 2
Texture—mucky peat

Oa horizon (subsurface tier):
Color—hue of 5YR to 10YR, value of 2 to 3, and chroma of 1 or 2
Texture—muck

A and Cg horizons:
Color—horizon has hue of 7.5YR to 5BG or is neutral in hue, has value of 2 to 5, and has chroma of 0 to 2
Texture—loamy, sandy, or clayey

Newhan Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Very rapid
Parent material: Marine and eolian sand
Landscape: Lower Coastal Plain
Landform: Undulating sand dunes on Ocracoke Island
Commonly associated soils: Corolla, Duckston, and Carteret soils
Slope: 6 to 25 percent
Taxonomic class: Thermic, uncoated Typic Quartzipsamments

Typical Pedon

Newhan fine sand, 6 to 25 percent slopes, rarely flooded; on Ocracoke Island, about 6.0 miles north of the intersection of North Carolina Highway 12 and Secondary Road 1337, about 50 feet west of the highway; Howard Reef USGS topographic quadrangle; lat. 35 degrees 08 minutes 48 seconds N. and long. 75 degrees 52 minutes 35 seconds W.

A—0 to 1 inch; light brownish gray (10YR 6/2) fine sand; single grain; loose; few fine opaque minerals; slightly alkaline; abrupt smooth boundary.
C1—1 to 24 inches; brown (10YR 5/3) fine sand; single grain; loose; common fine opaque minerals; few pebble-sized shell fragments; slightly alkaline; clear smooth boundary.
C2—24 to 42 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; common fine opaque minerals; few pebble-sized shell fragments; slightly alkaline; gradual smooth boundary.
C3—42 to 80 inches; light gray (2.5Y 7/2) fine sand; single grain; loose; common fine opaque minerals; few pebble-sized shell fragments; slightly alkaline.

Range in Characteristics

Thickness of the solum: More than 72 inches
Reaction: Extremely acid to slightly alkaline

A horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 3
Texture—fine sand

C horizon:
Color—hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 to 6
Texture—fine to coarse sand; as much as 35 percent, by volume, shell fragments and few or common opaque minerals
Redoximorphic features—iron depletions in shades of gray

Newholland Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the A horizon; rapid in the Cg horizon
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats and the outer edge of pocosins
Commonly associated soils: Conaby, Wasda, Stockade, Yonges, Ponzer, Belhaven, and Seabrook soils
Slope: 0 to 2 percent
Taxonomic class: Coarse-loamy, mixed, acid, thermic Cumulic Humaquepts

Typical Pedon

Newholland mucky loamy sand, 0 to 2 percent slopes, rarely flooded; in Grassy Ridge, about 0.25 mile west of the intersection of North Carolina Highway 45 and Secondary Road 1138 (fourth cut), 225 feet north of the highway, in a field; Belhaven USGS topographic quadrangle; lat. 35 degrees 40 minutes 52 seconds N. and long. 76 degrees 33 minutes 53 seconds W.

Ap—0 to 8 inches; black (10YR 2/1) mucky loamy sand; weak medium granular and weak medium subangular blocky structure; common fine and very fine roots; common clean sand grains; very strongly acid; clear smooth boundary.

A—8 to 19 inches; black (10YR 2/1) mucky loamy sand; massive; friable; common fine and very fine roots; many clean sand grains; common streaks and pockets of clean sand; extremely acid; clear wavy boundary.

AC—19 to 27 inches; very dark brown (10YR 2/2) loamy sand; massive; friable; common fine partially decomposed roots; few iron concretions along root channels; extremely acid; clear wavy boundary.

Cg1—27 to 40 inches; grayish brown (10YR 5/2) sandy loam; massive; friable; few fine partially decomposed roots; few iron concretions along root channels; common coarse faint brown (10YR 5/3) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear wavy boundary.

Cg2—40 to 44 inches; dark gray (5Y 4/1) sandy loam; massive; friable; few very fine partially decomposed roots; common medium distinct strong brown (7.5YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common streaks of sandy loam; extremely acid; abrupt wavy boundary.

Cg3—44 to 62 inches; grayish brown (10YR 5/2) loamy sand; massive; very friable; few very fine partially decomposed roots; common medium distinct light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; very strongly acid.

Range in Characteristics

Thickness of underlying material: More than 60 inches

Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

Ap or A horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
- Texture—mucky loamy sand

AC horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
- Texture—loamy sand, fine sandy loam, or sandy loam or the mucky analogues of these textures
- Redoximorphic features—masses of iron accumulation in shades of red, brown, yellow, or olive and iron or clay depletions in shades of gray

Cg horizon (upper part):
- Color—horizon has hue of 10YR to 5BG or is neutral in hue, has value of 4 or 5, and has chroma of 0 to 2
- Texture—commonly sandy loam, fine sandy loam, loam, or sandy clay loam; less commonly loamy sand or loamy fine sand
- Redoximorphic features—masses of iron accumulation in shades of red, brown, yellow, or olive and iron or clay depletions in shades of gray

Cg horizon (lower part):
- Color—horizon has hue of 10YR to 5BG or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
- Texture—fine sandy loam, sandy loam, loamy fine sand, loamy sand, fine sand, or sand; stratified in some pedons with lenses or strata ranging from sandy clay loam to sand
- Redoximorphic features—masses of iron accumulation in shades of red, brown, yellow, or olive and iron or clay depletions in shades of gray

Pasquotank Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats
Commonly associated soils: Weeksville, Acredale, and Hydeland soils
Slope: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, nonacid, thermic Typic Endoaquepts

Typical Pedon

Pasquotank silt loam, 0 to 2 percent slopes, rarely flooded; about 0.85 mile east of the intersection of Secondary Roads 1140 and 1139, about 75 feet south of Secondary Road 1139 on a dirt path, 45 feet east of the path, in a field; Scranton USGS topographic quadrangle; lat. 35 degrees 26 minutes 00 seconds N. and long. 76 degrees 26 minutes 47 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; common fine roots; moderately acid; clear smooth boundary.

Bg—6 to 38 inches; grayish brown (2.5Y 5/2) loam; weak medium subangular blocky structure; friable; few fine roots; common medium distinct yellowish brown (10YR 5/4) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; moderately acid; clear smooth boundary.

Cg1—38 to 55 inches; gray (5Y 6/1) silt loam; massive; common medium distinct brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), and light yellowish brown (2.5Y 6/4) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; moderately acid; clear smooth boundary.

Cg2—55 to 60 inches; gray (5Y 5/1) silty clay; massive; friable, sticky, plastic; common medium prominent strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; common fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Reaction: Very strongly acid to slightly alkaline

A horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—silt loam

Bg horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
Texture—silt loam, loam, or very fine sandy loam

Cg or 2Cg horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—loamy sand, loamy fine sand, sand, fine sand, sandy loam, loam, or silt loam; texture ranging to silty clay loam or clay in the lower part of the horizon in some pedons

Pettigrew Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid to moderately slow in the organic layers; slow and very slow in the upper mineral layers
Parent material: Organic material over clayey marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats, depressions, and the edge of pocosins
Slope: 0 to 2 percent
Commonly associated soils: Roper, Wasda, Brookman, and Hydeland soils
Taxonomic class: Fine, mixed, nonacid, thermic Histic Humaquepts

Typical Pedon

Pettigrew muck, 0 to 2 percent slopes, rarely flooded; about 5.0 miles northwest of Lake Mattamuskeet, 3.3 miles north of the intersection of Secondary Roads 1304 and 1305, about 4.3 miles northwest of Secondary Road 1305, on a farm path (New Holland Railroad) to the intersection of Chandler Road, 125 feet north of the intersection; Ponzer USGS topographic quadrangle; lat. 35 degrees 35 minutes 05 seconds N. and long. 76 degrees 22 minutes 08 seconds W.

Oap—0 to 6 inches; black (10YR 2/1, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; moderate fine and medium granular structure; very friable; nonfluid; common fine roots; few clean sand grains; extremely acid; clear smooth boundary.

Oa—6 to 12 inches; black (10YR 2/1, broken face and rubbed) muck; about 2 percent fiber unrubbed, less than 1 percent fiber rubbed; moderate medium subangular blocky structure; friable; nonfluid; few fine roots; few fragments of wood; extremely acid; gradual smooth boundary.

A—12 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; common medium distinct yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix and light gray (10YR 7/2) rounded iron depletions with clear boundaries in the matrix;

common coarse distinct black (10YR 2/1) mottles; few fine flakes of mica; very strongly acid; clear smooth boundary.

Bg—18 to 31 inches; dark grayish brown (10YR 4/2) clay; weak medium subangular blocky structure; firm, sticky, plastic; few partially decomposed herbaceous roots; common medium distinct reddish brown (5YR 4/4) and few common distinct very pale brown (10YR 7/3) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; extremely acid; clear smooth boundary.

BCg—31 to 36 inches; mottled grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) clay; massive, grading to weak medium subangular blocky structure; firm, sticky, plastic; few partially decomposed herbaceous roots; yellowish red (5YR 4/6) masses of iron accumulation lining old root channels; few fine flakes of mica; extremely acid; gradual smooth boundary.

2Cg1—36 to 50 inches; mottled dark greenish gray (5GY 4/1) and greenish gray (5GY 5/1) stratified sandy loam and sand; massive; very friable; few very fine flakes of mica; extremely acid; clear smooth boundary.

2Cg2—50 to 65 inches; greenish gray (5GY 6/1) sand; single grain; loose; common coarse distinct light brownish gray (2.5Y 6/2) irregularly shaped iron depletions with clear boundaries in the matrix; few fine flakes of mica; extremely acid.

Range in Characteristics

Thickness of the solum: 30 to more than 60 inches of muck and clayey materials over sandy and loamy sediments

Reaction: Extremely acid to strongly acid in the upper part of the profile, except in limed areas; moderately acid to slightly alkaline in the lower part

Oa horizon:
- Color—horizon has hue of 2.5YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 4
- Texture—muck; 2 to 20 percent fiber unrubbed, 0 to 4 percent fiber rubbed; fragments of wood and charcoal and pockets of ash in most pedons

A horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 3 or 4, and has chroma of 0 to 2
- Texture—loam, clay loam, silty clay loam, or sandy clay loam

Bg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 3 to 6, and has chroma of 0 to 2
- Texture—clay, silty clay, or clay loam
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

2Cg horizon:
- Color—hue of 10YR to 5GY, value of 4 to 6, and chroma of 1 or 2
- Texture—stratified sandy or loamy sediments
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

Ponzer Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Very slow to moderate in the organic layers; moderately slow and moderate in underlying mineral layers
Parent material: Organic materials underlain by marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Pocosins, broad upland flats, and depressions
Commonly associated soils: Belhaven, Scuppernong, Pungo, Roper, Wasda, Pettigrew, Conaby, Fortescue, Gullrock, and Hydeland soils
Slope: 0 to 2 percent
Taxonomic class: Loamy, mixed, dysic, thermic Terric Medisaprists

Typical Pedon

Ponzer muck, 0 to 2 percent slopes, rarely flooded; about 1.75 miles northeast of Ponzer, 0.4 mile northeast of the intersection of North Carolina Highway 45 and Secondary Road 1301 to the intersection with Fred Gall Road, about 0.6 mile east on Fred Gall Road to the intersection with Evans Road, 200 feet south of Evans Road, in a field; Ponzer USGS topographic quadrangle; lat. 35 degrees 36 minutes 10 seconds N. and long. 76 degrees 28 minutes 23 seconds W.

Oap—0 to 6 inches; black (N 2/0, broken face and rubbed) muck; less than 2 percent fiber unrubbed and rubbed; moderate fine and medium granular structure; friable; nonfluid; common fine roots; few very fine clean sand grains; about 66 percent mineral content; extremely acid; clear smooth boundary.

Oa1—6 to 13 inches; very dark brown (10YR 2/2, broken face and rubbed) muck; about 10 percent fiber unrubbed, less than 2 percent fiber rubbed; moderate coarse subangular blocky structure; friable; nonfluid; few fine roots; few very fine clean sand grains; about 68 percent mineral content; extremely acid; clear smooth boundary.

Oa2—13 to 21 inches; very dark brown (10YR 2/2, broken face and rubbed) muck; about 40 percent fiber unrubbed, less than 5 percent fiber rubbed; moderate coarse subangular blocky structure; friable; nonfluid; few fine roots; common very fine clean sand grains; about 80 percent mineral content; extremely acid; clear wavy boundary.

Cg1—21 to 39 inches; dark grayish brown (10YR 4/2) very fine sandy loam; few coarse faint very dark grayish brown (10YR 3/2) mottles; massive; friable; common fine and medium partially decomposed roots; common very fine tubular pores; few fine flakes of mica; very strongly acid; gradual smooth boundary.

Cg2—39 to 47 inches; dark brown (10YR 3/3) silt loam; massive; common fine and medium partially decomposed roots; common very fine tubular pores; few fine flakes of mica; strata of very dark brown (10YR 2/2, broken face and rubbed) muck, with 79 percent mineral content and 5 percent fiber unrubbed, less than 1 percent fiber rubbed; very strongly acid; abrupt smooth boundary.

Cg3—47 to 64 inches; gray (5Y 6/1) silty clay loam; massive; friable, slightly sticky, slightly plastic; common medium partially decomposed roots; common very fine tubular pores; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation with clear boundaries lining old root channels; very few fine flakes of mica; very strongly acid; clear smooth boundary.

Cg4—64 to 71 inches; greenish gray (5G 5/1) silty clay loam, gray (5Y 5/1) upon exposure to air; massive; friable, slightly sticky, slightly plastic; few medium partially decomposed roots; common very fine tubular pores; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation with clear boundaries lining old root channels; very few fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: Commonly 16 to 30 inches of organic materials, ranging to 51 inches

Reaction: Extremely acid in the surface layer, except in limed areas; extremely acid to slightly alkaline in underlying layers

Oa horizon:

Color—horizon has hue of 7.5YR or 10YR or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2

Texture—muck; 2 to 30 percent fiber unrubbed, less than 10 percent fiber rubbed; logs, stumps, fragments of wood and charcoal, and pockets of ash in some pedons

A horizon:

Color—hue of 7.5YR to 5Y, value of 2 to 4, and chroma of 1 to 4

Texture—fine sandy loam, sandy loam, loam, silt loam, sandy clay loam, or clay loam

Cg horizon:

Color—horizon has hue of 7.5YR to 5G or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2; thin layers with 3-chroma matrix in some pedons

Texture—variable, commonly loamy

Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

Portsmouth Series

Depth class: Very deep

Drainage class: Very poorly drained

Permeability: Moderate and moderately rapid in the A and Bt horizons; rapid and very rapid in the Cg horizon

Parent material: Marine and fluvial sediments

Landscape position: Lower Coastal Plain

Landform: Broad upland flats and depressions in the northwestern part of the county

Slope range: 0 to 2 percent

Commonly associated soils: Wasda, Conaby, Newholland, Hydeland, Pettigrew, Roper, Yonges, Seabrook, and Fork soils

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, thermic Typic Umbraquults

Typical Pedon

Portsmouth mucky sandy loam, 0 to 2 percent slopes, rarely flooded; in Pocosin Lakes National Wildlife Refuge, 0.95 mile north of the intersection of Secondary Road 1348 and North Carolina Highway 45, about 0.3 mile west of Secondary Road 1348 on a dirt path, 150 feet west of the path, in a field; Pungo USGS topographic quadrangle; lat. 35 degrees 40 minutes 22 seconds N. and long. 76 degrees 35 minutes 26 seconds W.

Ap—0 to 5 inches; black (10YR 2/1) mucky sandy loam; weak medium granular structure; very friable; few very fine roots; 13 percent organic

matter; common clean sand grains; strongly acid; clear smooth boundary.
A—5 to 16 inches; black (10YR 2/1) mucky fine sandy loam; moderate medium granular structure; friable; common fine and very fine roots; 19 percent organic matter; common clean sand grains and pockets of stripped sand; very strongly acid; clear smooth boundary.
Bt—16 to 25 inches; dark brown (10YR 3/3) organic stained fine sandy loam; moderate medium subangular blocky structure; friable; common fine partially decomposed roots; common medium faint pockets of very dark brown (10YR 3/2) material from A horizon; common clean sand grains and pockets of stripped sand; very strongly acid; clear smooth boundary.
Btg—25 to 30 inches; dark grayish brown (10YR 4/2) sandy clay loam; moderate medium subangular blocky structure; friable; common fine partially decomposed roots; common coarse faint pockets of very dark brown (10YR 3/2) material from A horizon; common clean sand grains and pockets of stripped sand; very strongly acid; abrupt smooth boundary.
Cg1—30 to 52 inches; light brownish gray (2.5Y 6/2) fine sand; single grain; loose; few large fragments of wood; common medium distinct dark brown (10YR 4/3) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; slightly acid; clear smooth boundary.
Cg2—52 to 70 inches; dark gray (5Y 4/1) fine sand; single grain; loose; moderately acid.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Reaction: Extremely acid to strongly acid in the A and B horizons, except in limed areas; extremely acid to moderately acid in the C horizon

Ap or A horizon:
Color—horizon has hue of 10YR or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—mucky sandy loam

Bt horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 3 to 5
Texture—sandy clay loam, clay loam, loam, or fine sandy loam; thin strata of sandy loam or silty clay loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Texture—sandy clay loam, clay loam, or loam; thin strata of sandy loam, fine sandy loam, or silty clay loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

BCg horizon:
Color—hue 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2
Texture—fine sandy loam, sandy loam, loam, or silt loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

2Cg horizon:
Color—hue of 10YR to 5Y, 5G, 5GY, or 5BG, value of 4 to 7, and chroma of 1 or 2
Texture—sand, loamy sand, loamy fine sand, or fine sand; horizon has strata, pockets, or bedding planes of sandy clay loam or sandy loam or is stratified
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

Pungo Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Very slow to moderately rapid in the surface layer; very slow and slow in the subsurface organic layers; moderately slow to moderately rapid in the underlying mineral layers
Parent material: Organic soil material over loamy marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Pocosins, broad upland flats, and depressions
Commonly associated soils: Scuppernong, Longshoal, Belhaven, Dorovan, and Ponzer soils
Slope: 0 to 2 percent
Taxonomic class: Dysic, thermic Typic Medisaprists

Typical Pedon

Pungo muck, 0 to 2 percent slopes, rarely flooded; about 8.0 miles east of Fairfield, about 4.8 miles northeast of the intersection of Secondary Road 1311 and the entrance to Mattamuskeet Farms, 50 feet

southeast of the intersection along a bear trail, in a wooded area; Engelhard West USGS topographic quadrangle; lat. 35 degrees 36 minutes 17 seconds N. and long. 76 degrees 01 minute 25 seconds W.

Oa1—0 to 10 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; weak fine and medium granular structure; friable; slightly fluid; few fine and medium roots; extremely acid; clear smooth boundary.

Oa2—10 to 30 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; weak coarse subangular blocky structure; friable; moderately fluid; few fine roots; few fine charcoal fragments; common logs and stumps; extremely acid; clear smooth boundary.

Oa3—30 to 80 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; massive; slightly sticky; moderately fluid; few medium roots; common logs and stumps; extremely acid; clear smooth boundary.

Cg—80 to 85 inches; gray (5Y 5/1) silt loam; massive; friable; extremely acid.

