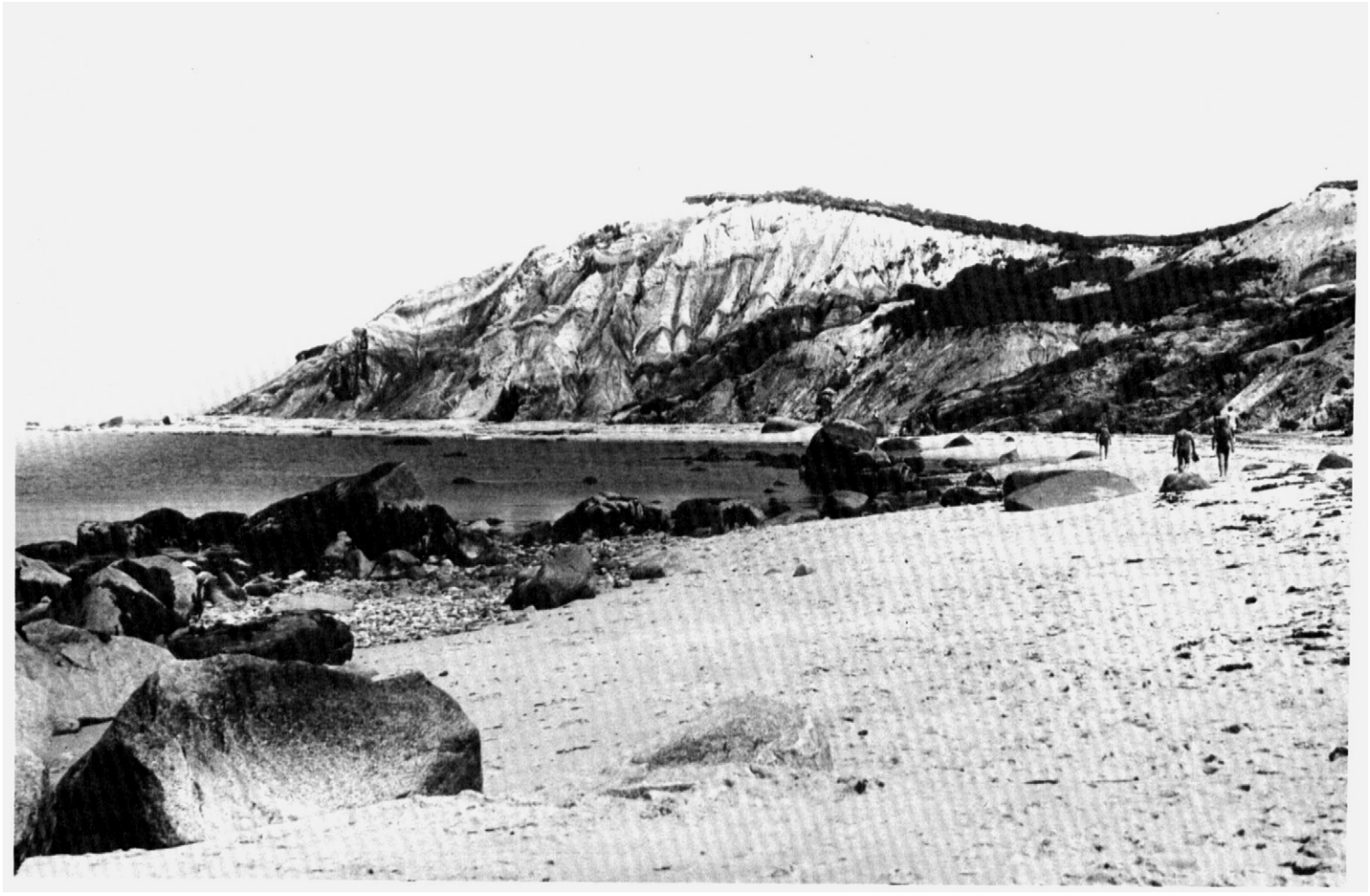
United States Department of Agriculture

Soil Conservation Service

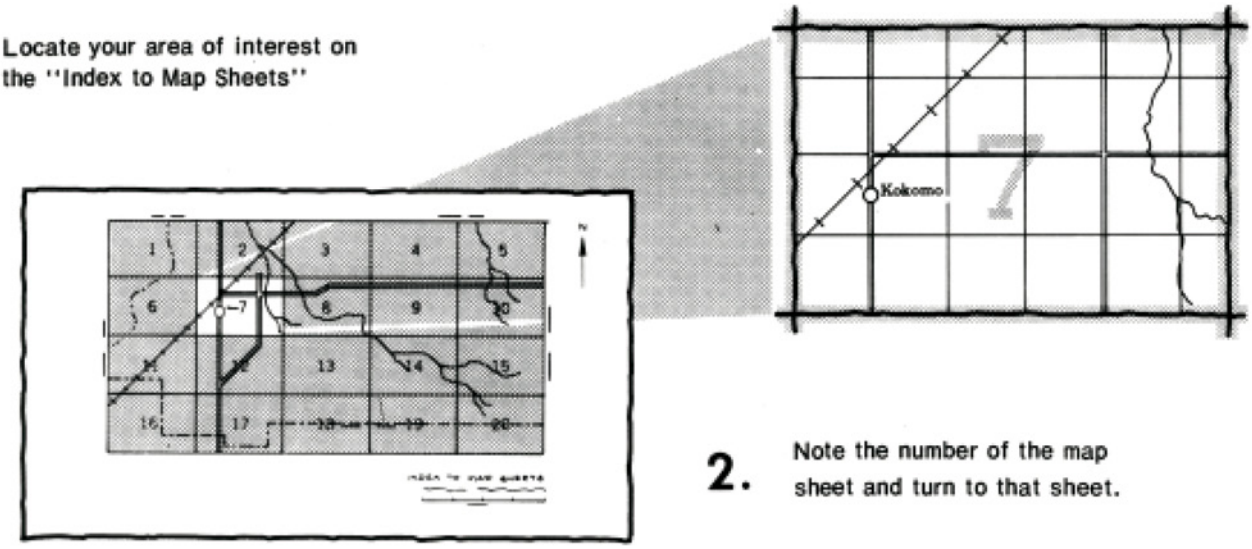
In cooperation with Massachusetts Agricultural Experiment Station