Range in Characteristics

Thickness of the solum: 51 inches to more than 90 inches of organic layers

Reaction: Extremely acid in the organic layers; extremely acid to neutral in the underlying material

Oa horizon (upper part):

Color—hue of 5YR to 10YR, value of 2 to 3, and chroma of 1 or 2

Texture—muck; 2 to 60 percent fiber unrubbed, less than 12 percent fiber rubbed; logs, stumps, and fragments of wood or charcoal in most pedons

Oa horizon (lower part):

Color—hue of 5YR or 2.5YR, value of 2.5 or 3, and chroma of 1 or 2

Texture—muck; 2 to 60 percent fiber unrubbed, less than 12 percent fiber rubbed; logs, stumps, and fragments of wood or charcoal in most pedons

Cg horizon:

Color—hue of 5YR to 5Y, value of 2 to 6, and chroma of 1 or 2

Texture—loam, silt loam, silty clay loam, silty clay, clay, sandy clay loam, or sandy clay

Figure 25.—Profile of Roper muck. This soil has a thin organic surface layer (histic epipedon).

Roper Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Loamy marine sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats, depressions, and the edge of pocosins
Commonly associated soils: Hydeland, Wasda, Pettigrew, Belhaven, Scuppernong, and Ponzer soils
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, acid, thermic Histic Humaquepts (fig. 25)

Typical Pedon

Roper muck, 0 to 2 percent slopes, rarely flooded;

about 3.0 miles northeast of Lake Mattamuskeet, about 4.2 miles north of the intersection of Secondary Road 1311 and the entrance to Mattamuskeet Farms, 0.7 mile west on the southern part of Loop Road, 150 feet south of Loop Road, in a field; Engelhard West USGS topographic quadrangle; lat. 35 degrees 36 minutes 08 seconds N. and long. 76 degrees 02 minutes 24 seconds W.

Oap—0 to 5 inches; black (10YR 2/1, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; moderate fine and medium granular structure; very friable; nonfluid; common fine roots; extremely acid; abrupt smooth boundary.

Oa—5 to 13 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 15 percent fiber unrubbed, less than 3 percent fiber rubbed; moderate fine and medium subangular blocky structure; friable; nonfluid; few fine roots; strongly acid; clear smooth boundary.

A—13 to 18 inches; black (5Y 2/2) silt loam; massive; friable; common fine herbaceous roots; few fine flakes of mica; extremely acid; clear wavy boundary.

Bg1—18 to 34 inches; olive gray (5Y 4/2) silty clay loam; massive, grading to weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine herbaceous roots; common dark reddish brown (5YR 3/4) masses of iron accumulation with clear boundaries lining root channels; common very fine flakes of mica; very strongly acid; clear smooth boundary.

Bg2—34 to 42 inches; dark gray (5Y 4/1) silt loam; massive, grading to weak medium subangular blocky structure; friable; few fine herbaceous roots; common medium faint dark gray (2.5Y 4/1) irregularly shaped iron depletions with clear boundaries in the matrix; common very fine flakes of mica; extremely acid; gradual smooth boundary.

Cg1—42 to 57 inches; dark gray (5Y 4/1) silt loam; massive; friable; few fine distinct olive (5Y 4/4) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few very fine flakes of mica; extremely acid; abrupt smooth boundary.

Cg2—57 to 72 inches; dark greenish gray (5GY 4/1) silty clay loam, dark gray (5Y 4/1) upon exposure to air; massive; sticky, plastic; few fine herbaceous roots; common medium distinct grayish green (5G 4/2) irregularly shaped iron depletions with clear boundaries in the matrix and olive (5Y 5/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common very fine flakes of mica; extremely acid.

Range in Characteristics

Thickness of the solum: 30 to more than 60 inches of mucky and loamy materials over loamy, sandy, and clayey sediments

Reaction: Extremely acid to strongly acid in the surface layer, except in limed areas; extremely acid to slightly alkaline in the underlying material

Oa or Oap horizon:
- Color—horizon has hue of 10YR to 2.5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 4
- Texture—muck; 2 to 15 percent fiber unrubbed, 0 to 4 percent fiber rubbed; charcoal and wood fragments and pockets of ash in some pedons

A horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 3 or 4, and has chroma of 0 to 2
- Texture—silt loam, clay loam, mucky silt loam, mucky loam, or loam

Bg horizon:
- Color—hue of 10YR to 5Y or 5GY, value of 4 to 6, and chroma of 1 or 2
- Texture—silty clay loam, silt loam, or loam; thin strata of clay loam or silty clay in some pedons
- Redoximorphic features—masses of iron accumulation in shades of yellow, brown, or red

Cg horizon:
- Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 3 to 5, and has chroma of 0 to 2
- Texture—silt loam to sand
- Redoximorphic features—masses of iron accumulation in shades of brown, yellow, or red

Scuppernong Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid in the organic layers and underlying mineral layers
Parent material: Organic soil material over marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Pocosins and depressions
Commonly associated soils: Pungo, Belhaven, Gullrock, Pettigrew, Wasda, Fortescue, Wysocking, Roper, and Ponzer soils
Slope: 0 to 2 percent
Taxonomic class: Loamy, mixed, dysic, thermic Terric Medisaprists (fig. 26)

Typical Pedon

Scuppernong muck, 0 to 2 percent slopes, rarely flooded; about 3 miles northeast of Lake Mattamuskeet, about 2.45 miles north of the intersection of Secondary Road 1311 and the entrance to Mattamuskeet Farms, 0.35 mile southeast from the entrance road on Boundary Canal Road, 250 feet north of Boundary Canal Road; Engelhard West USGS topographic quadrangle; lat. 35 degrees 34 minutes 18 seconds N. and long. 76 degrees 03 minutes 00 seconds W.

Oap—0 to 5 inches; black (10YR 2/1, broken face and rubbed) muck; about 5 percent fiber unrubbed, less than 1 percent fiber rubbed; weak fine and medium granular structure; friable; nonfluid; common fine roots; common fine clean sand grains; extremely acid; abrupt smooth boundary.

Oa1—5 to 20 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 12 percent fiber unrubbed, less than 2 percent fiber rubbed; massive; very friable, slightly sticky; slightly fluid; few fine vesicular pores; extremely acid; gradual smooth boundary.

Oa2—20 to 33 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 20 percent fiber unrubbed, less than 2 percent fiber rubbed; massive, parting to weak medium subangular blocky structure; friable; slightly fluid; common fine and medium vesicular pores; extremely acid; gradual smooth boundary.

Cg1—33 to 58 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; few fine partially decomposed roots; common medium faint very dark grayish brown (10YR 3/2) irregularly shaped pockets of Oa material with clear boundaries in the matrix; extremely acid; clear smooth boundary.

Cg2—58 to 72 inches; dark gray (5Y 4/1) silt loam; massive; slightly sticky; few fine partially decomposed roots; common fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 16 to 51 inches of organic material over fine-silty sediments

Reaction: Extremely acid in the organic layers; extremely acid to neutral in the mineral horizons

Oa1 or Oap horizon:

Color—horizon has hue of 5YR to 10YR or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 3

Texture—muck; logs, stumps, and fragments of wood, fragments of charcoal, and pockets of ash in most pedons

Figure 26.—Profile of Scuppernong muck. This soil consists of reddish brown colloidal muck. Scuppernong soils commonly contain few to many logs and stumps.

Oa2 horizon:

Color—hue of 2.5YR or 5YR, value of 2.5 or 3, and chroma of 2 to 4

Texture—muck; 10 to 50 percent fiber unrubbed, less than 10 percent fiber rubbed; logs, stumps, and fragments of wood, fragments of charcoal, and pockets of ash in most pedons

Cg horizon:

Color—hue of 10YR to 5Y, 5GY, or 5G, value of 3 to 5, and chroma of 1 or 2

Texture—silt loam, silty clay loam, or clay loam; lower part of horizon may contain sand or loamy sand

Seabrook Series

Depth class: Very deep

Drainage class: Moderately well drained

Figure 27.—Typical profile of Seabrook fine sand, 0 to 3 percent slopes, rarely flooded. Most areas of Seabrook soils are in the Grassy Ridge area of Hyde County.

Permeability: Rapid
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Ridges and stream terraces near the Pungo River
Commonly associated soils: Newholland, Stockade, Conaby, and Wasda soils
Slope: 0 to 3 percent
Taxonomic class: Mixed, thermic Aquic Udipsamments

Typical Pedon

Seabrook fine sand, 0 to 3 percent slopes, rarely flooded (fig. 27); in Grassy Ridge, about 1.2 miles north of the intersection of North Carolina Highway 45 and Secondary Road 1338, about 0.1 mile west of Secondary Road 1338, at the edge of a borrow area; Pungo USGS topographic quadrangle; lat. 35 degrees 38 minutes 10 seconds N. and long. 76 degrees 33 minutes 28 seconds W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sand; single grain; loose; slightly acid; abrupt wavy boundary.

C1—5 to 24 inches; yellowish brown (10YR 5/8) loamy sand; single grain; loose; few medium and coarse roots; common medium faint strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; few pockets of light brownish gray (2.5Y 6/2) stripped sand; few pockets of sandy loam; very strongly acid; gradual wavy boundary.

C2—24 to 34 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; common medium and coarse roots; few medium distinct strong brown (7.5YR 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few medium distinct dark grayish brown (10YR 4/2) masses of iron accumulation with clear boundaries along pores; few pockets of sandy loam; extremely acid; gradual wavy boundary.

Cg1—34 to 53 inches; light gray (2.5Y 7/2) fine sand; single grain; loose; few medium and coarse roots; few medium distinct brownish yellow (10YR 6/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; extremely acid; gradual wavy boundary.

Cg2—53 to 80 inches; light brownish gray (10YR 6/2) fine sand that has few lenses of sandy loam and loamy sand; single grain; loose; few medium and coarse roots; common medium distinct brown (10YR 4/3) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; extremely acid.

Range in Characteristics

Thickness of the solum: More than 72 inches of sand
Reaction: Extremely acid to neutral

A horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 2 or 3
Texture—sand, fine sand, loamy fine sand, or loamy sand

C horizon:
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Texture—fine sand
Redoximorphic features—iron depletions in

shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Cg horizon:
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—loamy fine sand, loamy sand, fine sand, or sand
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Stockade Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats and depressions in the northwestern part of the county
Commonly associated soils: Wasda, Conaby, Newholland, Hydeland, Pettigrew, Roper, Yonges, Seabrook, and Fork soils
Slope: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Umbraqualfs

Typical Pedon

Stockade mucky sandy loam, 0 to 2 percent slopes, rarely flooded; about 5.0 miles south of Pungo Lake, about 1.6 miles east of the intersection of North Carolina Highway 45 and Fred Gall Road, 0.6 mile south of Fred Gall Road on a farm path, 50 feet east of the farm path, in a field; Pungo USGS topographic quadrangle; lat. 35 degrees 37 minutes 05 seconds N. and long. 76 degrees 32 minutes 28 seconds W.

Ap—0 to 6 inches; black (10YR 2/1) mucky sandy loam; moderate medium granular structure; very friable; few very fine roots; few clean sand grains; very strongly acid; clear smooth boundary.
A—6 to 13 inches; very dark brown (10YR 2/2) fine sandy loam; moderate medium granular structure with some moderate medium subangular blocky structure; friable; few very fine roots; few medium distinct pockets of grayish brown (10YR 5/2) material from B horizon; extremely acid; clear smooth boundary.
Btg1—13 to 22 inches; dark grayish brown (10YR 4/2) sandy clay loam; moderate medium subangular blocky structure; friable; few pockets of material from A horizon; few medium distinct light gray (10YR 7/2) rounded iron depletions with clear boundaries in the matrix and few medium distinct strong brown (10YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; extremely acid; gradual wavy boundary.
Btg2—22 to 39 inches; dark gray (10YR 4/1) sandy clay loam; moderate medium subangular blocky structure; friable; few partially decomposed herbaceous roots; common medium distinct strong brown (7.5YR 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; few grayish brown (2.5Y 5/2) sand lenses on faces of peds; extremely acid; gradual wavy boundary.
BCg—39 to 43 inches; gray (10YR 5/1) fine sandy loam; weak medium subangular blocky structure; friable; few clay depletions; common coarse distinct strong brown (7.5YR 5/8) and common medium distinct strong brown (7.5YR 4/6) and yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear smooth boundary.
Cg1—43 to 54 inches; grayish brown (10YR 5/2) fine sandy loam; massive; friable; common medium distinct strong brown (7.5YR 5/8) and common fine distinct strong brown (7.5YR 4/6) irregularly shaped, convoluted, masses of iron accumulation with clear boundaries in the matrix; common medium distinct light yellowish brown (10YR 6/4) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear smooth boundary.
Cg2—54 to 70 inches; dark greenish gray (5G 4/1) sandy clay loam, dark gray (5Y 4/1) upon exposure to air; massive; friable; few medium distinct strong brown (7.5YR 5/8 and 4/6) irregularly shaped masses of iron accumulation with clear boundaries in the matrix; common fine and very fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Reaction: Extremely acid to slightly acid in the surface layer; extremely acid to moderately alkaline in the subsoil and underlying materials

Ap or A horizon:
Color—horizon has hue of 10YR or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—mucky sandy loam or fine sandy loam

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2

Texture—sandy clay loam, clay loam, or loam that has thin strata of sandy loam, fine sandy loam, or silty clay loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

BCg horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2
Texture—fine sandy loam, sandy loam, loam, or silt loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Cg horizon:
Color—hue of 10YR to 5Y, 5G, 5GY, or 5BG, value of 4 to 7, and chroma of 1 or 2
Texture—sandy clay loam, sandy loam, loamy sand, or sand; stratified in some pedons
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Udorthents

Depth class: Very deep
Drainage class: Excessively drained to poorly drained
Permeability: Very rapid to slow
Landscape: Lower Coastal Plain
Landform: Mostly dredge spoil areas along the Intracoastal Waterway
Slope: 0 to 30 percent
Taxonomic class: Udorthents

Typical Pedon

Udorthents consist of fill areas, which are composed mostly of dredge spoil of variable textures that range from clay to sand. In many areas, the soils have pebble- to gravel-sized fragments of sea shells. A typical pedon is not given due to the variable nature of the soil materials.

Range in Characteristics

Thickness of underlying material: 30 to more than 60 inches
Content and size of shell fragments: Variable, commonly 15 to 50 percent; ranging from pebbles to gravel
Reaction: Extremely acid to moderately alkaline throughout the profile, except in limed areas

Dredge spoil areas:
Color—hue of 10YR to 2.5Y, value of 2 to 8, and chroma of 0 to 8
Texture (fine-earth fraction)—variable, commonly sandy

Wasda Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate and moderately slow in the organic layers; moderate in the subsoil
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats, depressions, and the edge of pocosins
Commonly associated soils: Conaby, Ponzer, Pettigrew, Scuppernong, Stockade, Newholland, and Belhaven soils
Slope: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, acid, thermic Histic Humaquepts

Typical Pedon

Wasda muck, 0 to 2 percent slopes, rarely flooded; about 5.0 miles south of Pungo Lake, about 1.5 miles northeast of the intersection of North Carolina Highway 45 and Fred Gall Road to the intersection of Fred Gall Road and Allen Road, 75 feet north of the intersection and 60 feet west of Allen Road, in a field; Pungo USGS topographic quadrangle; lat. 35 degrees 37 minutes 34 seconds N. and long. 76 degrees 32 minutes 27 seconds W.

Oap—0 to 4 inches; black (10YR 2/1, broken face and rubbed) muck; about 10 percent fiber unrubbed, 2 percent fiber rubbed; moderate medium granular structure; very friable; nonfluid; common fine roots; common clean sand grains; very strongly acid; clear smooth boundary.
Oa1—4 to 9 inches; black (10YR 2/1, broken face and rubbed) muck; about 15 percent fiber unrubbed, 2 percent fiber rubbed; moderate coarse subangular blocky structure; very friable; nonfluid; common very fine roots; common clean sand grains; very strongly acid; clear smooth boundary.
Oa2—9 to 13 inches; black (10YR 2/1, broken face and rubbed) muck; moderate coarse subangular blocky structure; very friable, slightly sticky; slightly fluid; few very fine roots; few vertically shaped lenses of stripped sand; very strongly acid; clear wavy boundary.
A—13 to 25 inches; very dark grayish brown (10YR 3/2) sandy loam; weak medium subangular blocky structure; friable; few very fine roots; common fine partially decomposed roots; common very fine pores; very strongly acid; clear wavy boundary.

Bg1—25 to 38 inches; dark grayish brown (10YR 4/2) sandy clay loam; weak medium subangular blocky structure; friable; few very fine roots; common coarse distinct pockets of very dark gray (10YR 3/1) muck; common medium distinct strong brown (7.5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear wavy boundary.

Bg2—38 to 43 inches; light brownish gray (2.5Y 6/2) sandy clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few partially decomposed roots lining root channels; common medium distinct strong brown (7.5YR 4/6) and light yellowish brown (10YR 6/4) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear wavy boundary.

Cg1—43 to 67 inches; light brownish gray (2.5Y 6/2) sand; single grain; loose; common fine opaque minerals; common medium faint light yellowish brown (2.5Y 6/4) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear wavy boundary.

Cg2—67 to 72 inches; dark greenish gray (5GY 4/1) loamy sand, dark gray (5Y 4/1) upon exposure to air; massive; very friable; common fine opaque minerals; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches of muck and loamy horizons

Reaction: Extremely acid to strongly acid in the surface layer, except in limed areas; extremely acid to slightly alkaline in the subsoil and underlying layers

Oa horizon:
- Color—horizon has hue of 2.5YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
- Texture—muck; fragments of wood and charcoal in some pedons

A horizon:
- Color—hue of 10YR to 5Y, value of 2 to 4, and chroma of 1 or 2
- Texture—sandy loam, fine sandy loam, mucky loam, or mucky sandy loam

Bg horizon:
- Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
- Texture—sandy clay loam or clay loam that has thin layers of sandy loam, loam, or silty clay loam
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

BCg horizon:
- Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
- Texture—sandy loam, silty clay loam, or loam
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Cg horizon:
- Color—horizon has hue of 10YR to 5Y, 5GY, or 5BG or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 3
- Texture—sand, loamy sand, or stratified sandy clay loam to sand
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, brown, or yellow

Weeksville Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate
Parent material: Marine and fluvial sediments or lacustrine sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats and lake sediments of Lake Mattamuskeet
Commonly associated soils: Hydeland, Brookman, Gullrock, Roper, Acredale, Pasquotank, and Engelhard soils
Slope: 0 to 2 percent
Taxonomic class: Coarse-silty, mixed, acid, thermic Typic Humaquepts

Typical Pedon

Weeksville loam, 0 to 2 percent slopes, rarely flooded; about 1.0 mile west of Fairfield, about 0.9 mile west of the intersection of North Carolina Highway 94 and Secondary Road 1305, about 350 feet south of Secondary Road 1305 on a farm path, 20 feet west of the farm path, in a field; Fairfield USGS topographic quadrangle; lat. 35 degrees 32 minutes 12 seconds N. and long. 76 degrees 14 minutes 25 seconds W.

Ap—0 to 6 inches; very dark brown (10YR 2/2) loam; moderate medium granular structure; friable; common fine roots; very strongly acid; gradual smooth boundary.

AB—6 to 13 inches; very dark brown (10YR 2/2) loam;

moderate medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual smooth boundary.
Bg1—13 to 32 inches; dark grayish brown (10YR 4/2) loam; moderate medium subangular blocky structure; friable; few fine flakes of mica; very strongly acid; gradual smooth boundary.
Bg2—32 to 38 inches; dark grayish brown (2.5Y 4/2) loam; moderate medium subangular blocky structure; friable; few fine flakes of mica; few fine prominent strong brown (7.5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; very strongly acid; clear smooth boundary.
BCg—38 to 45 inches; grayish brown (10YR 5/2) loam; moderate medium subangular blocky structure; friable; common medium faint yellowish brown (10YR 5/4) rounded masses of iron accumulation with clear boundaries in the matrix; common fine flakes of mica; strongly acid; clear smooth boundary.
Cg1—45 to 60 inches; gray (10YR 6/1) loam; massive; friable; common medium distinct light olive brown (2.5Y 5/4) and few fine prominent dark reddish brown (5YR 3/4) rounded masses of iron accumulation with clear boundaries in the matrix; common fine flakes of mica; strongly acid; clear smooth boundary.
Cg2—60 to 72 inches; olive gray (5Y 5/2) fine sandy loam; massive; friable; common medium distinct olive (5Y 5/6) and yellowish red (5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; common fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Reaction: Very strongly acid or strongly acid in the surface layer and subsoil, except in limed areas; very strongly acid to moderately acid in the underlying material

A or Ap horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—loam

AB horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 3, and has chroma of 0 to 2
Texture—silt loam, loam, or very fine sandy loam

Bg horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—silt loam, loam, or very fine sandy loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, yellow, or brown

BCg horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—silt loam, loam, or very fine sandy loam
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, yellow, or brown

Cg or 2Cg horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 4 to 7, and has chroma of 0 to 2
Texture—silt loam, loam, fine sandy loam, loamy fine sand, loamy sand, fine sand, or sand
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, yellow, or brown

Wysocking Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately rapid in the mineral layers; moderately slow to moderately rapid in the organic horizons
Parent material: Lacustrine and possibly eolian sediments deposited over organic material
Landscape: Lower Coastal Plain
Landform: Lake terraces adjacent to Lake Mattamuskeet
Commonly associated soils: Engelhard, Belhaven, Scuppernong, Fortescue, Hydeland, Weeksville, and Pasquotank soils
Slope: 0 to 3 percent
Taxonomic class: Coarse-silty, mixed, acid, thermic Thapto-Histic Fluvaquents

Typical Pedon

Wysocking very fine sandy loam, 0 to 3 percent slopes, rarely flooded (fig. 28); about 5.5 miles east of Fairfield, about 3.1 miles northeast of the intersection of Secondary Roads 1312 and 1311, about 500 feet south of Secondary Road 1311, about 100 feet west of a canal, in a field; Fairfield USGS topographic quadrangle; lat. 35 degrees 34 minutes 10 seconds N. and long. 76 degrees 07 minutes 49 seconds W.

Ap—0 to 6 inches; very dark brown (10YR 2/2) very fine sandy loam; weak fine granular structure; very friable; common fine roots; few very fine tubular pores; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Cg—6 to 29 inches; grayish brown (2.5Y 5/2) silt; massive parting to weak medium platy structure; very friable; few fine and medium roots; black (N 2/0) wavy and discontinuous bedding planes (arcuate cusps) 0.05 to 1 inch thick, becoming thicker as depth increases, on about 10-degree angle sloping toward lake; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation with clear boundaries lining pores; few fine flakes of mica; very strongly acid; gradual smooth boundary.

2Oa1—29 to 58 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 44 percent fiber unrubbed, less than 2 percent fiber rubbed; massive; slightly sticky; moderately fluid; few medium roots; 31 percent mineral material; very strongly acid; gradual wavy boundary.

2Oa2—58 to 78 inches; dark reddish brown (5YR 2.5/2, broken face and rubbed) muck; about 20 percent fiber unrubbed, less than 4 percent fiber rubbed; massive; slightly sticky; moderately fluid; few medium roots; 4 percent mineral material; extremely acid; gradual wavy boundary.

3Ab—78 to 93 inches; very dark brown (10YR 2/2) mucky silt loam; massive; friable, slightly sticky, slightly plastic; 12 percent organic matter; very strongly acid.

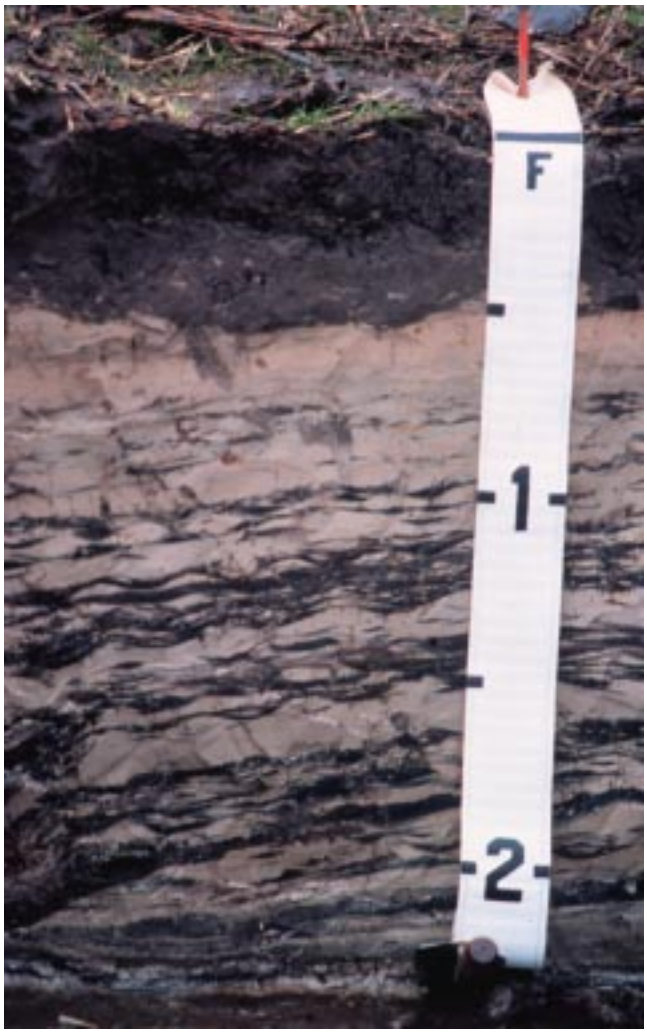


Figure 28.—Typical profile of Wysocking very fine sandy loam, 0 to 3 percent slopes, rarely flooded. The black layers are arcuate cusps formed by past wave action. The cusps angle downward in the direction of Lake Mattamuskeet. Wysocking soils consist of lakewash silt and very fine sand over muck.

Range in Characteristics

Thickness of the solum: Surface mineral horizons—16 to 40 inches; underlying organic horizons—8 to more than 80 inches

Reaction: Extremely acid to strongly acid throughout the profile, except in limed areas

A horizon:

Color—horizon has hue of 10YR to 5Y or is neutral in hue, has value of 2 to 5, and has chroma of 0 to 3

Texture—very fine sandy loam

Cg horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture—silt loam, silt, very fine sandy loam, or loamy very fine sand

Redoximorphic features—masses of iron accumulation in high-chroma shades

2Oa horizon:

Color—hue of 2.5YR to 5Y, value of 2 to 3, and chroma of 1 or 2

Texture—muck; stumps, logs, pockets of ash, and fragments of charcoal in most pedons

3Ab or 3Cg horizon:

Color—hue of 7.5YR to 5Y, value of 2 to 5, and chroma of 1 or 2

Texture—silt loam, sandy loam, loam, very fine sandy loam, loamy very fine sand, or loamy fine sand or the mucky analogues of these textures

Yeopim Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: The edge of divides along creeks and marshes of the Pungo River and its tributaries
Commonly associated soils: Chapanoke and Acredale soils
Slope: 0 to 3 percent
Taxonomic class: Fine-silty, mixed, thermic Aquic Hapludults

Typical Pedon

Yeopim silt loam, 0 to 3 percent slopes, rarely flooded; about 0.5 mile east of Ponzer, 0.5 mile northwest of the intersection of North Carolina Highway 45 and U.S. Highway 264, about 0.1 mile west of a creek, 180 feet north of North Carolina Highway 45, in a wooded area; Belhaven USGS topographic quadrangle; lat. 35 degrees 35 minutes 12 seconds N. and long. 76 degrees 29 minutes 13 seconds W.

Oi—2 inches to 0; partially decomposed leaves and twigs; common fine and medium roots.
A—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam; weak medium granular structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.
Bt1—3 to 9 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; friable, slightly sticky; extremely acid; clear smooth boundary.
Bt2—9 to 20 inches; light yellowish brown (2.5Y 6/4) silt loam; moderate medium subangular blocky structure; friable, slightly sticky; few fine distinct light gray (10YR 7/2) rounded iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear smooth boundary.
Bt3—20 to 30 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable, slightly sticky; few medium distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; common medium distinct light brownish gray (10YR 6/2) rounded iron depletions with clear boundaries in the matrix; extremely acid; gradual smooth boundary.
Bt4—30 to 44 inches; light yellowish brown (2.5Y 6/4) silt loam; moderate medium subangular blocky structure; friable; common medium distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; few fine distinct gray (10YR 6/1) rounded iron depletions with clear boundaries in the matrix; extremely acid; gradual smooth boundary.
Btg—44 to 54 inches; light brownish gray (2.5Y 6/2) loam; weak medium subangular blocky structure; friable, slightly sticky; common coarse faint light yellowish brown (2.5Y 6/4) and common medium distinct brownish yellow (10YR 6/6) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; clear wavy boundary.
C—54 to 65 inches; light yellowish brown (2.5Y 6/4) fine sandy loam; massive; common medium distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; common medium faint light brownish gray (2.5Y 6/2) rounded iron depletions with clear boundaries in the matrix; very strongly acid.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Reaction: Extremely acid to moderately acid, except in limed areas

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4
Texture—silt loam

E horizon:
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 6
Texture—loam, silt loam, fine sandy loam, or very fine sandy loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8
Texture—silty clay loam, loam, clay loam, or silt loam; thin strata of sandy clay loam, fine sandy loam, or very fine sandy loam in some pedons
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of yellow, brown, or red

Btg horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—silty clay loam, loam, clay loam, or silt loam; thin strata of sandier material in some pedons
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in shades of red, yellow, or brown

C or Cg horizon:
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 6
Texture—sandy or loamy; thin strata of clay in some pedons
Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in high-chroma shades

The Yeopim soils in Hyde County are considered taxadjuncts to the series because they have base saturation higher than that defined for the range of the series. Due to the limited acreage of these soils, a new series was not established. In this survey, the Yeopim soils are Aquultic Hapludalfs. This difference, however, does not significantly affect the use and management of the soils.

Yonges Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Parent material: Marine and fluvial sediments
Landscape: Lower Coastal Plain
Landform: Broad upland flats and depressions
Commonly associated soils: Acredale, Argent, Bolling, Fork, and Stockade soils
Slope: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Endoaqualfs

Typical Pedon

Yonges loam, 0 to 2 percent slopes, rarely flooded; about 0.6 mile south of Sladesville, 0.6 mile south of the intersection of Secondary Roads 1143 and 1142, about 400 feet east of Secondary Road 1143, in a field; Scranton USGS topographic quadrangle; lat. 35 degrees 27 minutes 24 seconds N. and long. 76 degrees 29 minutes 19 seconds W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam; weak medium granular structure; very friable; few fine roots; slightly acid; clear smooth boundary.
Btg1—7 to 28 inches; grayish brown (10YR 5/2) loam; moderate medium subangular blocky structure; friable; few fine roots; very dark grayish brown (10YR 3/2) material from A horizon in root channels; common fine distinct light yellowish brown (2.5Y 6/4) and few medium distinct yellowish brown (10YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; clear smooth boundary.
Btg2—28 to 37 inches; dark gray (10YR 4/1) loam; moderate medium subangular blocky structure; friable, slightly sticky; few fine flakes of mica; common medium distinct yellowish brown (10YR 5/8) and common fine distinct light yellowish brown (2.5Y 6/4) and strong brown (7.5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; extremely acid; gradual smooth boundary.
Btg3—37 to 43 inches; gray (10YR 5/1) loam; moderate medium subangular blocky structure; friable, slightly sticky; common medium faint dark gray (10YR 4/1) rounded iron depletions with clear boundaries in the matrix; few fine flakes of mica; extremely acid; gradual smooth boundary.
Btg4—43 to 51 inches; grayish brown (10YR 5/2) fine sandy loam; moderate medium subangular blocky structure; friable, slightly sticky; common coarse faint yellowish brown (10YR 5/4) and common fine distinct strong brown (7.5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; gradual smooth boundary.
BCg—51 to 58 inches; gray (5Y 6/1) fine sandy loam; weak medium subangular blocky structure; friable; few lenses of sandy clay loam; common medium distinct light olive brown (2.5Y 5/4) and common fine distinct strong brown (7.5YR 4/6) rounded masses of iron accumulation with clear boundaries in the matrix; few fine distinct gray (5Y 5/1) rounded iron depletions with clear boundaries in the matrix; few fine flakes of mica; very strongly acid; clear smooth boundary.
C—58 to 65 inches; grayish brown (2.5Y 5/2) loamy fine sand; massive; very friable; common coarse distinct strong brown (7.5YR 5/8) rounded masses of iron accumulation with clear boundaries in the matrix; few fine flakes of mica; very strongly acid.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Reaction: Very strongly acid to moderately alkaline

Ap or A horizon:
Color—hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2
Texture—loam

E horizon:
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2
Texture—sandy loam or fine sandy loam

Btg horizon:
- Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
- Texture—loam or sandy clay loam; thin layers of sandy loam or fine sandy loam in some pedons
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in high-chroma shades

BCg horizon:
- Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2
- Texture—fine sandy loam, sandy loam, clay loam, sandy clay loam, silt loam, or sandy clay
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in high-chroma shades

C or Cg horizon:
- Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 4
- Texture—sandy loam, loamy sand, or sand
- Redoximorphic features—iron depletions in shades of gray and masses of iron accumulation in high-chroma shades

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Anaerobic. A condition in which molecular oxygen is absent from the environment.

Aquifer. A water-bearing bed or stratum of permeable rock, sand, or gravel capable of fielding considerable quantities of water to wells or springs.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Atterberg limits. Atterberg limits are measured for soil materials passing the No. 40 sieve. They include the liquid limit (LL), which is the moisture content at which the soil passes from a plastic to a liquid state, and the plasticity index (PI), which is the water content corresponding to an arbitrary limit between the plastic and semisolid states of consistency of a soil.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Benchmark soil. A soil of large extent that holds a key position in the soil classification system or is of special significance to farming, engineering, forestry, or other uses.

Biotite. A common rock-forming mineral consisting primarily of ferromagnesian silicate minerals. Color ranges from dark brown to green in thin section. Biotite is commonly referred to as "black mica" because of the natural black color.

Bottom land. The normal flood plain of a stream, subject to flooding.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Carolina bay. A shallow, oval depression that does not have a natural drainage outlet. These bays are oriented in a northwest-southwest direction and range from 5 acres to more than 500 acres in size. Most contain standing water unless they are drained.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen

hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clayey. A general textural term that includes sandy clay, silty clay, and clay. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) containing 35 percent or more clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

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.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Coastal Plain. The physiographic region of eastern North Carolina that consists of ocean-deposited sediments of sand, silt, and clay. These sediments are in level to rolling areas and vary in thickness.

Colloidal muck. Muck which forms when organic materials are submerged for long periods of time under anaerobic conditions. Because the organic soils of North Carolina formed as a result of poor aeration and not as a result of high rainfall or low temperatures, colloidal muck is common in the survey area. These soils are sticky, plastic, impervious to water movement, and extremely acid.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contrasting soils. Soils that either do not share limits of some important diagnostic criteria or that have different use and management requirements for major land uses in the survey area. Individually, dissimilar soils have different interpretations or soil potential, or both, for selected uses.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dbh (diameter at breast height). The diameter of a tree at 4.5 feet above the ground level on the uphill side.

Delineation. The process of drawing or plotting features on a map with lines and symbols.

Denitrification. The biochemical reduction of nitrate or nitrite to gaseous nitrogen either as molecular nitrogen or as an oxide of nitrogen.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Engineering index test data. Laboratory test and mechanical analysis of selected soils in the county.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion classes. Classes based on estimates of past erosion. The classes are as follows:

Class 1.—Soils that have lost some of the original A horizon but on the average less than 25 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most areas, the thickness of the surface layer is within the normal range of variability of the uneroded soil. Class 1 erosion typically is not designated in the name of the map unit or in the map symbol.

Class 2.—Soils that have lost an average of 25 to 75 percent of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). Throughout most cultivated areas of class 2 erosion, the surface layer consists of a mixture of the original A horizon and material from below. Some areas may have intricate patterns ranging from uneroded spots to spots where all of the original A horizon has been removed.

Class 3.—Soils that have lost an average of 75 percent or more of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick). In most cultivated areas of class 3 erosion, material that was below the original A horizon is exposed. The plow layer consists entirely or largely of this material.

Class 4.—Soils that have lost all of the original A horizon or of the uppermost 8 inches (if the original A horizon was less than 8 inches thick) plus some or all of the deeper horizons throughout most of the area. The original soil can be identified only in spots. Some areas may be smooth, but most have an intricate pattern of gullies.

Erosion hazard. A term describing the potential for future erosion, inherent in the soil itself, in inadequately protected areas. The following definitions are based on estimated annual soil loss in metric tons per hectare (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per hectare	none
Less than 2.5 tons per hectare	slight
2.5 to 10 tons per hectare	moderate
10 to 25 tons per hectare	severe
More than 25 tons per hectare	very severe

Evapotranspiration. The combined loss of water from a given area through surface evaporation and through transpiration by plants during a specified period.

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.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when

light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). The duration of flooding is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month).

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Forb. Any herbaceous plant not a grass or a sedge.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors which differentiate it from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Geomorphic surface. A part of the surface of the land that represents an episode of landscape development and consists of one or more landforms. It is a mappable part of the land surface that is defined in terms of morphology (relief, slope, aspect, etc.); origin (erosional, constructional, etc.); age (absolute or relative); and stability of component landforms.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Growing season. The portion of the year when soil temperatures are above biologic zero (5 degrees C), as defined by "Soil Taxonomy." The following growing season months are assumed for each of the soil temperature regimes:

Isohyperthermic	January-December
Hyperthermic	February-December
Isothermic	January-December
Thermic	February-October
Isomesic	January-December
Mesic	March-October
Frigid	May-September
Cyric	June-August
Pergelic	July-August

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High water table (seasonal). The highest level of a saturated zone in the soil (the apparent or perched water table) over a continuous period of more than 2 weeks in most years, but not a permanent water table.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the

surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A horizon 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.

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 overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydric soil. A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Hydrophytic vegetation. Plant life growing in water or on a substrate that is at least periodically deficient in oxygen because of excessive water content.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

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.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interstream divide (or interstream area). The nearly level land between drainageways in relatively undissected parts of the Coastal Plain. It is in areas on uplands, low marine terraces, and stream terraces. Soils in these areas are generally poorly drained or very poorly drained.