Soil Survey of Dukes County, Massachusetts



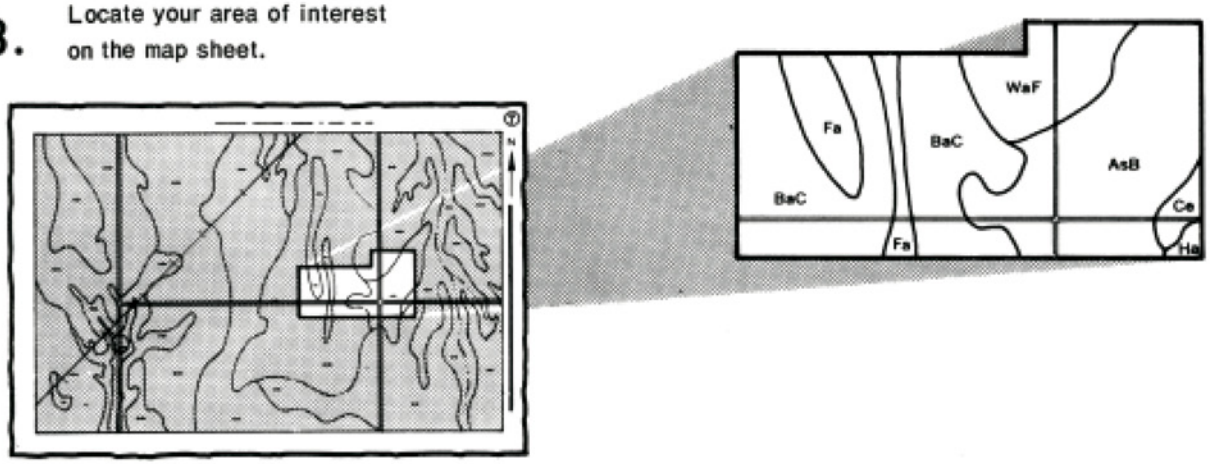
HOW TO USE

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



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

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



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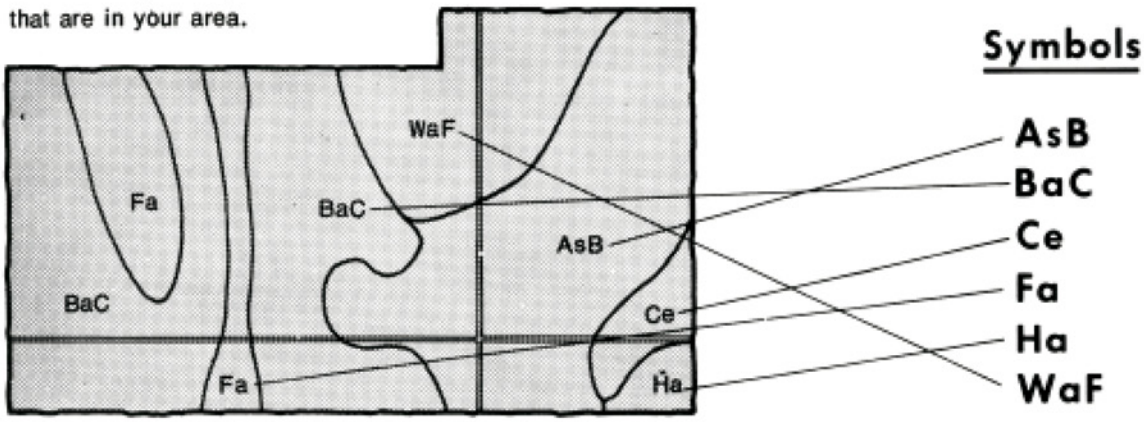
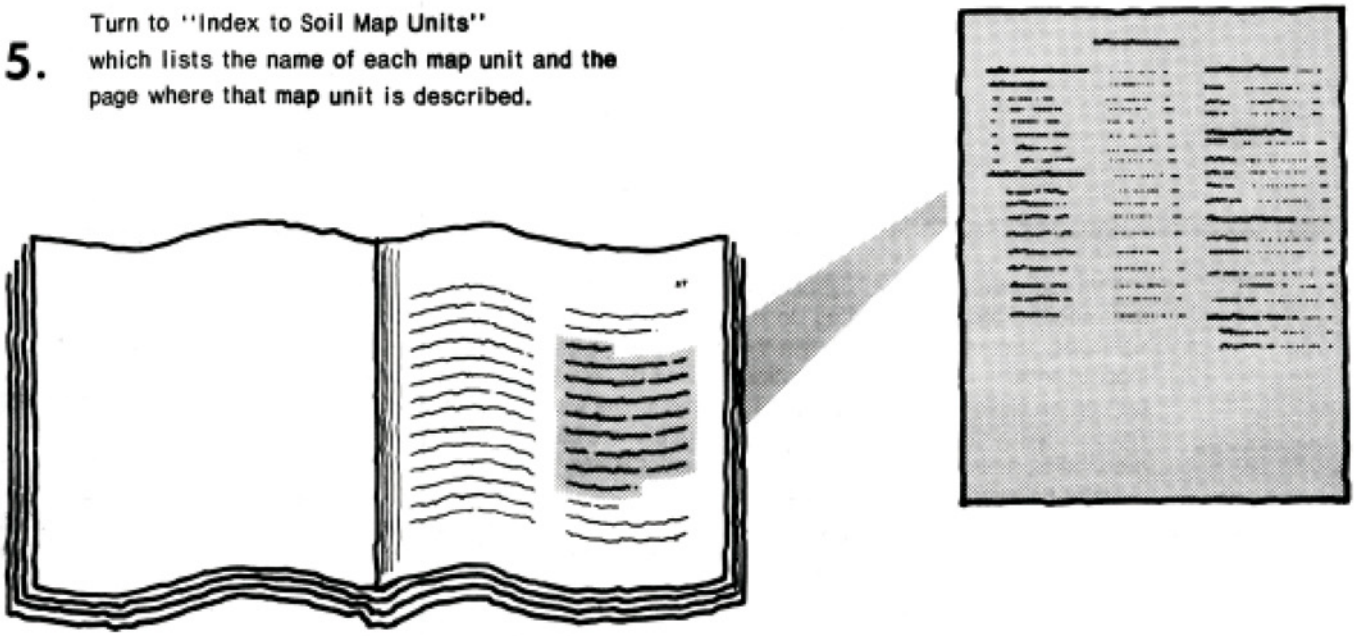
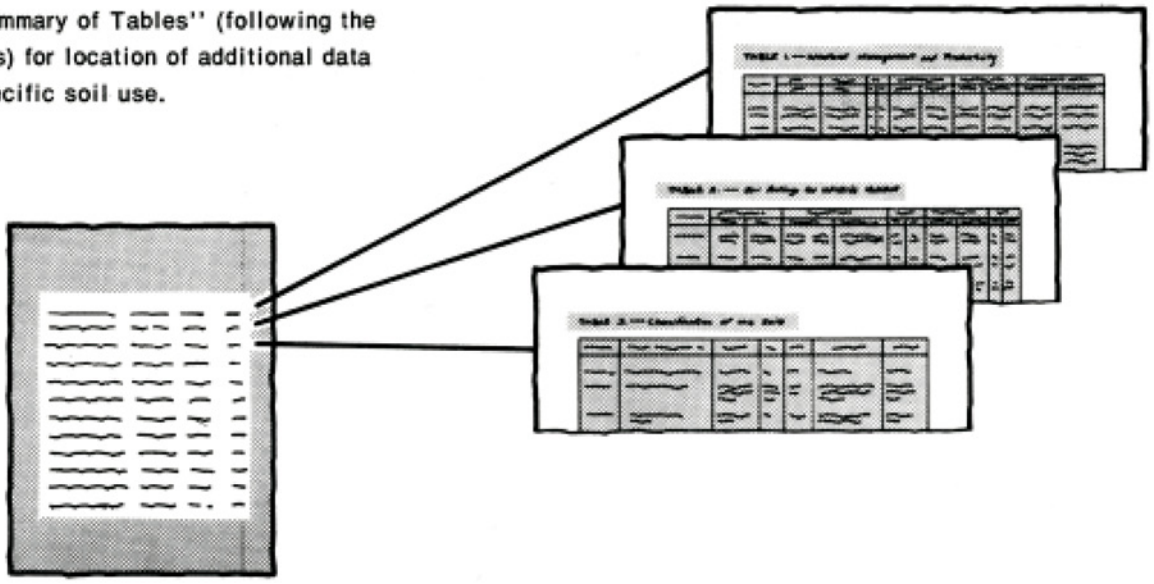