Irrigation. Application of water to soils to assist in production of crops. Subirrigation is used in this survey area. In this method, water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lamellae. Very thin, mostly horizontal layers of accumulated clay, iron, or other material common in some sands or loamy sands; associated with soil formation rather than geologic deposition.

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.

Loamy. A general textural term that includes coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, clay loam, and sandy clay loam. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of loamy very fine sand or finer textured material that contains more than 15 percent fine sand or coarser sand and less than 35 percent clay, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by the wind.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. Periodically wet or continually flooded areas where the surface is not deeply submerged. Marshes generally are covered with sedges, cattails, rushes, or other hydrophytic plants. Areas identified on the detailed soil maps by a special symbol are less than 2 acres in size. Subgroups are as follows:

Freshwater.—Lowland areas bordering rivers, creeks, and lakes that are flooded by fresh water and dominated by halophobic (salt-intolerant) plants.

Salt.—Lowland areas bordering coastal islands, sounds, bays, and sloughs that are flooded by salt water and dominated by halophytic (salt-tolerant) plants.

Tidal.—Lowland areas bordering rivers, creeks, and sloughs and traversed by interlacing channels. During high tides these areas are inundated by either salt water or brackish water. They are dominated by halophytic (salt-tolerant) plants.

Mean annual increment. The average annual volume of a stand of trees from the year of origin to the age under consideration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Micas. A group of silicate minerals characterized by sheet or scale cleavage. Biotite is the ferromagnesian black mica. Muscovite is the potassic white mica.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or 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. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat. Material intermediate in degree of decomposition between muck and peat. (See Hemic soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Muscovite. A nonferromagnesian rock-forming silicate mineral that has tetrahedra arranged in sheets. Commonly called “white mica” and sometimes called potassic mica.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

No-till planting. A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of

organic matter in the surface layer is described as follows:

Low	less than 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Organic soils. Soils which generally have more than 20 percent organic matter. The three main classes of organic soil are muck, mucky peat, and peat.

Overstory. The portion of the trees in a forest stand forming the upper crown cover.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

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.

Pegmatite. A small pluton of exceptionally coarse texture, commonly formed at the margin of a batholith characterized by graphic structure. Nearly 90 percent of all pegmatites are simple pegmatites consisting of quartz, orthoclase, and minor percentages of micas.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont. The physiographic region of central North Carolina characterized by rolling landscapes formed from the weathering of residual rock material.

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.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Pocosin. An Indian term meaning swamp on a hill. A pocosin is a large wet area on nearly level interstream divides of the Coastal Plain. The area is dominantly composed of organic materials which form a gentle dome on the nearly level surface and obscure any original depressions or buried stream channels. The highest elevations are generally near the center of the pocosin where the largest amount of organic materials have accumulated. Mineral soils are near the outer edge of the pocosin. Vegetation is generally scrub-shrub near the center, or high pocosin, and grades to evergreen-bay forest toward the outer edge.

Pocosin lake. A lake which probably formed after the burning of a pocosin during a dry period and the subsequent refilling of the burned area with water.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

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

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Reforestation. The process in which tree seedlings are planted or become naturally established in an area that was once forested.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Runoff class (surface). Refers to the rate at which water flows away from the soil over the surface without infiltrating. Six classes of rate of runoff are recognized:

Ponded.—Little of the precipitation and water that runs onto the soil escapes as runoff, and free water stands on the surface for significant periods. The amount of water that is removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs on level and nearly level soils in depressions. The water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils are commonly level or nearly level or are very porous.

Slow.—Surface water flows away so slowly that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away so rapidly that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils are nearly level or gently sloping and absorb precipitation at a moderate rate, or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away so rapidly that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep and have moderate or slow rates of absorption.

Very rapid.—Surface water flows away so rapidly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep and absorb precipitation slowly.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments ranging 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.

Sandy. A general textural term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, and

loamy very fine sand. According to family level criteria in the soil taxonomic system, a specific textural name referring to fine earth (particles less than 2 millimeters in size) of sand or loamy sand that contains less than 50 percent very fine sand, by weight, within the control section. The content of rock fragments is less than 35 percent, by volume.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated. A condition in which all voids (pores) between soil particles are filled with water.

Saturation extract. The solution removed from a soil that is completely filled with liquid, at less than one-third atmosphere.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). 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.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, especially those in the tropics, generally have a low ratio.

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.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area. For the purpose of summarizing map unit composition, similar soils are included with the percentage listed for the named soil.

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.

Skeletans. Coatings of light-colored, low-luster silica flour or silica dust adhering to the natural surfaces in soil materials.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Strongly sloping	6 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 50 percent

Classes for complex slopes are as follows:

Level	0 to 1 percent
Undulating	0 to 6 percent
Rolling	6 to 15 percent
Hilly	15 to 25 percent
Steep	25 to 50 percent

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil compaction. An alteration of soil structure that ultimately can affect the biological and chemical

properties of the soil. Compaction decreases the extent of voids and increases bulk density.

Soil map unit. A kind of soil or miscellaneous area or a combination of two or more soils or one or more soils and one or more miscellaneous areas that can be shown at the scale of mapping for the defined purposes and objectives of the soil survey. Soil map units generally are designed to reflect significant differences in use and management among the soils of a survey area.

Soil puddling. This condition occurs in certain soils if they are driven on when they are wet. Exertion of mechanical force destroys the soil structure by compressing and shearing and results in the rearrangement of the soil particles to a massive or nonstructural state.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Soil strength. The load-supporting capacity of a soil at specific moisture and density conditions.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stand density. The degree to which an area is covered with living trees. It is usually expressed in units of basal areas per acre, number of trees per acre, or the percentage of ground covered by the tree canopy as viewed from above.

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 grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. A pronounced reduction in volume in some drained soils because of the removal of water, shrinkage of organic material, and the oxidation of organic compounds. Generally associated with soils that have a high content of organic matter.

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.

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

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Suited or moderately suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

Very poorly suited, not suited, or unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

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 water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is 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 loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine." The textural classes are defined as follows:

Sands (coarse sand, sand, fine sand, and very fine sand).—Soil material in which the content of sand is 85 percent or more and the percentage of silt plus 1½ times the percentage of clay does not exceed 15.

Loamy sands (loamy coarse sand, loamy sand, loamy fine sand, and loamy very fine sand).—Soil material in which, at the upper limit, the content of sand is 85 to 90 percent and the percentage of silt plus 1½ times the percentage of clay is not less than 15; at the lower limit, the content of sand is 70 to 85 percent and the percentage of silt plus twice the percentage of clay does not exceed 30.

Sandy loams (coarse sandy loam, sandy loam, fine sandy loam, and very fine sandy loam).—Soil material in which the content of clay is 20 percent or less, the percentage of silt plus twice the percentage of clay exceeds 30, and the content of sand is 52 percent or more or soil material in which the content of clay is less than 7 percent, the content of silt is less than 50 percent, and the content of sand is 43 to 52 percent.

Loam.—Soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Silt loam.—Soil material that contains 50 percent or more silt and 12 to 27 percent clay or 50 to 80 percent silt and less than 12 percent clay.

Silt.—Soil material that contains 80 percent or more silt and less than 12 percent clay.

Sandy clay loam.—Soil material that contains 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand.

Clay loam.—Soil material that contains 27 to 40 percent clay and 20 to 45 percent sand.

Silty clay loam.—Soil material that contains 27 to 40 percent clay and less than 20 percent sand.

Sandy clay.—Soil material that contains 35 percent or more clay and 45 percent or more sand.

Silty clay.—Soil material that contains 40 percent or more clay and 40 percent or more silt.

Clay.—Soil material that contains 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topography. The relative positions and elevations of the natural or manmade features of an area that describe the configuration of its surface.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Underlying material. Technically the C horizon; the part of the soil below the biologically altered A and B horizons.

Understory. The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water table (apparent). A thick zone of free water in the soil. The 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 (perched). A saturated zone of water in the soil standing above an unsaturated 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.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wetness. A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Wind tides. Tidal fluctuation caused by the effects of wind direction and velocity on bodies of water, as opposed to lunar tides.

Yield (forest land). The volume of wood fiber from trees harvested in a certain unit of area. Yield is usually measured in board feet or cubic feet per acre.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1968-88 at Belhaven, North Carolina)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	o F	o F	o F	o F	o F	Units	In	In	In		In
January	50.4	30.8	40.6	74	8	50	4.07	2.61	5.38	9	1.1
February	54.0	33.2	43.6	79	15	39	3.14	1.76	4.35	6	2.4
March	62.2	40.5	51.4	83	24	125	4.01	2.62	5.27	7	1.6
April	71.6	49.4	60.5	90	31	315	3.26	1.34	4.87	6	.0
May	78.7	58.4	68.6	92	41	577	4.62	2.04	6.81	7	.0
June	85.3	66.4	75.9	98	50	777	4.45	2.85	5.90	7	.0
July	88.3	70.3	79.3	98	55	908	5.98	3.20	8.42	8	.0
August	87.3	69.7	78.5	97	55	884	5.27	2.43	7.70	8	.0
September	82.5	63.7	73.1	94	46	693	4.73	2.56	6.63	6	.0
October	72.7	51.8	62.3	88	32	394	3.44	.94	5.44	5	.0
November	65.0	44.2	54.6	82	24	181	3.33	1.82	4.64	6	.0
December	55.7	35.1	45.4	77	16	54	3.41	1.74	4.85	6	.1
Yearly:											
Average	71.1	51.1	61.2	---	---	---	---	---	---	---	---
Extreme	---	---	---	99	6	---	---	---	---	---	---
Total	---	---	---	---	---	4,997	49.71	42.84	56.28	81	5.2

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1968-88 at Belhaven, 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--	Mar. 10	Mar. 28	Apr. 11
2 years in 10 later than--	Mar. 2	Mar. 23	Apr. 6
5 years in 10 later than--	Feb. 15	Mar. 13	Mar. 27
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 21	Nov. 8	Oct. 25
2 years in 10 earlier than--	Nov. 27	Nov. 14	Oct. 31
5 years in 10 earlier than--	Dec. 10	Nov. 27	Nov. 12

Table 3.—Growing Season

(Recorded in the period 1968-88 at Belhaven, 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	265	236	207
8 years in 10	276	244	215
5 years in 10	297	259	230
2 years in 10	320	275	247
1 year in 10	335	286	257

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AcA	Acredale silt loam, 0 to 2 percent slopes, rarely flooded	13,684	1.6
ArA	Argent loam, 0 to 2 percent slopes, rarely flooded	9,879	1.1
BaA	Backbay mucky peat, 0 to 1 percent slopes, very frequently flooded	7,800	0.9
BcA	Beaches	50	*
BeE	Beaches-Newhan complex, 3 to 50 percent slopes, flooded	1,204	0.1
BmA	Belhaven muck, 0 to 2 percent slopes, rarely flooded	19,747	2.3
BnA	Belhaven muck, 0 to 2 percent slopes, frequently flooded	7,901	0.9
BoA	Bolling loamy fine sand, 0 to 3 percent slopes, rarely flooded	1,119	0.1
BrA	Brookman loam, 0 to 2 percent slopes, rarely flooded	8,044	0.9
CaA	Carteret sand, low, 0 to 1 percent slopes, very frequently flooded	1,120	0.1
CbA	Carteret sand, high, 0 to 1 percent slopes, very frequently flooded	826	0.1
CeA	Carteret sand, 0 to 3 percent slopes, frequently flooded	629	0.1
ChA	Chapanoke silt loam, 0 to 2 percent slopes, rarely flooded	1,354	0.2
CoA	Conaby muck, 0 to 2 percent slopes, rarely flooded	3,987	0.5
CrB	Corolla sand, 0 to 6 percent slopes, rarely flooded	620	0.1
DeA	Delway muck, 0 to 1 percent slopes, very frequently flooded	16,439	1.9
DoA	Dorovan muck, 0 to 1 percent slopes, frequently flooded	4,820	0.6
DuA	Duckston sand, 0 to 2 percent slopes, rarely flooded	1,118	0.1
DwB	Duckston-Corolla complex, 0 to 6 percent slopes, rarely flooded	130	*
EaA	Engelhard loamy very fine sand, 0 to 2 percent slopes, rarely flooded	4,646	0.5
EnA	Engelhard loamy very fine sand, 0 to 2 percent slopes, frequently flooded	3,142	0.4
FkA	Fork fine sandy loam, 0 to 2 percent slopes, rarely flooded	1,011	0.1
FoA	Fortescue silt loam, 0 to 2 percent slopes, rarely flooded	3,972	0.5
GuA	Gullrock muck, 0 to 2 percent slopes, rarely flooded	7,560	0.9
HyA	Hydeland silt loam, 0 to 2 percent slopes, rarely flooded	17,734	2.0
LfA	Longshoal mucky peat, 0 to 1 percent slopes, very frequently flooded	17,915	2.1
NaD	Newhan fine sand, 6 to 25 percent slopes, rarely flooded	348	*
NcC	Newhan-Corolla complex, 0 to 15 percent slopes, rarely flooded	305	*
NeA	Newholland mucky loamy sand, 0 to 2 percent slopes, rarely flooded	3,032	0.3
NhA	Newholland mucky loamy sand, 0 to 2 percent slopes, frequently flooded	1,497	0.2
PaA	Pasquotank silt loam, 0 to 2 percent slopes, rarely flooded	606	0.1
PeA	Pettigrew muck, 0 to 2 percent slopes, rarely flooded	4,823	0.6
PnA	Ponzer muck, 0 to 2 percent slopes, rarely flooded	36,023	4.1
PoA	Portsmouth mucky sandy loam, 0 to 2 percent slopes, rarely flooded	4,058	0.5
PuA	Pungo muck, 0 to 2 percent slopes, rarely flooded	85,631	9.8
RoA	Roper muck, 0 to 2 percent slopes, rarely flooded	22,917	2.6
ScA	Scuppernong muck, 0 to 2 percent slopes, rarely flooded	58,647	6.7
SeA	Seabrook fine sand, 0 to 3 percent slopes, rarely flooded	637	0.1
StA	Stockade mucky sandy loam, 0 to 2 percent slopes, rarely flooded	2,495	0.3
Ud	Udorthents, sandy, rarely flooded	3,650	0.4
WaA	Wasda muck, 0 to 2 percent slopes, rarely flooded	5,749	0.7
WeA	Weeksville loam, 0 to 2 percent slopes, rarely flooded	4,544	0.5
WkA	Weeksville loam, 0 to 2 percent slopes, frequently flooded	1,900	0.2
WyA	Wysocking very fine sandy loam, 0 to 3 percent slopes, rarely flooded	2,051	0.2
YeA	Yeopim silt loam, 0 to 3 percent slopes, rarely flooded	554	0.1
YoA	Yonges loam, 0 to 2 percent slopes, rarely flooded	2,733	0.3
	Water (areas less than 40 acres)	850	0.1
	Water (areas greater than 40 acres)	471,635	54.1
	Total	871,136	100.0

* Less than 0.1 percent.

Table 5.—Native Vegetation

Common name	Scientific name
Alabama supplejack	Berchemia scandens
American beachgrass	Ammophila breviligulata
American beautyberry	Callicarpa americana
American beech	Fagus grandifolia
American holly	Ilex opaca
American hornbeam	Carpinus caroliniana
arrowhead	Sagittaria
Atlantic white-cedar	Chamaecyparis thyoides
baccharis	Baccharis halmifolia
baldcypress	Taxodium distichum
big cordgrass	Spartina cynosuroides
bitter gallberry	Ilex glabra
bitter panicum	Panicum amarum
black cherry	Prunus serotina
blackgum	Nyssa sylvatica
blackjack oak	Quercus marilandica
black needlegrass rush	Juncus roemerianus
black oak	Quercus velutina
black willow	Salix nigra
brackenfern	Pteridium aquilinum
broom sedge	Carex scoparia
bushy bluestem	Andropogon glomeratus
buttonbush	Cephalanthus occidentalis
cane (giant cane)	Arundinaria gigantea
cat greenbrier	Smilax latifolia
cattail	Typha latifolia
cinnamon fern	Osmunda cinnamomea
climbing hempweed	Mikania scandens
common trumpetcreeper	Campsis radicans
cross-vine	Anisostichus capreolata
dangleberry	Gaylussacia frondosa
devils-walkingstick	Aralia spinosa

Table 5.—Native Vegetation--Continued

Common name	Scientific name
dogwood (flowering)	Cornus florida
dwarf huckleberry	Gaylussacia dumosa
fetterbush	Lyonia lucida
flameleaf sumac	Rhus copallinum
grape (muscadine)	Vitis rotundifolia
green ash	Fraxinus pensylvanica
greenbrier	Smilax rotundifolia
hairy St Johnswort	Hypericum setosum
hairy thoroughwort	Eupatorium pilosum
hickory water	Carya aquatica
honeysuckle (Japanese)	Lonicera japonica
horsesugar (sweetleaf)	Symplocos tinctoria
huckleberry	Gaylussacia
ladyfern (southern)	Athyrium filix-femina
large gallberry	Ilex coriacea
largeleaf pennywort	Hydrocotyle bonariensis
laurel oak	Quercus laurifolia
live oak	Quercus virginiana
lizards tail	Saururus cernuus
loblollybay	Gordonia lasianthus
loblolly pine	Pinus taeda
longleaf pine	Pinus palustris
marshelder	Iva frutescens
marsh mallow	Kosteletskya virginica
marsh sedge	Fimbristylis spadicea
narrowleaf cattail	Typha angustifolia
netted chain fern	Woodwardia areolata
nodding beaked-rush	Rhynchospora inexpansa
northern bayberry	Myrica pensylvanica
partridgeberry	Mitchella repens
pawpaw	Asimina triloba

Table 5.—Native Vegetation--Continued

Common name	Scientific name
Pennsylvania smartweed	Polygonum pensylvanicum
persimmon	Diospyros virginiana
pitcherplant	Sarracenia purpurea
poison ivy	Toxicodendron radicans
pond pine	Pinus serotina
redbay	Persea borbonia
red cedar	Juniperus virginiana
red elm	Ulmus rubra
red maple	Acer rubrum
red oak	Quercus rubra
rose mallow	Hibiscus moscheutos
royal fern	Osmunda regalis
saltgrass	Distichlis spicata
saltmarsh cordgrass	Spartina alterniflora
saltmeadow hay	Spartina patens
sassafras	Sassafras albidum
sawgrass	Cladium jamaicense
seacoast bluestem	Andropogon littoralis
seaoats	Uniola paniculata
sea oxeye	Borrichia frutesens
searocket	Cakile edentula
seashore mallow	Kosteletskya virginica
seaside goldenrod	Solidago sempervirens
sedge	Cyperaceae
sourwood	Oxydendrum arboreum
southern red oak	Quercus falcata
southern waxmyrtle	Myrica cerifera
sphagnum moss	Sphagnum
spiked uniola	Chasmanthium laxum
sundew	Drosera
swamp chestnut oak	Quercus michauxii
swamp blackgum	Nyssa sylvatica biflora

Table 5.—Native Vegetation--Continued

Common name	Scientific name
swamp cyrilla	Cyrilla racemiflora
sweetbay	Magnolia virginiana
sweetgum	Liquidambar styraciflua
sweetleaf	Symplocos tinctoria
sweet pepperbush	Clethra alnifolia
switchcane	Arundinaria tecta
tall reed	Phragmites communis
threeawn	Aristida
three square	Scirpus robustus
titi	Cyrilla racemiflora
turkey oak	Quercus laevis
Virginia chainfern	Woodwardia virginica
Virginia creeper	Parthenocissus quinquefolia
water oak	Quercus nigra
water tupelo	Nyssa aquatica
white oak	Quercus alba
willow oak	Quercus phellos
yaupon holly	Ilex vomitoria
yellow jessamine	Gelsemium sempervirens
yellow-poplar	Liriodendron tulipifera
zenobia	Zenobia pulverulenta

Table 6.—Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Pasture
		Bu	Bu	Bu	AUM*
AcA—Acredale	IIIw**	145	45	50	---
ArA—Argent	IIIw**	130	40	45	---
BaA—Backbay	VIIIw	---	---	---	---
BcA***—Beaches	VIIIw	---	---	---	---
BeE***:					
Beaches	VIIIw	---	---	---	---
Newhan	VIIIs	---	---	---	---
BmA—Belhaven	IVw**	125	40	40	12.0
BnA—Belhaven	VIIw	---	---	---	---
BoA—Bolling	IIw	125	40	50	---
BrA—Brookman	IIIw**	140	45	50	12.0
CaA, CbA, CeA—Carteret	VIIIw	---	---	---	---
ChA—Chapanoke	IIw**	130	45	55	7.0
CoA—Conaby	IIIw**	130	35	50	8.5
CrB—Corolla	VIIs	---	---	---	---
DeA—Delway	VIIIw	---	---	---	---
DoA—Dorovan	VIIw	---	---	---	---
DuA—Duckston	VIIw	---	---	---	---
DwB:					
Duckston	VIIw	---	---	---	---
Corolla	VIIs	---	---	---	---

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Pasture
		Bu	Bu	Bu	AUM*
EaA---------- Engelhard	IIIw**	135	40	50	12
EnA---------- Engelhard	VIw	---	---	---	---
FkA---------- Fork	IIIw**	125	40	50	---
FoA---------- Fortescue	IIIw**	150	50	55	11.0
GuA---------- Gullrock	IIIw**	135	40	50	8.5
HyA---------- Hydeland	IIIw**	150	50	60	14.0
LfA---------- Longshoal	VIIIw	---	---	---	---
NaD---------- Newhan	VIIIs	---	---	---	---
NcC:					
Newhan----------	VIIIs	---	---	---	---
Corolla----------	VIIs	---	---	---	---
NeA---------- Newholland	IIIw**	135	40	50	12.0
NhA---------- Newholland	VIIw	---	---	---	---
PaA---------- Pasquotank	IIIw**	140	40	60	12.5
PeA---------- Pettigrew	IIIw**	140	45	50	9.5
PnA---------- Ponzer	IVw**	140	45	50	7.5
PoA---------- Portsmouth	IIIw**	130	45	60	10.0
PuA---------- Pungo	IVw**	90	25	30	12.0
RoA---------- Roper	IIIw**	150	50	60	10.0
ScA---------- Scuppernong	IIIw**	120	35	35	---
SeA---------- Seabrook	IIIs**	75	30	35	---

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Wheat	Pasture
		Bu	Bu	Bu	AUM*
StA---------- Stockade	IIIw**	145	45	55	---
Ud. Udorthents					
WaA---------- Wasda	IIIw**	130	35	50	12.0
WeA---------- Weeksville	IIIw**	150	50	55	13.0
WkA---------- Weeksville	VIIw	---	---	---	---
WyA---------- Wysocking	IIIw**	130	45	50	10.5
YeA---------- Yeopim	IIw	130	45	50	9.0
YoA---------- Yonges	IIIw**	135	40	50	---

* 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.

** Classification is for areas where the soil is drained.

*** See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.—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	---	---	---	---
II	1,673	---	1,673	---
III	118,375	---	117,738	637
IV	200,048	---	200,048	---
V	---	---	---	---
VI	13,680	---	13,680	---
VII	14,722	---	13,911	811
VIII	46,500	---	45,477	1,023

Table 8.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. The listed soils are prime farmland only in areas where they are drained)

Map symbol	Soil name
AcA	Acredale silt loam, 0 to 2 percent slopes, rarely flooded
BoA	Bolling loamy fine sand, 0 to 3 percent slopes, rarely flooded
ChA	Chapanoke silt loam, 0 to 2 percent slopes, rarely flooded
CoA	Conaby muck, 0 to 2 percent slopes, rarely flooded
EaA	Engelhard loamy very fine sand, 0 to 2 percent slopes, rarely flooded
FkA	Fork fine sandy loam, 0 to 2 percent slopes, rarely flooded
FoA	Fortescue silt loam, 0 to 2 percent slopes, rarely flooded
GuA	Gullrock muck, 0 to 2 percent slopes, rarely flooded
HyA	Hydeland silt loam, 0 to 2 percent slopes, rarely flooded
NeA	Newholland mucky loamy sand, 0 to 2 percent slopes, rarely flooded
PaA	Pasquotank silt loam, 0 to 2 percent slopes, rarely flooded
PoA	Portsmouth mucky sandy loam, 0 to 2 percent slopes, rarely flooded
RoA	Roper muck, 0 to 2 percent slopes, rarely flooded
StA	Stockade mucky sandy loam, 0 to 2 percent slopes, rarely flooded
WaA	Wasda muck, 0 to 2 percent slopes, rarely flooded
WeA	Weeksville loam, 0 to 2 percent slopes, rarely flooded
WyA	Wysocking very fine sandy loam, 0 to 3 percent slopes, rarely flooded
YeA	Yeopim silt loam, 0 to 3 percent slopes, rarely flooded
YoA	Yonges loam, 0 to 2 percent slopes, rarely flooded

Table 9.—Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol[1]	Management concerns				Potential productivity			Trees to plant[3]
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume[2]	
AcA—Acredale	10W	Severe	Severe	Slight	Severe	Loblolly pine	96	145	Loblolly pine.
						Sweetgum	100	138	
						Water oak	86	81	
						Hickory	---	---	
ArA—Argent	10W	Severe	Moderate	Slight	Severe	Loblolly pine	96	145	Loblolly pine, green ash, sweetgum, American sycamore, longleaf pine.
						Sweetgum	96	125	
						Water oak	96	93	
						Longleaf pine	85	112	
BmA—Belhaven	3W	Severe	Severe	Severe	Severe	Pond pine	63	43	Loblolly pine, Atlantic white-cedar.
						Loblolly pine	85	120	
						Sweetgum	---	---	
						Red maple	---	---	
						Blackgum	---	---	
BnA—Belhaven	7W	Severe	Severe	Severe	Severe	Swamp blackgum	70	100	Baldcypress.
						Red maple	---	---	
						Baldcypress	---	---	
BoA—Bolling	9W	Moderate	Slight	Slight	Moderate	Loblolly pine	90	131	Loblolly pine, yellow-poplar, black walnut, green ash.
						Yellow-poplar	90	90	
						Sweetgum	---	---	
						Water oak	---	---	
BrA—Brookman	10W	Severe	Severe	Moderate	Severe	Loblolly pine	95	142	Loblolly pine, sweetgum, water tupelo, green ash.
						Baldcypress	---	---	
						Sweetgum	100	138	
						Yellow-poplar	---	---	
						Pond pine	---	---	
						Swamp chestnut oak	---	---	
ChA—Chapanoke	9W	Moderate	Slight	Slight	Severe	Loblolly pine	90	131	Loblolly pine, sweetgum, American sycamore, green ash.
						Sweetgum	---	---	
						Yellow-poplar	---	---	
						Water oak	---	---	
						Southern red oak	---	---	
						Red maple	---	---	
CoA—Conaby	11W	Severe	Severe	Severe	Severe	Loblolly pine	100	154	Loblolly pine, sweetgum, Atlantic white-cedar.
						Pond pine	---	---	
						Sweetgum	---	---	
						Red maple	---	---	
						Baldcypress	---	---	
DoA—Dorovan	7W	Severe	Severe	Severe	Severe	Swamp blackgum	70	95	Baldcypress.
						Baldcypress	---	---	
						Green ash	---	---	
						Red maple	---	---	
						Water tupelo	---	---	

See footnotes at end of table.

Table 9.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol[1]	Management concerns: Equipment limitation	Seedling mortality	Wind-throw hazard	Plant competition	Potential productivity: Common trees	Site index	Volume[2]	Trees to plant[3]
EaA Engelhard	10W	Severe	Severe	Severe	Severe	Loblolly pine Sweetgum Water oak Baldcypress Yellow-poplar	94 --- --- --- ---	140 --- --- --- ---	Loblolly pine, yellow-poplar, baldcypress, green ash.
EnA Engelhard	8W	Severe	Severe	Severe	Severe	Swamp blackgum Sweetgum Water oak Baldcypress Yellow-poplar	80 --- --- --- ---	110 --- --- --- ---	Swamp blackgum, baldcypress, green ash.
FkA Fork	9W	Moderate	Slight	Slight	Severe	Loblolly pine Southern red oak Sweetgum Yellow-poplar	90 80 90 90	131 62 106 90	Loblolly pine, yellow-poplar, green ash.
FoA Fortescue	12W	Severe	Severe	Severe	Severe	Loblolly pine Red maple Yellow-poplar Baldcypress Water oak Willow oak Sweetgum	107 --- --- --- --- --- ---	170 --- --- --- --- --- ---	Loblolly pine, yellow-poplar, baldcypress, sweetgum, green ash.
GuA Gullrock	11W	Severe	Severe	Severe	Severe	Loblolly pine Pond pine Sweetgum Red maple Baldcypress	100 --- --- --- ---	154 --- --- --- ---	Loblolly pine, sweetgum, Atlantic white-cedar.
HyA Hydeland	12W	Severe	Severe	Severe	Severe	Loblolly pine Sweetgum Swamp blackgum Water tupelo Red maple Baldcypress Water oak Willow oak Swamp chestnut oak	107 --- --- --- --- --- --- --- ---	170 --- --- --- --- --- --- --- ---	Loblolly pine, yellow-poplar, sweetgum, Atlantic white-cedar, green ash, baldcypress.
NeA Newholland	12W	Severe	Severe	Severe	Severe	Loblolly pine Sweetgum Swamp blackgum Baldcypress Pond pine Water oak Willow oak	106 94 --- --- --- --- ---	168 119 --- --- --- --- ---	Loblolly pine, yellow-poplar, sweetgum, Atlantic white-cedar, green ash, baldcypress.
NhA Newholland	8W	Severe	Severe	Severe	Severe	Sweetgum Water tupelo Baldcypress Water oak Willow oak	80 --- --- --- ---	110 --- --- --- ---	Water tupelo, baldcypress.

See footnotes at end of table.

Table 9.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol[1]	Management concerns				Potential productivity			Trees to plant[3]
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume[2]	
PaA—Pasquotank	10W	Severe	Severe	Severe	Severe	Loblolly pine	94	140	Loblolly pine, sweetgum, American sycamore, green ash.
						Green ash	80	49	
						Sweetgum	90	106	
						Water oak	90	86	
						Yellow-poplar	---	---	
						Blackgum	---	---	
						Red maple	---	---	
						Willow oak	---	---	
PeA—Pettigrew	10W	Severe	Severe	Severe	Severe	Loblolly pine	96	145	Loblolly pine, water tupelo, yellow-poplar, Atlantic white-cedar.
						Water tupelo	---	---	
						Baldcypress	---	---	
						Atlantic white-cedar	---	---	
						Green ash	---	---	
						Pond pine	80	68	
						Sweetgum	97	128	
PnA—Ponzer	10W	Severe	Severe	Severe	Severe	Loblolly pine	94	140	Loblolly pine, Atlantic white-cedar.
						Pond pine	72	56	
						Sweetgum	---	---	
						Water tupelo	---	---	
						Baldcypress	---	---	
						Swamp blackgum	---	---	
						Sweetbay	---	---	
						Redbay	---	---	
						Loblollybay gordonia	---	---	
						Red maple	---	---	
PoA—Portsmouth	11W	Severe	Severe	Severe	Severe	Loblolly pine	101	155	Loblolly pine, sweetgum, green ash.
						Sweetgum	---	---	
						Red maple	---	---	
						Water oak	---	---	
						Willow oak	---	---	
						Sweetbay	---	---	
						Redbay	---	---	
PuA—Pungo	2W	Severe	Severe	Severe	Severe	Pond pine	55	33	Pond pine, loblolly pine, Atlantic white-cedar.
						Loblolly pine	77	105	
						Red maple	---	---	
						Sweetbay	---	---	
						Baldcypress	---	---	
						Swamp tupelo	---	---	
						Atlantic white-cedar	---	---	
						Loblollybay gordonia	---	---	
RoA—Roper	12W	Severe	Severe	Severe	Severe	Loblolly pine	107	170	Loblolly pine, sweetgum, Atlantic white-cedar.
						Pond pine	72	56	
						Sweetgum	---	---	
						Water oak	---	---	
						Red maple	---	---	
						Blackgum	---	---	
						Baldcypress	---	---	
						Water tupelo	---	---	
ScA—Scuppernong	3W	Severe	Severe	Severe	Severe	Pond pine	63	43	Loblolly pine, Atlantic white-cedar.
						Sweetgum	---	---	
						Baldcypress	---	---	
						Atlantic white-cedar	---	---	
						Loblolly pine	85	120	

See footnotes at end of table.

Table 9.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol[1]	Management concerns: Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume[2]	Trees to plant[3]
SeA—Seabrook	8S	Moderate	Moderate	Slight	Slight	Loblolly pine	81	112	Loblolly pine, longleaf pine, yellow-poplar.
						Longleaf pine	---	---	
						Southern red oak	---	---	
						Sweetgum	---	---	
						Red maple	---	---	
						Yellow-poplar	---	---	
						Water oak	---	---	
						Willow oak	---	---	
						American beech	---	---	
StA—Stockade	10W	Severe	Severe	Moderate	Severe	Loblolly pine	101	145	Loblolly pine, sweetgum, green ash.
						Sweetgum	100	138	
						Water oak	100	98	
						Blackgum	---	---	
						Swamp chestnut oak	---	---	
						Pond pine	---	---	
WaA—Wasda	10W	Severe	Severe	Severe	Severe	Loblolly pine	92	136	Loblolly pine, sweetgum, Atlantic white-cedar.
						Pond pine	---	---	
						Sweetgum	---	---	
						Water oak	---	---	
						Red maple	---	---	
						Swamp blackgum	---	---	
						Water tupelo	---	---	
						Baldcypress	---	---	
WeA—Weeksville	12W	Severe	Severe	Severe	Severe	Loblolly pine	107	170	Loblolly pine, sweetgum, American sycamore, Shumard oak, water tupelo, Atlantic white-cedar, green ash.
						Water tupelo	---	---	
						Sweetgum	---	---	
WkA—Weeksville	7W	Severe	Severe	Severe	Severe	Swamp blackgum	70	95	Baldcypress, sweetgum, water tupelo, Atlantic white-cedar, green ash.
						Water tupelo	---	---	
						Baldcypress	---	---	
WyA—Wysocking	10W	Severe	Severe	Severe	Severe	Loblolly pine	94	10	Loblolly pine, yellow-poplar, baldcypress, green ash.
						Sweetgum	---	---	
						Water oak	---	---	
						Baldcypress	---	---	
						Water tupelo	---	---	
						Yellow-poplar	---	---	
YeA—Yeopim	9A	Slight	Slight	Slight	Severe	Loblolly pine	91	133	Loblolly pine, yellow-poplar, sweetgum, American sycamore, green ash.
						Sweetgum	---	---	
						Yellow-poplar	---	---	
						Southern red oak	---	---	
						White oak	---	---	
						Red maple	---	---	

See footnotes at end of table.

Table 9.—Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol[1]	Management concerns				Potential productivity			Trees to plant[3]
		Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume[2]	
YoA—Yonges	12W	Severe	Severe	Slight	Severe	Loblolly pine Sweetgum Water oak	105 100 100	166 138 98	Loblolly pine, green ash, sweetgum, American sycamore, water tupelo.

[1] The number in the ordination symbol denotes potential productivity in cubic meters per hectare per year for a group (range) of site indices for the indicator species (first tree listed under Common trees).

[2] Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands. Cubic feet can be converted to board feet by multiplying by about 5.

[3] If hardwoods are desired on a forest site, the natural reproduction (seeds and sprouts) of acceptable species should be used. Special site preparation techniques may be needed. Planting hardwoods on a specific site should based on the recommendations of a forester.

Table 10.—Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "moderate" and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AcA Acredale	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
ArA Argent	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
BaA Backbay	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
BcA* Beaches	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: excess salt, wetness, droughty.
BeE*: Beaches	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness, flooding.	Severe: wetness, too sandy.	Severe: excess salt, wetness, droughty.
Newhan	Severe: flooding, too sandy.	Severe: too sandy, excess salt.	Severe: slope, too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, too acid, droughty.
BmA Belhaven	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
BnA Belhaven	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, too acid.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: too acid, ponding, flooding.
BoA Bolling	Severe: flooding.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
BrA Brookman	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CaA, CbA, CeA Carteret	Severe: flooding, ponding, too sandy.	Severe: ponding, too sandy, excess salt.	Severe: too sandy, ponding, flooding.	Severe: ponding, too sandy.	Severe: excess salt, ponding, droughty.
ChA Chapanoke	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.

See footnote at end of table.

Table 10.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CoA Conaby	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
CrB Corolla	Severe: flooding, too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, droughty.
DeA Delway	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, excess salt.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: excess salt, too acid, ponding.
DoA Dorovan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
DuA Duckston	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: excess salt, too acid, wetness.
DwB*: Duckston	Severe: flooding, wetness, too sandy.	Severe: wetness, too sandy, excess salt.	Severe: too sandy, wetness.	Severe: wetness, too sandy.	Severe: excess salt, too acid, wetness.
Corolla	Severe: flooding, too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, droughty.
EaA Engelhard	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
EnA Engelhard	Severe: flooding, ponding, too acid.	Severe: ponding, too acid.	Severe: ponding, flooding, too acid.	Severe: ponding.	Severe: too acid, ponding, flooding.
FkA Fork	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
FoA Fortescue	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
GuA Gullrock	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.

See footnote at end of table.

Table 10.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HyA Hydeland	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
LfA Longshoal	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus, excess salt.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: excess salt, ponding, flooding.
NaD Newhan	Severe: flooding, slope, too sandy.	Severe: slope, too sandy, excess salt.	Severe: slope, too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, too acid, droughty.
NcC*:					
Newhan	Severe: flooding, too sandy.	Severe: too sandy, excess salt.	Severe: slope, too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, too acid, droughty.
Corolla	Severe: flooding, too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy, excess salt.	Severe: too sandy.	Severe: excess salt, droughty.
NeA Newholland	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
NhA Newholland	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, flooding, too acid.	Severe: wetness.	Severe: too acid, wetness, flooding.
PaA Pasquotank	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PeA Pettigrew	Severe: flooding, wetness, percs slowly.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, percs slowly.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
PnA Ponzer	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
PoA Portsmouth	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
PuA Pungo	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.

See footnote at end of table.