THIS SOIL SURVEY

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



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



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

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

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1983. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Soil Conservation Service and the Massachusetts Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Dukes County Conservation District. Part of the funding for this survey was provided by local units of government.

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: Gay Head Cliffs in the Eastchop-Chilmark-Nantucket general soil map unit.

Contents

Soil Series

Issued September 1986

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Summary of Tables

Preface

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

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

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

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

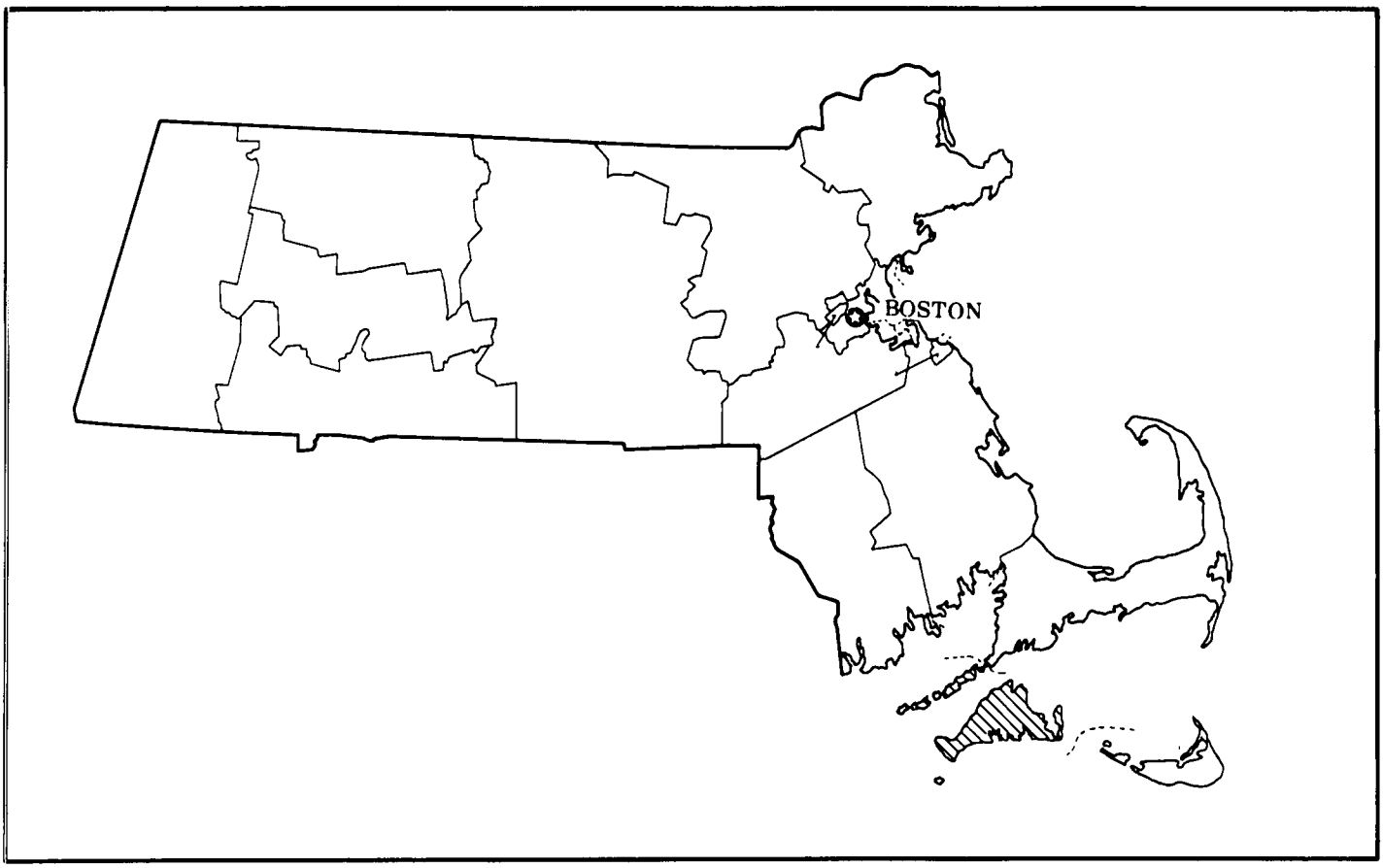

Figure 1.—Location of Dukes County in Massachusetts.

Soil Survey of Dukes County, Massachusetts

By Peter C. Fletcher and Rino J. Roffinoli, Soil Conservation Service

Fieldwork by Peter C. Fletcher, Rino J. Roffinoli, Richard J. Scanu, and Bruce Thompson, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
In cooperation with
Massachusetts Agricultural Experiment Station

Dukes County consists of a group of islands, mainly Martha's Vineyard and the Elizabeth Islands, off the southern coast of Massachusetts (fig. 1). The land area of the county is about 65,760 acres.

Martha's Vineyard is the largest island of the group, covering about 55,000 acres. It is roughly triangular, and its northern point is about 5 miles south of the mainland. The western and northwestern parts of Martha's Vineyard are marked by parallel ridges and hills that terminate on the western end at the high cliffs of Gay Head, Nashaquitsa, and Squibnocket. The elevation of the hills averages about 200 feet above sea level but is as much as 300 feet in some areas. The northern and northeastern parts of Martha's Vineyard are characterized by low, undulating hills and shallow depressions. The elevation of these hills averages about 100 feet above sea level in the northern section and about 50 feet above sea level in the northeastern section. The central and southern parts are covered by an extensive plain that is about 100 feet above sea level along its northern edge and that slopes gently southward until it is only 5 or 10 feet above sea level along the southern shore. Most of the shoreline is fringed by barrier beaches and sand dunes. Chappaquiddick is a small island east of and adjacent to Martha's Vineyard. Its physiography is similar to the northeastern section of Martha's Vineyard.

Elizabeth Islands form a six-island chain separated by narrow inlets. The islands extend southwest from Woods Hole for 16 miles and are parallel to and about 4 miles from the northwestern shore of Martha's Vineyard. The average width of the Elizabeth Islands is about 1 mile. The topography is a series of broken hills with an elevation averaging 100 feet above sea level, though some are at least 170 feet above sea level. An abrupt escarpment is along the southeastern shore of the islands, and small, fairly smooth spots are along the northern and western sides of the islands.

Nomans Land, an island of about 650 acres and about 3 miles southwest of Martha's Vineyard, was not surveyed.

General Nature of the Survey Area

This section provides general information about some of the natural and cultural factors that affect the use and development of the soils in Dukes County.

History and Land Use

William Wilcox, soil conservationist, Soil Conservation Service, assisted with the preparation of this section.

During the 18th century and the first half of the 19th century, the whaling industry dominated the economy of Martha's Vineyard, especially during the 30 years leading up to the Civil War. The discovery of oil caused a decline in the whaling industry. In 1866, however, the Oak Bluffs

Land and Wharf Company began subdividing and selling lots, marking the beginning of the resort industry on Martha's Vineyard and especially at Oak Bluffs, where by 1880 nearly two-thirds of the land was owned by nonresidents. The resort and tourist industry continues to be the economic base of Dukes County.

According to U.S. Census Bureau data, the year-round population of the county was 5,633 in 1950 and 8,942 in 1980. The seasonal population is estimated to be as much as 60,000 during the peak summer months. Correspondingly, between 1951 and 1980, the acreage of urban land increased from 1,705 acres to 5,855 acres, the amount of tilled and pastured land decreased from 5,131 acres to 2,442 acres, and the acreage of forest decreased from 48,796 acres to 46,735 acres.

Although farming in the county has consisted of growing corn, wheat, oats, hay, potatoes, and other vegetables and raising hogs, sheep, poultry, and cattle, the farming industry at no time exceeded fishing in economic importance. The 1920 Census of Agriculture showed 4,532 sheep, 945 cattle, 605 swine, and 220 horses in the county, but the decline of farming began mainly after World War II and has continued with the increase in tourism and other land uses.

Climate

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

Table 1 gives data on temperature and precipitation for the survey area as recorded at Edgartown in the period 1951 to 1978. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 31 degrees F, and the average daily minimum temperature is 22 degrees. The lowest temperature on record, which occurred at Edgartown on February 3, 1961, is -9 degrees. In summer the average temperature is 67 degrees, and the average daily maximum temperature is 76 degrees. The highest recorded temperature, which occurred at Edgartown on July 2, 1964, is 94 degrees.

Growing degree days are shown in table 2. 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 (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 22 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 17 inches. The heaviest 1-day rainfall during the period of record was 7.02 inches at Edgartown on September 3, 1972. Thunderstorms occur on about 20 days each year, and most occur in summer.