Table 10.—Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
RoA Roper	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus, too acid.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
ScA Scuppernong	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
SeA Seabrook	Severe: flooding, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
StA Stockade	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ud. Udorthents					
WaA Wasda	Severe: flooding, wetness, excess humus.	Improbable: excess fines.	Severe: excess humus, wetness, too acid.	Severe: wetness, excess humus.	Severe: too acid, wetness, excess humus.
WeA Weeksville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WkA Weeksville	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
WyA Wysocking	Severe: flooding, wetness, too acid.	Severe: wetness, too acid.	Severe: wetness, too acid.	Severe: wetness.	Severe: too acid, wetness.
YeA Yeopim	Severe: flooding, too acid.	Severe: too acid.	Severe: too acid.	Moderate: wetness.	Severe: too acid.
YoA Yonges	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.—Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AcA—Acredale	Good	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
ArA—Argent	Fair	Fair	Good	Good	Good	Good	Good	Fair	Good	Good.
BaA—Backbay	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
BcA*—Beaches	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
BeE*:										
Beaches	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Newhan	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
BmA—Belhaven	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Good	Fair.
BnA—Belhaven	Very poor.	Very poor.	Poor	Poor	Poor	Good	Good	Poor	Fair	Good.
BoA—Bolling	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BrA—Brookman	Fair	Fair	Good	Good	Good	Good	Good	Fair	Good	Fair.
CaA, CbA, CeA—Carteret	---	---	---	---	---	Good	Very poor.	---	---	Fair.
ChA—Chapanoke	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CoA—Conaby	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good	Fair.
CrB—Corolla	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
DeA—Delway	Very poor.	Very poor.	Very poor.	---	---	Good	Poor	Very poor.	Very poor.	Good.
DoA—Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
DuA—Duckston	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Poor	Very poor.	Very poor.	Fair.
DwB*:										
Duckston	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Poor	Very poor.	Very poor.	Fair.

See footnote at end of table.

Table 11.—Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
DwB*:										
Corolla	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
EaA, EnA---------- Engelhard	Very poor.	Very poor.	Good	Fair	Very poor.	Good	Good	Very poor.	Poor	Good.
FkA---------- Fork	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
FoA---------- Fortescue	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Fair.
GuA---------- Gullrock	Fair	Fair	Good	Good	Good	Good	Fair	Fair	Good	Fair.
HyA---------- Hydeland	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
LfA---------- Longshoal	Very poor.	Very poor.	Very poor.	---	---	Good	Poor	Very poor.	Very poor.	Good.
NaD---------- Newhan	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
NcC*:										
Newhan----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Corolla----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.
NeA---------- Newholland	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NhA---------- Newholland	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
PaA---------- Pasquotank	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
PeA---------- Pettigrew	Fair	Good	Good	Good	Good	Good	Good	Fair	Good	Good.
PnA---------- Ponzer	Fair	Good	Good	Good	Good	Good	Good	Fair	Good	Good.
PoA---------- Portsmouth	Fair	Good	Good	Good	Good	Good	Fair	Good	Good	Good.
PuA---------- Pungo	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good	Fair.
RoA---------- Roper	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
ScA---------- Scuppernong	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good	Fair.

See footnote at end of table.

Table 11.—Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SeA---- Seabrook	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
StA---- Stockade	Good	Good	Good	Good	Good	Good	Fair	Good	Good	Fair.
Ud. Udorthents										
WaA---- Wasda	Fair	Fair	Good	Good	Good	Good	Fair	Fair	Good	Fair.
WeA---- Weeksville	Good	Good	Good	Fair	Fair	Poor	Fair	Good	Fair	Poor.
WkA---- Weeksville	Very poor.	Very poor.	Good	Fair	Poor	Good	Good	Poor	Poor	Good.
WyA---- Wysocking	Good	Good	Good	Good	Good	Good	Poor	Good	Good	Poor.
YeA---- Yeopim	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
YoA---- Yonges	Fair	Good	Fair	Good	Good	Good	Fair	Good	Good	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "moderate" and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AcA Acredale	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
ArA Argent	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
BaA Backbay	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
BcA* Beaches	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: excess salt, wetness, droughty.
BeE*:						
Beaches	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: excess salt, wetness, droughty.
Newhan	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding, slope.	Moderate: slope, flooding.	Severe: excess salt, too acid, droughty.
BmA Belhaven	Severe: excess humus, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: wetness.	Severe: too acid, wetness, excess humus.
BnA Belhaven	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: too acid, ponding, flooding.
BoA Bolling	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: low strength, wetness, flooding.	Moderate: wetness.
BrA Brookman	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
CaA, CbA, CeA Carteret	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: excess salt, ponding, droughty.

See footnote at end of table.

Table 12.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ChA---------- Chapanoke	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: too acid, wetness.
CoA---------- Conaby	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness, excess humus.
CrB---------- Corolla	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: excess salt, droughty.
DeA---------- Delway	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding, flooding.	Severe: excess salt, too acid, ponding.
DoA---------- Dorovan	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding, flooding.	Severe: ponding, flooding, excess humus.
DuA---------- Duckston	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: excess salt, too acid, wetness.
DwB*:						
Duckston---------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: excess salt, too acid, wetness.
Corolla----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: excess salt, droughty.
EaA---------- Engelhard	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness.
EnA---------- Engelhard	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: too acid, ponding, flooding.
FkA---------- Fork	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, flooding.	Moderate: wetness.
FoA---------- Fortescue	Severe: excess humus, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: too acid, wetness.
GuA---------- Gullrock	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness, excess humus.

See footnote at end of table.

Table 12.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HyA---------- Hydeland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: too acid, wetness.
LfA---------- Longshoal	Severe: excess humus, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, ponding, flooding.	Severe: excess salt, ponding, flooding.
NaD---------- Newhan	Severe: cutbanks cave, slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: flooding, slope.	Severe: slope.	Severe: excess salt, too acid, droughty.
NcC*:						
Newhan----------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Severe: excess salt, too acid, droughty.
Corolla----------	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: excess salt, droughty.
NeA---------- Newholland	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness.
NhA---------- Newholland	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: too acid, wetness, flooding.
PaA---------- Pasquotank	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
PeA---------- Pettigrew	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: too acid, wetness, excess humus.
PnA---------- Ponzer	Severe: excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, low strength, wetness.	Severe: too acid, wetness, excess humus.
PoA---------- Portsmouth	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness.
PuA---------- Pungo	Severe: excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, wetness, low strength.	Severe: too acid, wetness, excess humus.
RoA---------- Roper	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: too acid, wetness, excess humus.

See footnote at end of table.

Table 12.—Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ScA—Scuppernong	Severe: cutbanks cave, excess humus, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, flooding, wetness.	Severe: subsides, wetness.	Severe: wetness, excess humus.
SeA—Seabrook	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: droughty.
StA—Stockade	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
Ud. Udorthents						
WaA—Wasda	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness, excess humus.
WeA—Weeksville	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.
WkA—Weeksville	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
WyA—Wysocking	Severe: excess humus, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, low strength.	Severe: flooding, wetness.	Severe: wetness.	Severe: too acid, wetness.
YeA—Yeopim	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength.	Severe: too acid.
YoA—Yonges	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "poor," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AcA Acredale	Severe: wetness, percs slowly.	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
ArA Argent	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
BaA Backbay	Severe: flooding, ponding, percs slowly.	Severe: flooding, excess humus, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
BcA* Beaches	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
BeE*: Beaches	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, wetness.
Newhan	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
BmA Belhaven	Severe: wetness, percs slowly.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, too acid.	Severe: seepage, wetness.	Poor: wetness, too acid.
BnA Belhaven	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding, too acid.
BoA Bolling	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: too clayey, hard to pack.
BrA Brookman	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
CaA, CbA, CeA Carteret	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.

See footnote at end of table.

Table 13.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ChA Chapanoke	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too acid.	Severe: wetness.	Poor: wetness, too acid.
CoA Conaby	Severe: wetness.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: wetness.
CrB Corolla	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
DeA Delway	Severe: flooding, ponding, percs slowly.	Severe: seepage, flooding, excess humus.	Severe: flooding, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus, too acid.
DoA Dorovan	Severe: subsides, flooding, ponding.	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.
DuA Duckston	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
DwB*:					
Duckston	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Corolla	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
EaA Engelhard	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
EnA Engelhard	Severe: flooding, ponding.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding.
FkA Fork	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
FoA Fortescue	Severe: wetness, percs slowly.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, excess humus.	Severe: seepage, wetness.	Poor: wetness, excess humus, too acid.

See footnote at end of table.

Table 13.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GuA Gullrock	Severe: wetness.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, too acid.
HyA Hydeland	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too acid.	Severe: wetness.	Poor: wetness, too acid.
LfA Longshoal	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus, excess salt.
NaD Newhan	Severe: poor filter, slope.	Severe: seepage, flooding, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
NcC*: Newhan	Severe: poor filter.	Severe: seepage, flooding, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Corolla	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
NeA Newholland	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, too acid.
NhA Newholland	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage.	Severe: flooding, seepage, wetness.	Poor: wetness, too acid.
PaA Pasquotank	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
PeA Pettigrew	Severe: wetness, percs slowly.	Severe: excess humus.	Severe: wetness, too clayey, too acid.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
PnA Ponzer	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: wetness, excess humus.	Severe: wetness.	Poor: wetness.
PoA Portsmouth	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.

See footnote at end of table.

Table 13.—Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PuA—Pungo	Severe: subsides, wetness, percs slowly.	Severe: excess humus.	Severe: seepage, wetness, excess humus.	Severe: wetness.	Poor: wetness, excess humus, too acid.
RoA—Roper	Severe: wetness, percs slowly.	Severe: seepage, excess humus, wetness.	Severe: wetness, too acid.	Severe: wetness.	Poor: wetness, too acid.
ScA—Scuppernong	Severe: wetness, percs slowly.	Severe: seepage, excess humus, wetness.	Severe: seepage, wetness, excess humus.	Severe: seepage, wetness.	Poor: wetness, excess humus.
SeA—Seabrook	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy.
StA—Stockade	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, thin layer.
Ud. Udorthents					
WaA—Wasda	Severe: wetness.	Severe: excess humus, wetness.	Severe: wetness, seepage.	Severe: wetness.	Poor: wetness, too acid.
WeA—Weeksville	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
WkA—Weeksville	Severe: flooding, ponding.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding.
WyA—Wysocking	Severe: wetness, percs slowly.	Severe: seepage, excess humus.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, excess humus, too acid.
YeA—Yeopim	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness, too acid.	Severe: wetness.	Poor: too acid.
YoA—Yonges	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AcA Acredale	Poor: wetness.	Improbable: excess fines.	Improbable: too sandy.	Poor: wetness.
ArA Argent	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
BaA Backbay	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
BcA* Beaches	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt.
BeE*:				
Beaches	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt.
Newhan	Good	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, too acid.
BmA Belhaven	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
BnA Belhaven	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness, too acid.
BoA Bolling	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
BrA Brookman	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
CaA, CbA, CeA Carteret	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, wetness.
ChA Chapanoke	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.

See footnote at end of table.

Table 14.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CoA Conaby	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness, too acid.
CrB Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt.
DeA Delway	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, excess salt, wetness.
DoA Dorovan	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
DuA Duckston	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness, too acid.
DwB*: Duckston	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, wetness, too acid.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt.
EaA, EnA Engelhard	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
FkA Fork	Poor: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
FoA Fortescue	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
GuA Gullrock	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
HyA Hydeland	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
LfA Longshoal	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, excess salt, wetness.

See footnote at end of table.

Table 14.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NaD Newhan	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, too acid.
NcC*: Newhan	Good	Probable	Improbable: too sandy.	Poor: too sandy, excess salt, too acid.
Corolla	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, excess salt.
NeA, NhA Newholland	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
PaA Pasquotank	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
PeA Pettigrew	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
PnA Ponzer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness, too acid.
PoA Portsmouth	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness, too acid.
PuA Pungo	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness, too acid.
RoA Roper	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
ScA Scuppernong	Poor: wetness.	Improbable: excess humus, excess fines.	Improbable: excess humus, excess fines.	Poor: excess humus, wetness.
SeA Seabrook	Fair: wetness.	Probable	Improbable: too sandy.	Poor: too sandy.
StA Stockade	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ud. Udorthents				

See footnote at end of table.

Table 14.—Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WaA Wasda	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too acid.
WeA, WkA Weeksville	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
WyA Wysocking	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, too acid.
YeA Yeopim	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too acid.
YoA Yonges	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.—Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
AcA Acredale	Slight	Severe: wetness.	Severe: slow refill, cutbanks cave.	Favorable	Wetness, soil blowing, percs slowly.	Erodes easily, wetness, soil blowing.	Wetness, erodes easily, percs slowly.
ArA Argent	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
BaA Backbay	Moderate: seepage.	Severe: piping, ponding.	Severe: slow refill.	Ponding, flooding.	Ponding, flooding, excess salt.	Ponding	Wetness, excess salt.
BcA* Beaches	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: salty water, cutbanks cave.	Flooding, cutbanks cave.	Wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, excess salt, droughty.
BeE*: Beaches	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: salty water, cutbanks cave.	Flooding, slope, cutbanks cave.	Slope, wetness, droughty.	Wetness, too sandy, soil blowing.	Wetness, excess salt, droughty.
Newhan	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
BmA Belhaven	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Subsides, too acid.	Wetness, soil blowing, too acid.	Wetness, soil blowing.	Wetness.
BnA Belhaven	Severe: seepage.	Severe: piping, ponding.	Severe: slow refill, cutbanks cave.	Ponding, flooding, subsides.	Ponding, soil blowing, flooding.	Ponding, soil blowing.	Wetness.
BoA Bolling	Moderate: seepage.	Severe: wetness.	Severe: cutbanks cave.	Favorable	Wetness, fast intake.	Wetness, soil blowing.	Favorable.
BrA Brookman	Slight	Severe: hard to pack, wetness.	Moderate: slow refill.	Percs slowly	Wetness, percs slowly.	Wetness	Wetness, percs slowly.

See footnote at end of table.

Table 15.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
CaA, CbA, CeA----- Carteret	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: salty water, cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, droughty, fast intake.	Ponding, too sandy, soil blowing.	Wetness, excess salt, droughty.
ChA---------- Chapanoke	Slight---------	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Too acid-------	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
CoA---------- Conaby	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Subsides, cutbanks cave, too acid.	Wetness, soil blowing, rooting depth.	Wetness, too sandy, soil blowing.	Wetness.
CrB---------- Corolla	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, excess salt.	Slope, wetness, droughty.	Wetness, too sandy, soil blowing.	Excess salt, droughty.
DeA---------- Delway	Severe: seepage.	Severe: excess humus, ponding, excess salt.	Severe: slow refill, salty water.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding--------	Wetness, excess salt.
DoA---------- Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, soil blowing, flooding.	Ponding, soil blowing.	Wetness.
DuA---------- Duckston	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, excess salt.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, excess salt, droughty.
DwB*: Duckston---------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, excess salt.	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Wetness, excess salt, droughty.
Corolla----------	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, excess salt.	Slope, wetness, droughty.	Wetness, too sandy, soil blowing.	Excess salt, droughty.

See footnote at end of table.

Table 15.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
EaA—Engelhard	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, too acid.	Wetness, fast intake, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
EnA—Engelhard	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding, cutbanks cave.	Ponding, fast intake, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily.
FkA—Fork	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Favorable	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
FoA—Fortescue	Severe: seepage.	Severe: excess humus, wetness.	Slight	Subsides, too acid.	Wetness, erodes easily, too acid.	Erodes easily, wetness.	Wetness, erodes easily.
GuA—Gullrock	Severe: seepage.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Subsides, cutbanks cave, too acid.	Wetness, too acid.	Wetness	Wetness.
HyA—Hydeland	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Percs slowly, too acid.	Wetness, percs slowly, too acid.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
LfA—Longshoal	Severe: seepage.	Severe: excess humus, ponding, excess salt.	Severe: salty water.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding	Wetness, excess salt.
NaD—Newhan	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
NcC*:							
Newhan	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.	Droughty.
Corolla	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, excess salt.	Slope, wetness, droughty.	Wetness, too sandy, soil blowing.	Excess salt, droughty.

See footnote at end of table.

Table 15.—Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
NeA—Newholland	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Too acid	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
NhA—Newholland	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, too acid.	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
PaA—Pasquotank	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
PeA—Pettigrew	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, subsides, too acid.	Wetness, soil blowing, percs slowly.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
PnA—Ponzer	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, subsides, too acid.	Wetness, soil blowing, percs slowly.	Wetness, soil blowing.	Wetness, percs slowly.
PoA—Portsmouth	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, too acid.	Wetness, soil blowing.	Wetness, too sandy, soil blowing.	Wetness.
PuA—Pungo	Severe: seepage.	Severe: excess humus, wetness.	Severe: slow refill.	Subsides, too acid.	Wetness, soil blowing, percs slowly.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
RoA—Roper	Slight	Severe: wetness.	Severe: slow refill.	Subsides, too acid.	Wetness, soil blowing, too acid.	Erodes easily, wetness, soil blowing.	Wetness, erodes easily.
ScA—Scuppernong	Severe: seepage.	Severe: excess humus, wetness.	Slight	Subsides	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.
SeA—Seabrook	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness, droughty, fast intake.	Wetness, too sandy, soil blowing.	Droughty.
StA—Stockade	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly	Wetness, soil blowing.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.

See footnote at end of table.

Table 15.—Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ud. Udorthents							
WaA—Wasda	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Subsides, too acid.	Wetness, soil blowing, too acid.	Wetness, soil blowing.	Wetness.
WeA—Weeksville	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
WkA—Weeksville	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, flooding.	Ponding, erodes easily, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
WyA—Wysocking	Severe: seepage.	Severe: excess humus, wetness.	Severe: slow refill.	Subsides, too acid.	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
YeA—Yeopim	Slight	Severe: wetness.	Severe: slow refill.	Too acid	Wetness	Erodes easily, wetness.	Erodes easily.
YoA—Yonges	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Favorable	Wetness, soil blowing.	Wetness, soil blowing.	Wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.—Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
AcA—Acredale	0-7	Silt loam	CL, ML, CL-ML	A-4, A-6	100	100	80-100	50-90	10-30	NP-15
	7-13	Silt loam, loam	CL, ML, CL-ML	A-4, A-6	100	100	80-100	50-90	10-30	NP-15
	13-51	Silt loam, silty clay loam, clay loam, loam.	CL	A-4, A-5, A-6, A-7	100	100	90-100	70-95	20-45	7-25
	51-62	Sandy loam, loamy sand, sand.	SM, SC, SC-SM, SW-SM	A-2, A-3, A-4	100	100	55-75	5-40	10-30	NP-15
ArA—Argent	0-14	Loam	CL, CL-ML	A-4, A-6, A-7	100	98-100	90-100	51-80	20-43	5-20
	14-58	Clay, sandy clay, silty clay, silty clay loam, clay loam.	CL, CH	A-6, A-7	100	98-100	90-100	55-98	30-60	11-40
	58-65	Sandy clay loam, clay loam, silty clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	100	98-100	90-100	40-80	22-49	6-28
BaA—Backbay	0-14	Mucky peat	PT	A-8	---	---	---	---	---	---
	14-21	Sandy loam, loam, silt loam.	SM, CL, SC-SM, CL-ML	A-4, A-6	100	100	60-100	35-90	10-22	NP-12
	21-62	Stratified sandy loam to silty clay loam.	SM, ML, CL, SC	A-4, A-6	100	100	60-100	35-95	10-40	NP-20
BcA*—Beaches	0-60	Sand	SP	A-1, A-3	100	75-100	5-85	0-5	---	NP
BeE*:										
Beaches	0-60	Sand	SP	A-1, A-3	100	75-100	5-85	0-5	---	NP
Newhan	0-80	Fine sand, sand, coarse sand.	SP, SP-SM	A-3	95-100	95-100	60-75	0-5	10-14	NP
BmA—Belhaven	0-40	Muck	PT	---	---	---	---	---	---	---
	40-53	Sandy loam, fine sandy loam, mucky sandy loam, mucky loam.	SM, SC, SC-SM	A-2, A-4	100	100	60-85	30-49	20-30	NP-10
	53-65	Loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	100	100	80-100	36-95	20-45	4-15

See footnote at end of table.