The average seasonal snowfall is 22 inches. The greatest snow depth at any one time during the period of record was 12 inches. On an average of 3 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 70 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the northwest. Average windspeed is highest, 22 miles per hour, in winter.

Geology

William Wilcox, soil conservationist, and Rudolph C. Chlanda, geologist, Soil Conservation Service, helped prepare this section.

The geological deposits that make up Dukes County consist of recent beach and marsh sediments, glacial deposits, interglacial deposits, and glacially deformed ancient coastal plain sediments (fig. 2). The county consists mostly of deposits from the last glacial stage but in places consists of glacial or interglacial deposits as much as 300,000 years old. The deposits of the Gay Head cliffs are ancient continental shelves, river deltas, and beaches as much as 135 million years old. The Quaternary section and coastal plain deposits overlie solid bedrock and range from 500 feet thick on the north shore of Martha's Vineyard to 900 feet thick on the south shore.

Glacial deposition, deformation, and erosion in several glacial and interglacial stages are responsible for the topography of the county. During glacial advance, the ice moved southward from Canada, where snow accumulation greatly exceeded snowmelt. As the snow accumulated, its weight compacted the underlying snow into ice, and after achieving a tremendous thickness, the ice began to deform and flow southward. As the ice moved, it mixed existing soil and unconsolidated sediments, scoured and broke up bedrock into pieces ranging from clay-size to boulders as large as a house, and transported and deposited this material as it advanced southward and later retreated.

On Martha's Vineyard the glacial deposits form several distinctive landforms representing accumulations from several different glacial advances (*6*). The Squibnocket moraine is made up of the oldest deposit, a compact, pink and purple-gray till. This moraine is covered by a Wisconsin-age veneer consisting of stony till and outwash that also covers the Gay Head moraine, which forms a ridge and valley topography extending from Gay Head to Chilmark and West Tisbury. The Gay Head moraine consists of folded and faulted older Pleistocene deposits and coastal plain sand, silt, and clay of Cretaceous and Tertiary Age. The common soils in this moraine are the Chilmark, Nantucket, and Eastchop soils.

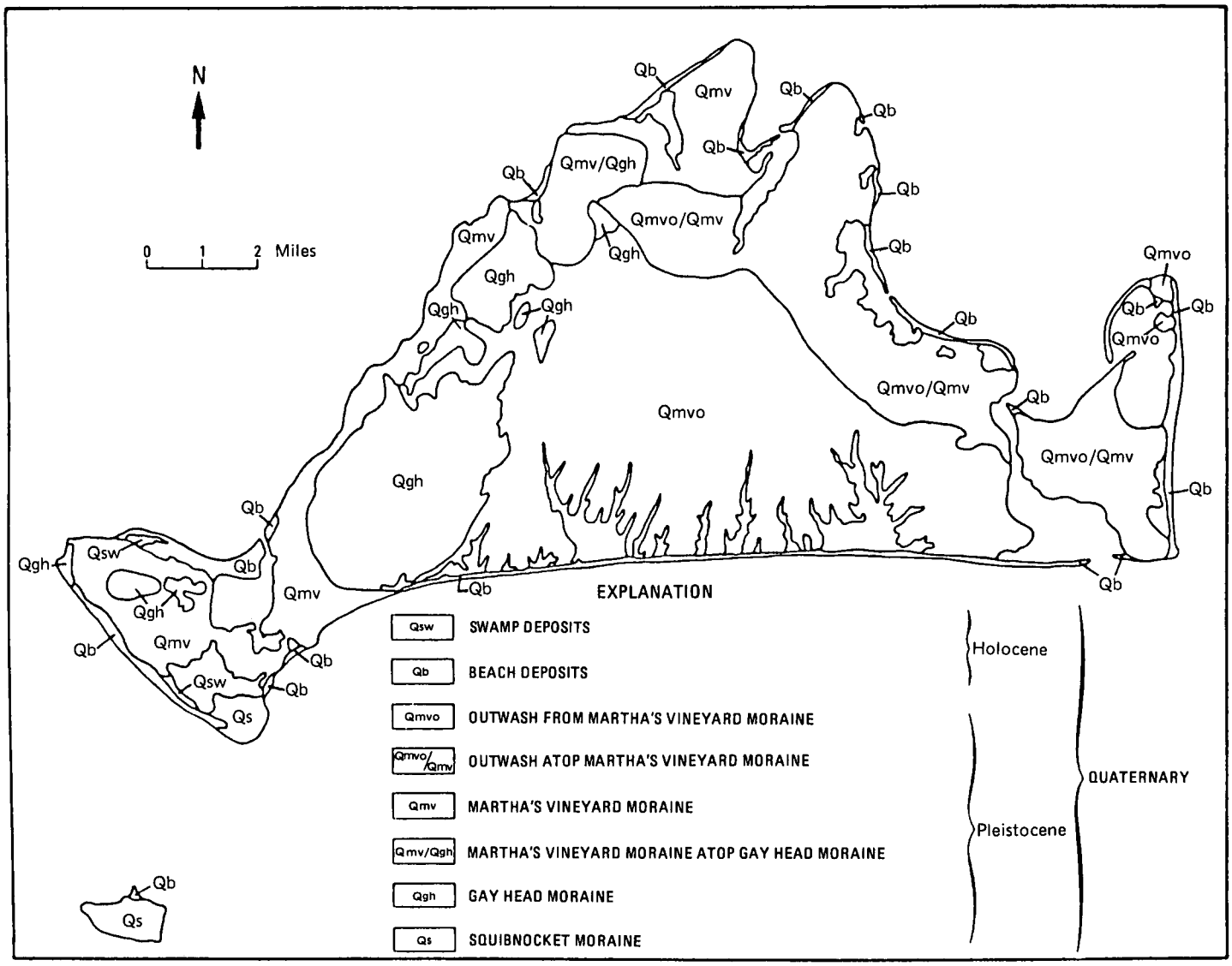

Figure 2.—Generalized geologic map of Martha's Vineyard.

The Wisconsin ice sheet reached its southernmost extent approximately 25,000 years ago when the rate of melting equaled the rate of southerly flow of the glacier. At this point, a thick deposit of boulders and stones in a variable matrix of sand, silt, and clay was deposited to form a rolling and hilly landform called a terminal moraine. Sections of this moraine are on Nantucket, Martha's Vineyard, Block Island, and Long Island. On Martha's Vineyard it is called the Martha's Vineyard moraine and consists primarily of sand and gravel. The Carver soils are extensive on this moraine.

At the time of the glacial standstill, tremendous volumes of meltwater in the form of braided streams laden with sand and gravel flowed south of the ice front to form the nearly level Martha's Vineyard outwash plain, which extends from the moraine south to the Atlantic Ocean.

With a gradual warming of the climate, the glacial ice melted and retreated. The Elizabeth Islands represent a more recent readvance of the Wisconsin ice front. These islands are the southwestern extension of the Buzzards Bay moraine, which continues north to the Cape Cod Canal. The morainal sediments that make up the islands are variable but are characterized by a folded and faulted bouldery till mixed with sandy and gravelly outwash deposits and with silt and clay in some areas on the westernmost islands. The common soils on the

Elizabeth Islands are the Eastchop, Plymouth, Montauk, and Nantucket soils.

Large areas with no plant cover were exposed when the glacial ice melted and retreated from the region. Strong winds abraded this newly exposed surface. The winds transported and redeposited fine-textured sediments, in the form of sand, silt, and clay, to form a discontinuous mantle on the exposed land surface.

The most recent Holocene sediments in Dukes County consist of estuarine and lagoonal deposits, salt marsh deposits, freshwater marsh and swamp deposits, and beach and dune sand. The common soils in these areas are the Freetown, Swansea, Pawcatuck, and Matunuck soils and Udipsamments and Beaches.

How This Survey was Made

The first soil survey of Dukes County was completed in 1925 and primarily described use and management of the soils for farming (*5*). This report provides updated information to the 1925 publication, contains maps that show the soils in greater detail, and provides information on farm and nonfarm uses.

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

Commonly, individual soils on the landscape merge into one another resulting in gradual changes in characteristics. 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.

The information for this report was compiled by soil scientists who dug into the soil at key sites to a depth of 40 to 60 inches. Depending upon the complexity of the soil pattern, the distance between holes ranged from 75 feet to 300 feet.

The soils in the holes were examined by the soil scientists for development, texture, reaction, underlying material, degree of wetness, and other related features. Slope and the incidence of stones and boulders on the surface were also noted. The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. On the basis of field observations, and with the aid of a stereoscope, they drew the boundaries of the soils on aerial photographs making use of reference points and tonal contrasts on the aerial photographs. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately. The soil maps at the back of this publication were prepared from those aerial photographs.

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

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

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

While a soil survey is in progress, samples of some of the soils in the area are collected for laboratory analyses

and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for most of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. Data on crop yields under defined levels of management were 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, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

General Soil Map Units

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

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

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

Soil Descriptions

1. Udipsamments-Beaches-Pawcatuck

Undulating or rolling, very deep, excessively drained, sandy soils composed of windblown deposits, nearly level beaches; and nearly level, very deep, very poorly drained mucky peat formed in organic deposits; along coastal shorelines

This unit is on beaches, on sand dunes, and in tidal marshes (fig.3). It makes up about 6 percent of the survey area and is about 45 percent Udipsamments, 27 percent beaches, 10 percent Pawcatuck soils, and 18 percent soils of minor extent.

Undulating or rolling Udipsamments are sand dunes that generally extend inland from the beaches. Udipsamments are pale brown sand to a depth of 60 inches or more. The main type of plant cover is beach grasses.

Nearly level, long narrow areas of beaches are on the coastal shoreline. Their size and shape are subject to changes caused by erosion and deposition of sand through wave action. Beaches have no plant cover, are very deep, and consist of fine, medium, or coarse sand. Some areas have a gravelly or cobbly surface, and a few areas have stones and boulders on the surface.

Nearly level Pawcatuck soils border saltwater and brackish water areas that are protected from the direct force of ocean waves. These soils are in tidal areas subject to daily inundation. Typically, they consist of very dark grayish brown and black mucky peat to a depth of about 20 inches. Below the peat and extending to a depth of 60 inches or more is light brownish gray sand.

The common minor soils in this unit are very poorly drained Matunuck, Berryland, Freetown, and Swansea soils. The Matunuck soils are near the Pawcatuck soils and formed in a thin layer of organic material in tidal marshes. The Berryland, Freetown, and Swansea soils are in areas where a fresh water table is at or near the surface. The soils are in depressions within areas of Udipsamments and in low-lying areas inland from areas of Beaches and Udipsamments and cut off from saltwater inundation. The Berryland soils formed in sand. The Freetown and Swansea soils formed in organic material.

This map unit is used mainly for limited recreation or as wildlife habitat. The Udipsamments support sparse, fragile plants that are subject to severe wind erosion when disturbed. It is difficult to establish a plant cover on road cuts in this unit, and tidal inundation and a high organic matter content make the Pawcatuck soils poorly suited to most uses other than as wildlife habitat.

2. Katama-Carver

Nearly level or gently sloping, very deep, well drained and excessively drained, loamy and sandy soils formed in glacial outwash; on outwash plains

This unit makes up about 2 percent of the survey area and is about 50 percent Katama soils, 40 percent Carver soils, and 10 percent soils of minor extent.

Nearly level Katama soils generally are in broad areas. Typically, they have a surface layer of very dark grayish brown sandy loam about 6 inches thick and a subsurface layer of dark brown sandy loam about 3 inches thick. The subsoil is about 17 inches thick. It is dark yellowish brown sandy loam in the upper part and light olive brown loamy coarse sand in the lower part. The substratum is yellowish brown and strong brown coarse sand to a depth of at least 60 inches.