Table 16.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
BnA---------- Belhaven	0-26	Muck----------	PT	---	---	---	---	---	---	---
	26-32	Sandy loam, fine sandy loam, mucky sandy loam, mucky loam.	SM, SC, SC-SM	A-2, A-4	100	100	60-85	30-49	20-30	NP-10
	32-65	Loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	100	100	80-100	36-95	20-45	4-15
	65-72	Stratified sand to fine sand.	SM, SP-SM	A-2, A-3	100	100	50-80	5-35	10-15	NP
BoA---------- Bolling	0-17	Loamy fine sand	SM, ML	A-2, A-4	100	100	90-100	25-55	15-20	NP-7
	17-48	Clay loam, sandy clay loam, silty clay loam.	CL, SC	A-6, A-7	95-100	75-100	70-95	40-85	30-45	11-20
	48-70	Sand, loamy sand, sandy loam, sandy clay loam.	SC, SM, CL	A-2, A-4, A-6	95-100	70-100	65-100	20-85	10-30	NP-20
BrA---------- Brookman	0-7	Loam----------	CL, ML, CL-ML	A-6, A-4	100	95-100	75-100	51-81	25-40	3-19
	7-31	Sandy clay, clay, silty clay loam, clay loam.	CH, CL	A-7, A-6	100	98-100	85-100	55-91	37-65	18-41
	31-42	Sandy clay loam, fine sandy loam, clay loam.	SC, CL, ML, SM	A-4, A-6, A-7	95-100	90-100	80-100	35-80	30-45	8-20
	42-70	Fine sandy loam, loam, sandy clay loam, loamy sand.	SM, SC, CL, ML	A-4, A-6, A-7	95-100	90-100	80-100	35-80	20-40	NP-20
CaA, CbA, CeA---- Carteret	0-80	Sand, fine sand	SP, SP-SM	A-3	95-100	90-100	60-90	4-10	10-14	NP
ChA---------- Chapanoke	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	85-100	60-90	15-35	NP-7
	5-50	Silt loam, silty clay loam, loam, clay loam.	CL, CL-ML	A-4, A-6, A-7	100	100	85-100	60-95	22-49	6-30
	50-58	Sandy loam, fine sandy loam, loamy fine sand, loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	100	100	50-85	15-55	15-35	NP-7
	58-72	Stratified sand to clay.	SM, ML, SC-SM, CL-ML	A-2, A-4	98-100	98-100	50-95	18-80	10-25	NP-7
CoA---------- Conaby	0-13	Muck----------	PT	---	---	---	---	---	---	---
	13-70	Fine sand, fine sandy loam, loamy fine sand.	SM, SP-SM	A-2, A-3	100	96-100	65-85	5-25	15-30	NP
CrB---------- Corolla	0-62	Sand, fine sand, coarse sand.	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	10-14	NP

See footnote at end of table.

Table 16.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
DeA	0-36	Muck	PT	A-8	---	---	---	---	---	---
Delway	36-80	Loam, clay loam, silty clay loam, silt loam, sandy clay loam.	CL, CL-ML	A-4, A-6	100	95-100	65-100	60-95	25-45	5-15
DoA	0-5	Muck	PT	---	---	---	---	---	---	---
Dorovan	5-70	Muck, mucky peat	PT	---	---	---	---	---	---	---
DuA	0-12	Sand	SP-SM, SP	A-2, A-3	100	95-100	60-75	3-12	10-15	NP
Duckston	12-60	Sand, fine sand	SP-SM, SP	A-2, A-3	100	95-100	60-75	3-12	10-15	NP
DwB*:										
Duckston	0-12	Sand	SP-SM, SP	A-2, A-3	100	95-100	60-75	3-12	10-15	NP
	12-60	Sand, fine sand, coarse sand.	SP-SM, SP	A-2, A-3	100	95-100	60-75	3-12	10-15	NP
Corolla	0-62	Sand, fine sand, coarse sand.	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	10-14	NP
EaA, EnA	0-8	Loamy very fine sand.	ML	A-4	100	100	90-100	60-90	15-25	NP-4
Engelhard	8-60	Loamy very fine sand, silt loam, silt.	ML	A-4	100	100	90-100	60-90	15-25	NP-4
	60-73	Loamy very fine sand, silt loam, silty clay loam.	ML, CL-ML, CL	A-4	100	100	90-100	80-95	15-30	NP-10
FkA	0-8	Fine sandy loam	ML, SM, CL, SC	A-4	95-100	90-100	70-100	40-80	10-30	NP-10
Fork	8-46	Clay loam, sandy clay loam, loam, fine sandy loam.	SC, CL, ML, SM	A-4, A-6, A-7	95-100	90-100	80-100	35-80	32-46	8-20
	46-62	Loamy sand, sandy loam, sand.	SC, SM	A-2, A-4, A-6	95-100	70-100	65-100	20-85	10-30	NP-20
FoA	0-10	Silt loam	CL-ML, ML, CL	A-4	100	100	85-100	60-90	20-40	NP-10
Fortescue	10-31	Loam, silt loam, silty clay loam, clay loam, silty clay.	CL	A-4, A-6, A-7-6	100	100	90-100	75-95	22-49	8-25
	31-55	Muck	PT	---	---	---	---	---	---	---
	55-61	Variable	---	---	---	---	---	---	---	---
GuA	0-13	Muck	PT	A-8	---	---	---	---	---	---
Gullrock	13-33	Loamy very fine sand, very fine sandy loam, silt loam.	ML, CL-ML	A-4	100	95-100	85-100	50-90	10-20	NP-7
	33-70	Loamy very fine sand, silt loam, silt, very fine sandy loam, loam.	SM, ML	A-4	100	95-100	80-100	35-85	10-20	NP-4

See footnote at end of table.

Table 16.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
HyA	0-11	Silt loam	ML, CL-ML	A-4	100	95-100	85-100	60-99	15-35	NP-7
Hydeland	11-31	Loam, silt loam, silty clay loam, clay loam.	CL	A-4, A-5, A-6, A-7-5	100	95-100	90-100	70-99	25-45	7-20
	31-58	Loam, clay loam, silt loam.	CL	A-4, A-5, A-6, A-7-5	100	95-100	90-100	70-95	20-40	5-20
	58-66	Sandy loam, loam, silt loam.	CL, CL-ML	A-4, A-5, A-6, A-7-5	100	90-100	85-100	36-90	15-45	NP-20
LfA	0-72	Mucky peat, muck	PT	A-8	---	---	---	---	---	---
Longshoal										
NaD	0-80	Fine sand, sand, coarse sand.	SP, SP-SM	A-3	95-100	95-100	60-75	0-5	10-14	NP
Newhan										
NcC*:										
Newhan	0-80	Fine sand, sand, coarse sand.	SP, SP-SM	A-3	95-100	95-100	60-75	0-5	10-14	NP
Corolla	0-60	Sand, fine sand, coarse sand.	SW, SP-SM, SP	A-2, A-3	80-100	75-100	60-95	1-12	10-14	NP
NeA, NhA	0-19	Mucky loamy sand	OL, SM, SC-SM, ML	A-4, A-6	100	95-100	65-95	30-55	20-30	NP-4
Newholland	19-27	Loamy sand, sandy loam, fine sandy loam.	SM, SC-SM, ML, CL-ML	A-4, A-5	100	95-100	65-95	30-55	15-30	NP-7
	27-44	Sandy loam, loam, sandy clay loam, fine sandy loam.	SC-SM, SC, CL, CL-ML	A-2-4, A-4	100	95-100	60-95	35-65	20-35	NP-10
	44-62	Sand, loamy sand, sandy loam, fine sandy loam.	SM, SC-SM	A-2-4, A-3	100	95-100	50-75	5-50	10-20	NP-4
PaA	0-6	Silt loam	CL-ML, ML	A-4	100	100	90-100	65-95	20-30	NP-7
Pasquotank	6-55	Loam, very fine sandy loam, silt loam.	CL-ML, ML	A-4	100	100	90-98	65-95	20-30	NP-7
	55-60	Loamy sand, loamy fine sand, fine sand, silty clay loam, clay.	SM, SP-SM, SC	A-2	100	100	50-80	11-30	10-20	NP-10
PeA	0-12	Muck	PT	---	---	---	---	---	---	---
Pettigrew	12-18	Loam, clay loam, silty clay loam, sandy clay loam.	CL	A-6, A-7	100	100	85-100	65-90	25-49	11-25
	18-36	Clay loam, clay, silty clay.	CL, CH	A-7	100	100	85-100	70-95	42-70	20-40
	36-65	Variable	---	---	---	---	---	---	---	---
PnA	0-21	Muck	PT	---	---	---	---	---	---	---
Ponzer	21-71	Very fine sandy loam, silty clay loam, silt loam.	SM, ML, SC, CL	A-2, A-4, A-6	100	100	60-95	30-95	25-40	NP-20

See footnote at end of table.

Table 16.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
PoA---------- Portsmouth	0-16	Mucky sandy loam	SM, SC-SM, ML, SC	A-2, A-4	98-100	98-100	65-95	30-65	20-30	NP-10
	16-30	Fine sandy loam, sandy clay loam, clay loam, loam.	SC, CL-ML, CL	A-4, A-6	98-100	98-100	75-95	36-70	20-40	7-18
	30-70	Stratified coarse sand to loamy sand.	SP-SM, SP, SM	A-1, A-2, A-3	98-100	98-100	45-65	3-25	10-20	NP
PuA---------- Pungo	0-10	Muck----------	PT	---	---	---	---	---	---	---
	10-80	Muck----------	PT	---	---	---	---	---	---	---
	80-85	Silt loam, loam, silty clay loam, clay, silty clay, sandy clay.	CH, CL, SC	A-7, A-6	100	95-100	85-100	45-95	35-65	15-35
RoA---------- Roper	0-13	Muck----------	PT	---	---	---	---	---	---	---
	13-18	Silt loam, loam, silty clay loam, mucky loam, mucky silt loam.	CL	A-4, A-6	100	100	90-100	60-95	20-40	8-25
	18-42	Silt loam, silty clay loam, loam.	CL	A-4, A-6	100	100	90-100	60-95	20-40	8-25
	42-72	Variable---------	---	---	---	---	---	---	---	---
ScA---------- Scuppernong	0-33	Muck----------	PT	---	---	---	---	---	---	---
	33-72	Silt loam, silty clay loam, clay loam.	ML, CL-ML	A-4	100	100	94-98	90-95	20-30	NP-7
SeA---------- Seabrook	0-5	Fine sand--------	SM, SP-SM	A-2, A-3	95-100	90-100	85-99	5-25	10-20	NP
	5-80	Loamy fine sand, fine sand, sand, loamy sand.	SM, SP-SM	A-2, A-3	95-100	90-100	85-100	5-25	10-20	NP
StA---------- Stockade	0-6	Mucky sandy loam	SM, ML	A-2-4, A-4	100	100	85-100	20-60	10-30	NP-7
	6-43	Sandy clay loam, fine sandy loam, loam, clay loam.	SC	A-4, A-6, A-2	100	100	90-100	28-45	28-40	9-18
	43-70	Variable---------	---	---	---	---	---	---	---	---
Ud. Udorthents										
WaA---------- Wasda	0-13	Muck----------	PT	---	---	---	---	---	---	---
	13-25	Fine sandy loam, sandy loam, mucky sandy loam, mucky loam.	ML, SM	A-4	98-100	95-100	75-99	45-70	20-35	NP-3
	25-43	Clay loam, sandy clay loam, sandy loam.	ML, CL, CL-ML	A-4, A-6	98-100	95-100	75-99	50-80	20-40	6-18
	43-72	Sand, loamy sand, sandy loam, loam.	ML, SM, CL-ML, SC-SM	A-4, A-5	98-100	95-100	75-95	30-60	15-25	NP-7

See footnote at end of table.

Table 16.—Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
WeA, WkA--------- Weeksville	0-13	Loam------------- Loam, very fine sandy loam, silt loam.	ML, CL-ML ML, CL-ML	A-4, A-5 A-4, A-5	100 100	100 100	85-100 85-100	60-95 60-95	20-30 15-30	NP-7 NP-7
	13-45									
	45-72	Fine sandy loam, loam, silt loam.	SM	A-2, A-4	100	100	60-90	20-50	15-25	NP-3
WyA-------------- Wysocking	0-29	Very fine sandy loam, silt, silt loam.	ML	A-4	100	100	80-100	50-95	10-25	NP-4
	29-93	Muck--------------	PT	---	---	---	---	---	---	---
YeA-------------- Yeopim	0-3	Silt loam-------- Silt loam, silty clay loam, clay loam, loam.	ML, CL-ML CL	A-4 A-4, A-6, A-7	100 100	100 100	85-100 90-100	55-80 70-90	15-30 22-49	NP-7 8-30
	3-54									
	54-65	Stratified sand to loam.	SM, ML, SC-SM, SP-SM	A-2, A-3, A-4	98-100	98-100	50-95	5-80	10-20	NP-7
YoA-------------- Yonges	0-7	Loam--------------	SM, SC-SM, ML	A-4	100	100	70-85	40-55	15-30	NP-7
	7-51	Loam, sandy clay loam.	CL-ML, CL, SC, SC-SM	A-4, A-6, A-7	100	100	95-100	40-70	20-45	6-28
	51-58	Fine sandy loam, sandy clay loam, clay loam, sandy clay.	CL, ML, SC, SM	A-4, A-6	100	100	80-100	40-65	20-40	3-22
	58-65	Variable---------	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.—Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
AcA	0-7	8-15	1.20-1.35	0.6-2.0	0.17-0.20	3.6-5.5	0	Low	0.37	3	3	2-8
Acredale	7-13	12-20	1.20-1.35	0.6-2.0	0.17-0.20	3.6-5.5	0	Low	0.37			
	13-51	18-34	1.25-1.40	0.06-0.2	0.13-0.20	4.5-7.3	0	Moderate	0.37			
	51-62	5-18	1.30-1.50	2.0-20	0.04-0.12	4.5-7.3	0	Low	0.24			
ArA	0-14	10-27	1.30-1.50	0.6-2.0	0.15-0.20	3.6-6.0	0-2	Low	0.24	5	6	2-8
Argent	14-58	25-60	1.30-1.50	0.06-0.2	0.14-0.18	3.6-6.0	0-2	Moderate	0.32			
	58-65	20-40	1.20-1.50	0.06-0.6	0.12-0.16	4.5-8.4	0-2	Moderate	0.32			
BaA	0-14	0	0.10-0.20	2.0-6.0	0.15-0.22	4.5-6.0	4-16	Low	----	5	8	20-60
Backbay	14-21	10-27	1.15-1.35	0.2-2.0	0.16-0.20	5.1-7.3	2-8	Low	0.20			
	21-62	8-34	1.20-1.40	0.2-2.0	0.14-0.20	5.1-7.3	0-2	Moderate	0.20			
BcA*	0-60	0-1	1.35-1.85	>6.0	0.03-0.05	5.1-7.8	4-32	Low	0.05	5	1	0-.1
Beaches												
BeE*:												
Beaches	0-60	0-1	1.35-1.85	>6.0	0.03-0.05	5.1-7.8	4-32	Low	0.05	5	1	0-.1
Newhan	0-80	0	1.60-1.75	>20	<0.05	3.5-7.8	4-16	Low	0.10	5	1	0-.5
BmA	0-40	---	0.40-0.65	0.2-6.0	0.20-0.26	2.0-4.5	0-2	Low	----	2	2	20-100
Belhaven	40-53	5-15	1.45-1.65	2.0-6.0	0.10-0.24	3.5-5.5	0-2	Low	0.24			
	53-65	10-35	1.30-1.45	0.2-0.6	0.12-0.20	3.5-5.5	0-2	Low	0.24			
BnA	0-26	---	0.40-0.65	0.2-6.0	0.20-0.26	2.0-4.5	0-2	Low	----	2	2	20-100
Belhaven	26-32	5-15	1.45-1.65	2.0-6.0	0.10-0.24	3.5-5.5	0-2	Low	0.24			
	32-65	10-35	1.30-1.45	0.2-0.6	0.12-0.20	3.5-5.5	0-2	Low	0.24			
	65-72	2-8	1.60-1.70	6.0-20	0.04-0.09	3.5-5.5	0-2	Low	0.15			
BoA	0-17	5-15	1.40-1.60	2.0-6.0	0.10-0.15	4.5-7.3	0	Low	0.17	5	2	.5-6
Bolling	17-48	20-35	1.30-1.60	0.6-2.0	0.13-0.19	4.5-7.3	0	Low	0.28			
	48-70	2-35	1.20-1.60	0.6-20	0.08-0.22	4.5-7.3	0	Low	0.24			
BrA	0-7	5-30	1.20-1.45	0.6-2.0	0.15-0.20	4.5-6.5	<2	Low	0.24	4	5	4-19
Brookman	7-31	35-55	1.30-1.50	0.6-2.0	0.18-0.22	4.5-6.5	<2	Moderate	0.28			
	31-42	18-35	1.30-1.60	0.6-2.0	0.16-0.21	4.5-7.8	0	Moderate	0.32			
	42-70	10-35	1.20-1.60	0.6-2.0	0.14-0.21	4.5-7.8	0	Low	0.32			
CaA	0-80	2-8	1.45-1.60	>6.0	0.02-0.10	5.6-8.4	16-80	Low	0.15	5	1	.5-8
Carteret												
CbA	0-80	2-8	1.45-1.60	>6.0	0.02-0.10	5.6-8.4	4-8	Low	0.15	5	1	.5-8
Carteret												
CeA	0-80	2-8	1.45-1.60	>6.0	0.02-0.10	5.6-8.4	2-4	Low	0.15	5	1	.5-8
Carteret												
ChA	0-5	7-27	1.30-1.50	2.0-6.0	0.15-0.24	3.5-6.5	0-2	Low	0.43	5	5	.5-8
Chapanoke	5-50	18-35	1.30-1.50	0.2-0.6	0.15-0.22	3.5-6.5	0-2	Low	0.43			
	50-58	7-27	1.30-1.50	0.2-0.6	0.15-0.24	3.5-6.5	0-2	Low	0.37			
	58-72	2-15	1.45-1.65	0.2-2.0	0.07-0.15	3.5-6.5	0-2	Low	0.20			

See footnote at end of table.