Nearly level or gently sloping Carver soils also are in broad areas. Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper part is strong brown loamy coarse sand,

Figure 3.—Lobsterville Dunes at Gay Head, part of the Udipsamments-Beaches-Pawcatuck general soil map unit.

and the lower part is brownish yellow coarse sand. The substratum is light brownish gray coarse sand to a depth of 60 inches or more.

The dominant minor soils in this unit are moderately well drained Klej soils, somewhat poorly drained Pompton soils, and very poorly drained Pawcatuck and Matunuck soils. These soils have a seasonal high water table, and they generally are in low areas adjacent to ponds and bays. Klej soils formed in sandy outwash. Pompton soils formed in loamy and sandy outwash. Pawcatuck and Matunuck soils formed in organic material.

Most areas of this unit are in pasture or cropland. Some areas are used as homesites. The unit is well suited to crops and pasture and most nonfarm uses. The soils have essentially no limitations as building sites, but the sides of excavations generally cave in because of the instability of the substratum. There is a hazard of pollution to ground water if septic systems are installed in the unit or if the unit is used as a site for sanitary landfills.

3. Carver

Nearly level to moderately steep, very deep, excessively drained, sandy soils formed in glacial outwash; on outwash plains and moraines

This unit makes up about 32 percent of the survey area and is about 89 percent Carver soils and 11 percent soils of minor extent (fig. 4).

The nearly level to gently sloping areas of Carver soils are throughout this unit. The strongly sloping and moderately steep areas are on the side slopes of swales and valleys and on ridges and hills. Typically, the surface layer of the soils is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper part is strong brown loamy coarse sand, and the lower part is brownish yellow coarse sand. The substratum is light brownish gray coarse sand to a depth of 60 inches or more.

The dominant minor soils in this unit are well drained Riverhead soils; moderately well drained Klej soils; somewhat poorly drained Pompton soils; and very poorly drained Berryland, Freetown, and Swansea soils. The

Riverhead soils formed in loamy material over sandy outwash, the Klej and Berryland soils in sandy outwash, the Pompton soils in loamy and sandy outwash, and the Freetown and Swansea soils in organic material. The Klej, Pompton, Berryland, Freetown, and Swansea soils have a seasonal high water table and are in swales, in depressions, and adjacent to small bodies of water.

Most areas of this unit are in woodland. Some areas are used as homesites. The unit is poorly suited to cultivated crops and pasture because of a very low available water capacity. There are no major limitations for use as a building site, but the sides of excavations generally cave in because of the instability of the substratum. There is a hazard of pollution to the ground water if septic systems are installed or if areas of the unit are used as sites for sanitary landfills.

4. Riverhead-Carver-Haven

Nearly level to moderately steep, very deep, well drained and excessively drained, loamy and sandy soils formed in glacial outwash or eolian material; on outwash plains