Table 17.—Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
CoA	0-13	---	0.40-0.65	0.2-2.0	0.20-0.46	3.5-5.5	0-2	Low	---	5	2	20-60
Conaby	13-70	5-12	1.60-1.75	2.0-6.0	0.04-0.10	3.5-5.5	0-2	Low	0.10			
CrB	0-62	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	4-16	Low	0.10	5	1	0-.5
Corolla												
DeA	0-36	---	0.15-0.50	2.0-20	0.20-0.50	3.5-5.5	16-70	Low	---	2	2	30-70
Delway	36-80	12-35	1.15-1.40	0.2-0.6	0.14-0.18	4.5-7.8	16-70	Low	0.28			
DoA	0-5	---	0.25-0.40	0.6-2.0	0.20-0.46	3.6-4.4	<2	---	---	3	2	20-80
Dorovan	5-70	---	0.35-0.55	0.6-2.0	0.20-0.46	3.6-4.4	<2	---	---			
DuA	0-12	0-4	1.60-1.70	>20	0.02-0.08	3.5-8.4	8-16	Low	0.10	5	1	.5-3
Duckston	12-60	0-4	1.60-1.70	>20	0.02-0.05	3.5-8.4	4-8	Low	0.10			
DwB*:												
Duckston	0-12	0-4	1.60-1.70	>20	0.02-0.08	3.5-8.4	8-16	Low	0.10	5	1	.5-3
	12-60	0-4	1.60-1.70	>20	0.02-0.05	3.5-8.4	4-8	Low	0.10			
Corolla	0-62	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	4-16	Low	0.10	5	1	0-.5
EaA, EnA	0-8	0-5	1.20-1.60	2.0-6.0	0.10-0.28	3.5-5.5	0-2	Low	0.49	5	5	2-8
Engelhard	8-60	0-5	1.20-1.60	2.0-6.0	0.10-0.18	4.5-7.3	0-2	Low	0.49			
	60-73	5-30	1.15-1.60	2.0-6.0	0.10-0.24	4.5-7.3	0-2	Low	0.37			
FkA	0-8	10-27	1.20-1.50	2.0-6.0	0.14-0.21	4.5-6.0	0-2	Low	0.37	5	5	1-8
Fork	8-46	18-35	1.30-1.60	0.6-2.0	0.16-0.21	4.5-7.3	0-2	Low	0.32			
	46-62	2-35	1.20-1.60	0.6-20	0.08-0.22	5.6-7.3	0-2	Low	0.24			
FoA	0-10	7-27	1.20-1.40	0.6-2.0	0.13-0.21	3.5-5.5	0-2	Low	0.37	5	5	2-12
Fortescue	10-31	18-50	1.20-1.40	0.2-0.6	0.15-0.21	3.5-5.5	0-2	Low	0.32			
	31-55	---	0.40-0.60	0.2-6.0	0.24-0.46	3.5-5.5	0-2	Low	---			
	55-61	---	---	---	---	---	---	---	---			
GuA	0-13	---	0.40-0.75	0.2-2.0	0.20-0.26	3.5-6.0	0	Low	---	5	2	20-60
Gullrock	13-33	2-10	1.00-1.65	2.0-6.0	0.04-0.10	3.5-6.0	0	Low	0.24			
	33-70	0-5	1.35-1.65	2.0-6.0	0.10-0.14	3.5-7.8	0	Low	0.28			
HyA	0-11	5-18	1.30-1.50	0.6-2.0	0.12-0.20	3.5-5.5	0	Low	0.17	5	5	3-10
Hydeland	11-31	18-35	1.30-1.40	0.2-0.6	0.15-0.20	3.5-5.5	0	Low	0.43			
	31-58	12-35	1.30-1.40	0.2-0.6	0.15-0.20	3.5-7.3	0	Low	0.43			
	58-66	5-35	1.30-1.45	0.2-2.0	0.12-0.20	3.5-7.3	0	Low	0.43			
LfA	0-72	---	0.15-0.50	2.0-20	0.20-0.50	4.5-8.4	16-70	Low	---	3	2	30-70
Longshoal												
NaD	0-80	0	1.60-1.75	>20	<0.05	3.5-7.8	4-16	Low	0.10	5	1	0-.5
Newhan												
NcC*:												
Newhan	0-80	0	1.60-1.75	>20	<0.05	3.5-7.8	4-16	Low	0.10	5	1	0-.5
Corolla	0-60	0-3	1.60-1.70	>20	0.01-0.03	5.6-7.8	4-16	Low	0.10	5	1	0-.5
NeA	0-19	2-20	1.25-1.45	2.0-6.0	0.18-0.24	3.5-5.5	0	Low	0.15	5	3	8-18
Newholland	19-27	2-20	1.40-1.65	6.0-20	0.06-0.10	3.5-5.5	0	Low	0.15			
	27-44	12-27	1.45-1.65	6.0-20	0.06-0.12	3.5-5.5	0	Low	0.17			
	44-62	1-18	1.45-1.55	6.0-20	0.60-0.12	3.5-5.5	0	Low	0.15			

See footnote at end of table.

Table 17.—Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
NhA	0-19	2-20	1.25-1.45	2.0-6.0	0.18-0.24	3.5-5.5	0	Low	0.15	5	3	8-18
Newholland	19-27	2-20	1.40-1.65	6.0-20	0.06-0.10	3.5-5.5	0	Low	0.15			
	27-44	12-27	1.45-1.65	6.0-20	0.06-0.12	3.5-5.5	0	Low	0.17			
	44-62	1-18	1.45-1.55	6.0-20	0.06-0.12	3.5-5.5	0	Low	0.15			
PaA	0-6	5-18	1.30-1.50	0.6-2.0	0.18-0.25	5.0-7.4	0-2	Low	0.43	5	5	2-5
Pasquotank	6-55	5-18	1.30-1.50	0.6-2.0	0.15-0.20	5.0-7.4	0-2	Low	0.43			
	55-60	3-45	1.50-1.70	2.0-6.0	0.05-0.10	5.0-7.4	0-2	Low	0.32			
PeA	0-12	---	0.40-0.65	0.2-6.0	0.24-0.46	3.5-5.5	0-2	Low	----	5	2	20-90
Pettigrew	12-18	10-30	1.30-1.40	0.06-0.2	0.15-0.22	3.5-5.5	0-2	Moderate	0.17			
	18-36	35-60	1.20-1.35	0.02-0.06	0.12-0.18	3.5-5.5	0-2	High	0.32			
	36-65	---	---	---	---	5.6-7.8	---	---	----			
PnA	0-21	---	0.40-0.65	0.06-2.0	0.35-0.45	2.0-4.5	0-2	Low	----	2	2	20-80
Ponzer	21-71	5-34	1.30-1.60	0.2-2.0	0.10-0.24	3.5-7.8	0-2	Low	0.24			
PoA	0-16	10-25	1.10-1.30	2.0-6.0	0.15-0.20	3.5-5.5	0-2	Low	0.24	5	3	8-15
Portsmouth	16-30	20-35	1.45-1.55	0.6-2.0	0.14-0.20	3.5-5.5	0-2	Low	0.28			
	30-70	2-10	1.40-1.65	6.0-20	0.02-0.05	3.5-6.0	0-2	Low	0.17			
PuA	0-10	---	0.35-0.60	0.6-6.0	0.20-0.26	2.0-4.5	0-2	Low	----	3	2	20-100
Pungo	10-80	---	0.35-0.60	0.06-0.2	0.20-0.26	2.0-4.5	0-2	Low	----			
	80-85	35-60	1.25-1.35	0.2-6.0	0.12-0.18	3.5-7.3	0-2	Moderate	0.24			
RoA	0-13	---	0.40-0.65	0.2-6.0	0.24-0.46	3.5-5.5	0-2	Low	----	5	2	20-50
Roper	13-18	18-35	1.30-1.40	0.2-0.6	0.16-0.24	3.5-5.5	0-2	Low	0.43			
	18-42	18-35	1.30-1.40	0.2-0.6	0.16-0.24	3.5-7.8	0-2	Low	0.43			
	42-72	---	---	---	---	3.5-7.8	---	---	----			
ScA	0-33	---	0.35-0.45	0.2-6.0	0.35-0.45	2.0-4.5	0-2	Low	----	2	2	20-100
Scuppernong	33-72	10-34	1.25-1.45	0.2-6.0	0.18-0.28	3.5-7.3	0-2	Low	0.32			
SeA	0-5	2-12	1.30-1.60	6.0-20	0.05-0.11	4.5-7.3	0	Low	0.10	5	2	.5-2
Seabrook	5-80	2-12	1.30-1.60	6.0-20	0.02-0.09	4.5-7.3	0	Low	0.10			
StA	0-6	10-15	1.30-1.50	0.6-2.0	0.15-0.24	4.0-6.5	0-2	Low	0.20	5	3	3-19
Stockade	6-43	18-30	1.40-1.70	0.6-2.0	0.12-0.17	4.0-6.5	0-2	Low	0.28			
	43-70	---	---	2.0-20	---	---	---	---	----			
Ud.												
Udorthents												
WaA	0-13	---	0.40-0.65	0.2-0.6	0.20-0.46	3.5-5.5	0-2	---	----	5	2	20-50
Wasda	13-25	15-25	1.20-1.50	0.6-2.0	0.14-0.20	3.5-5.5	0-2	Low	0.20			
	25-43	18-35	1.35-1.60	0.6-2.0	0.12-0.18	3.5-5.5	0-2	Low	0.20			
	43-72	8-20	1.35-1.60	0.6-2.0	0.12-0.18	5.1-7.8	0-2	Low	0.24			
WeA, WkA	0-13	5-18	1.30-1.50	0.6-2.0	0.18-0.26	4.5-5.5	0-2	Low	0.43	5	5	3-8
Weeksville	13-45	5-18	1.30-1.50	0.6-2.0	0.16-0.24	4.5-5.5	0-2	Low	0.43			
	45-72	5-18	1.40-1.60	0.6-2.0	0.10-0.15	4.5-6.0	0-2	Low	0.43			
WyA	0-29	1-18	1.29-1.38	2.0-6.0	0.10-0.20	3.5-5.5	0	Low	0.43	3	5	2-8
Wysocking	29-93	0	---	0.2-6.0	0.20-0.26	3.5-5.5	0	Low	----			
YeA	0-3	4-20	1.20-1.40	2.0-6.0	0.15-0.20	3.5-6.0	0-2	Low	0.37	5	5	.5-8
Yeopim	3-54	18-35	1.40-1.60	0.2-0.6	0.15-0.20	3.5-6.0	0-2	Low	0.37			
	54-65	2-25	1.40-1.60	0.6-6.0	0.15-0.20	3.5-6.0	0-2	Low	0.17			

See footnote at end of table.

Table 17.—Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
YoA—Yonges	0-7	10-20	1.30-1.60	0.6-2.0	0.11-0.15	4.5-8.4	0-2	Low	0.20	5	2	2-8
	7-51	18-35	1.30-1.60	0.2-0.6	0.13-0.18	4.5-8.4	0-2	Low	0.17			
	51-58	10-40	1.30-1.50	0.6-2.0	0.12-0.16	4.5-8.4	0-2	Low	0.20			
	58-65	---	---	---	---	---	---	---	---			

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 18.—Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," and "apparent" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
AcA—Acredale	D	Rare	---	---	0-1.0	Apparent	Dec-Apr	---	---	High	High.
ArA—Argent	D	Rare	---	---	0-1.0	Apparent	Nov-Apr	---	---	High	High.
BaA—Backbay	D	Very frequent.	Very brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	---	---	High	High.
BcA*—Beaches	D	Very frequent.	Very brief to long.	Jan-Dec	0-3.0	Apparent	Jan-Dec	---	---	High	High.
BeE*:											
Beaches	D	Very frequent.	Very brief to long.	Jan-Dec	0-3.0	Apparent	Jan-Dec	---	---	High	High.
Newhan	A	Rare	---	---	>6.0	---	---	---	---	High	Low.
BmA—Belhaven	D	Rare	---	---	0-1.0	Apparent	Nov-May	2-8	10-26	High	High.
BnA—Belhaven	D	Frequent	Brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	2-8	10-26	High	High.
BoA—Bolling	C	Rare	---	---	1.5-2.5	Apparent	Dec-Mar	---	---	Moderate	High.
BrA—Brookman	D	Rare	---	---	0-1.0	Apparent	Nov-May	---	---	Moderate	Moderate.
CaA, CbA—Carteret	D	Very frequent.	Very brief	Jan-Dec	0-1.0	Apparent	Jan-Dec	---	---	High	High.
CeA—Carteret	D	Occasional	Very brief	Jan-Dec	0-1.0	Apparent	Jan-Dec	---	---	High	High.
ChA—Chapanoke	C	Rare	---	---	0.5-1.5	Apparent	Nov-Apr	---	---	High	High.
CoA—Conaby	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	2-8	6-13	High	High.
CrB—Corolla	D	Rare	---	---	1.5-3.0	Apparent	Jan-Dec	---	---	Low	Low.
DeA—Delway	D	Very frequent.	Very brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	10-25	20-50	High	High.
DoA—Dorovan	D	Frequent	Brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	6-12	51-80	High	High.
DuA—Duckston	A/D	Rare	---	---	0-1.0	Apparent	Jan-Dec	---	---	High	Low.

See footnote at end of table.

Table 18.—Soil and Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
DwB*:											
Duckston	A/D	Rare	---	---	0-1.0	Apparent	Jan-Dec	---	---	High	Low.
Corolla	D	Rare	---	---	1.5-3.0	Apparent	Jan-Dec	---	---	High	Low.
EaA	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	---	---	High	High.
Engelhard											
EnA	B/D	Frequent	Brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	---	---	High	High.
Engelhard											
FkA	C	Rare	---	---	1.0-2.0	Apparent	Dec-Mar	---	---	High	High.
Fork											
FoA	C/D	Rare	---	---	0-3.0	Apparent	Dec-Apr	2-8	6-12	High	High.
Fortescue											
GuA	B/D	Rare	---	---	0-1.0	Apparent	Dec-May	2-8	6-13	High	High.
Gullrock											
HyA	B/D	Rare	---	---	0-1.0	Apparent	Dec-Apr	---	---	High	High.
Hydeland											
LfA	D	Very frequent.	Very brief to long.	Jan-Dec	0-0.5	Apparent	Jan-Dec	10-25	20-50	High	High.
Longshoal											
NaD	A	Rare	---	---	>6.0	---	---	---	---	High	Low.
Newhan											
NcC*:											
Newhan	A	Rare	---	---	>6.0	---	---	---	---	High	Low.
Corolla	D	Rare	---	---	1.5-3.0	Apparent	Nov-May	---	---	High	Low.
NeA	B/D	Rare	---	---	0-1.0	Apparent	Dec-Apr	---	---	High	High.
Newholland											
NhA	B/D	Frequent	Brief to long.	Jan-Dec	0-1.0	Apparent	Dec-Apr	---	---	High	High.
Newholland											
PaA	B/D	Rare	---	---	0-1.0	Apparent	Dec-Mar	---	---	High	Moderate.
Pasquotank											
PeA	D	Rare	---	---	0-1.0	Apparent	Dec-May	4-8	8-12	High	High.
Pettigrew											
PnA	D	Rare	---	---	0-1.0	Apparent	Nov-May	2-6	12-24	High	High.
Ponzer											
PoA	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	---	---	High	High.
Portsmouth											
PuA	D	Rare	---	---	0-1.0	Apparent	Nov-May	16-24	36-50	High	High.
Pungo											
RoA	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	1-5	3-15	High	High.
Roper											

See footnote at end of table.

Table 18.—Soil and Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Subsidence		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Initial	Total	Uncoated steel	Concrete
					Ft			In	In		
ScA—Scuppernong	D	Rare	---	---	0-1.0	Apparent	Nov-May	12-18	20-42	High	High.
SeA—Seabrook	C	Rare	---	---	2.0-3.5	Apparent	Dec-Mar	---	---	Low	Moderate.
StA—Stockade	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	---	---	High	Moderate.
Ud—Udorthents	---	Rare	---	---	---	---	---	---	---	---	---
WaA—Wasda	B/D	Rare	---	---	0-1.0	Apparent	Nov-May	3-7	7-14	High	High.
WeA—Weeksville	B/D	Rare	---	---	0-1.0	Apparent	Dec-Mar	---	---	High	Moderate.
WkA—Weeksville	B/D	Frequent	Brief to long.	Jan-Dec	0-1.0	Apparent	Jan-Dec	---	---	High	Moderate.
WyA—Wysocking	C/D	Rare	---	---	0-1.0	Apparent	Nov-May	2-8	6-12	High	High.
YeA—Yeopim	B	Rare	---	---	1.5-3.0	Apparent	Nov-Apr	---	---	Moderate	High.
YoA—Yonges	D	Rare	---	---	0-1.0	Apparent	Nov-Apr	---	---	High	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 19.—Classification of the Soils

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Acredale	Fine-silty, mixed, thermic Typic Endoaqualfs
Argent	Fine, mixed, thermic Typic Endoaqualfs
Backbay	Fine-loamy, mixed, nonacid, thermic Histic Humaquepts
Belhaven	Loamy, mixed, dysic, thermic Terric Medisaprists
*Bolling	Fine-loamy, mixed, thermic Aquic Hapludalfs
Brookman	Fine, mixed, thermic Typic Umbraqualfs
Carteret	Mixed, thermic Typic Psammaquents
*Chapanoke	Fine-silty, mixed, thermic Aeric Endoaquults
Conaby	Coarse-loamy, mixed, nonacid, thermic Histic Humaquepts
Corolla	Thermic, uncoated Aquic Quartzipsamments
Delway	Loamy, mixed, euic, thermic Terric Medisaprists
Dorovan	Dysic, thermic Typic Medisaprists
Duckston	Siliceous, thermic Typic Psammaquents
Engelhard	Coarse-silty, mixed, acid, thermic Humaqueptic Fluvaquents
Fork	Fine-loamy, mixed, thermic Aeric Endoaqualfs
Fortescue	Fine-silty, mixed, acid, thermic Cumulic Humaquepts
Gullrock	Coarse-silty, mixed, nonacid, thermic Histic Humaquepts
Hydeland	Fine-silty, mixed, thermic Typic Umbraqualfs
Longshoal	Euic, thermic Typic Medisaprists
Newhan	Thermic, uncoated Typic Quartzipsamments
Newholland	Coarse-loamy, mixed, acid, thermic Cumulic Humaquepts
Pasquotank	Coarse-silty, mixed, nonacid, thermic Typic Endoaquepts
Pettigrew	Fine, mixed, nonacid, thermic Histic Humaquepts
Ponzer	Loamy, mixed, dysic, thermic Terric Medisaprists
Portsmouth	Fine-loamy over sandy or sandy-skeletal, mixed, thermic Typic Umbraquults
Pungo	Dysic, thermic Typic Medisaprists
Roper	Fine-silty, mixed, acid, thermic Histic Humaquepts
Scuppernong	Loamy, mixed, dysic, thermic Terric Medisaprists
Seabrook	Mixed, thermic Aquic Udipsamments
Stockade	Fine-loamy, mixed, thermic Typic Umbraqualfs
Udorthents	Udorthents
Wasda	Fine-loamy, mixed, acid, thermic Histic Humaquepts
Weeksville	Coarse-silty, mixed, acid, thermic Typic Humaquepts
Wysocking	Coarse-silty, mixed, acid, thermic Thapto-Histic Fluvaquents
*Yeopim	Fine-silty, mixed, thermic Aquic Hapludults
Yonges	Fine-loamy, mixed, thermic Typic Endoaqualfs

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