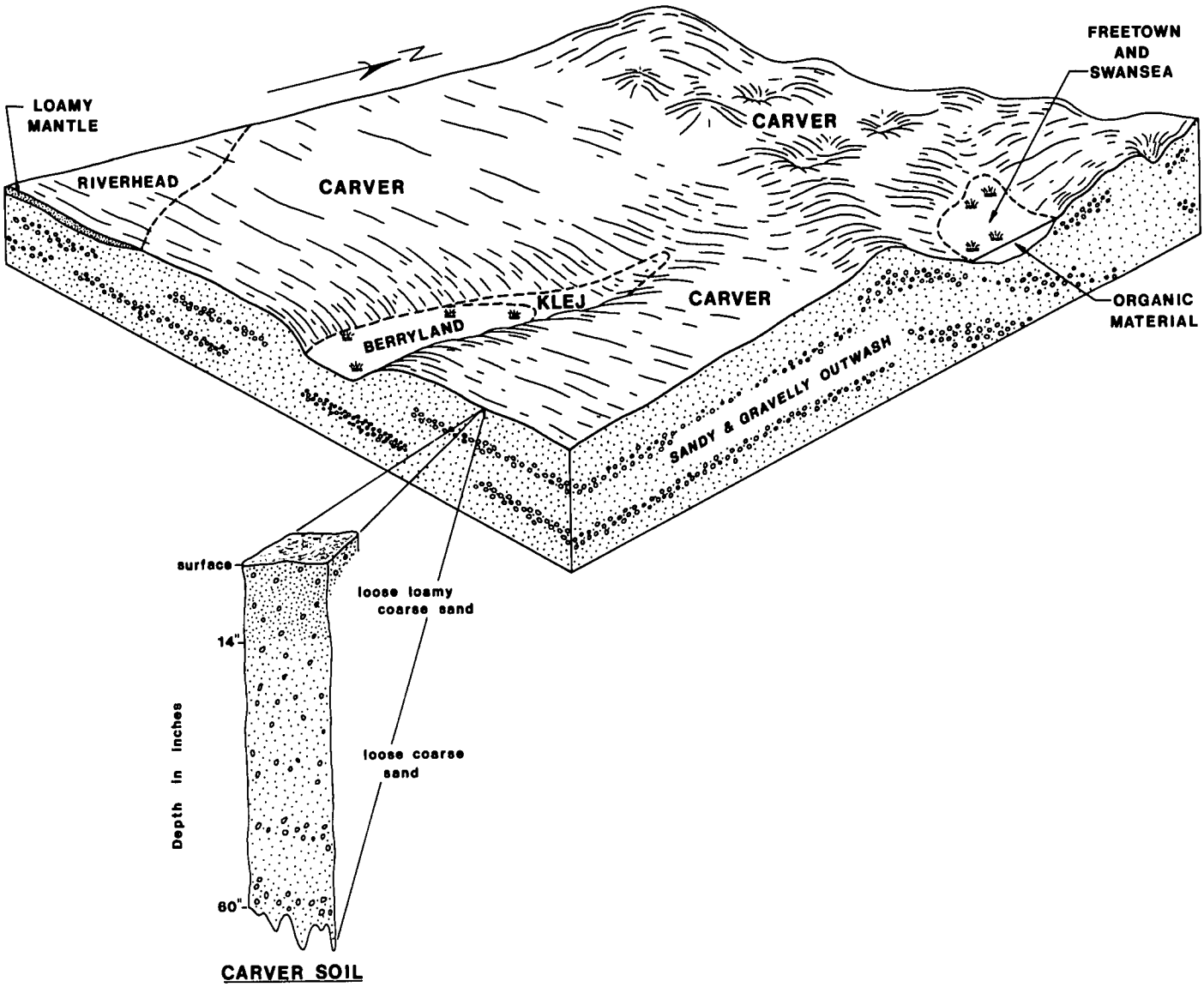

Figure 4.—Typical pattern of soils and underlying material in the Carver general soil map unit.

This unit makes up about 21 percent of the survey area and is about 50 percent Riverhead soils, 26 percent Carver soils, 19 percent Haven soils, and 5 percent soils of minor extent (fig. 5).

Nearly level to strongly sloping Riverhead soils are in broad areas throughout this unit. Typically, the surface layer is dark brownish gray sandy loam about 4 inches thick. The subsoil is 20 inches thick. The upper part is yellowish brown sandy loam, and the lower part is yellowish brown loamy sand. The substratum is brownish yellow coarse sand to a depth of 60 inches or more.

The nearly level to gently sloping areas of Carver soils are throughout this unit. The strongly sloping to moderately steep areas are on the side slopes of fingerlike swales and valleys that extend from the southern shore and gradually rise to the elevation of the outwash plain. Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper part is strong brown loamy coarse sand, and the lower part is brownish yellow coarse sand. The substratum is light brownish gray coarse sand to a depth of 60 inches or more.

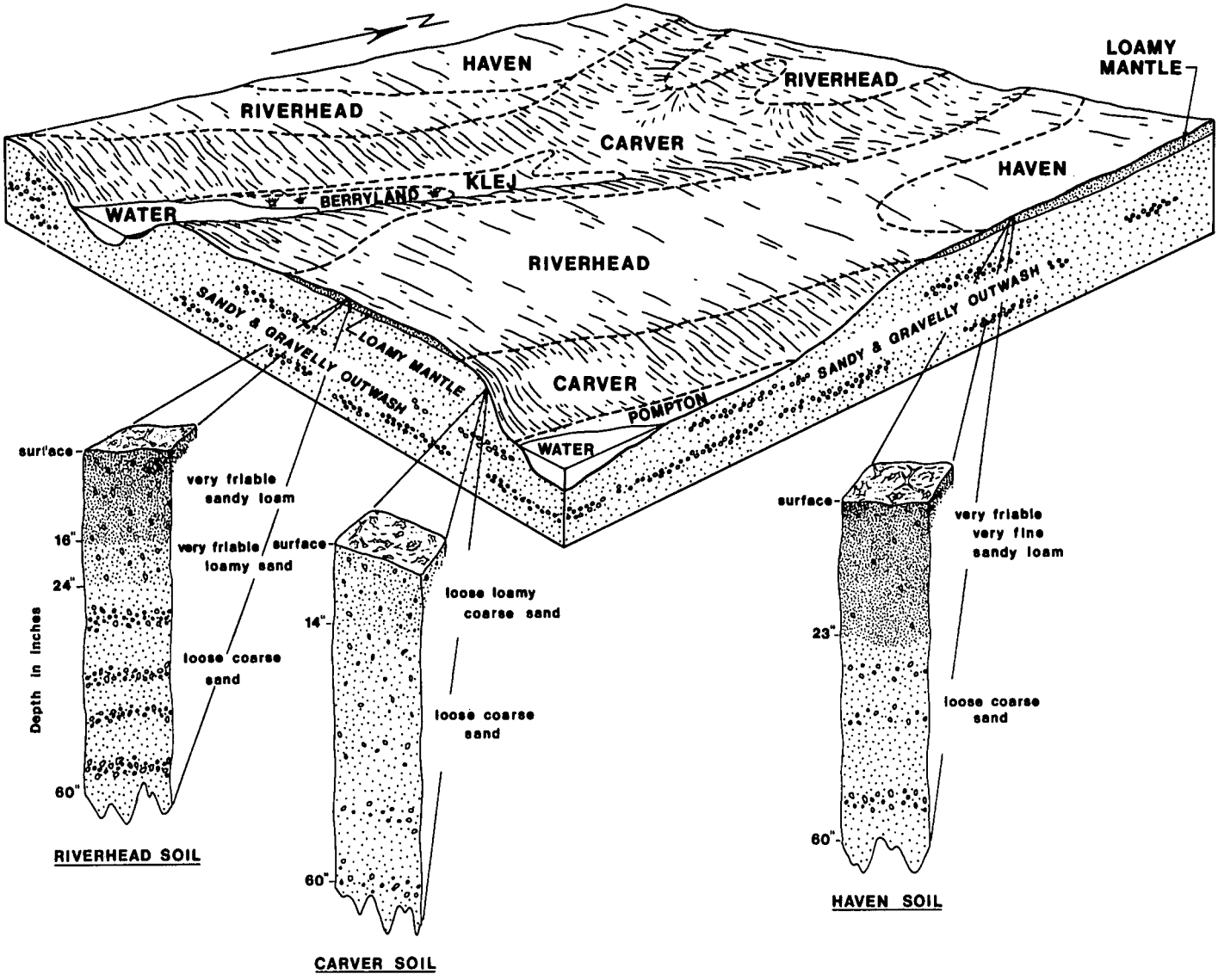

Figure 5.—Typical pattern of soils and underlying material in the Riverhead-Carver-Haven general soil map unit.

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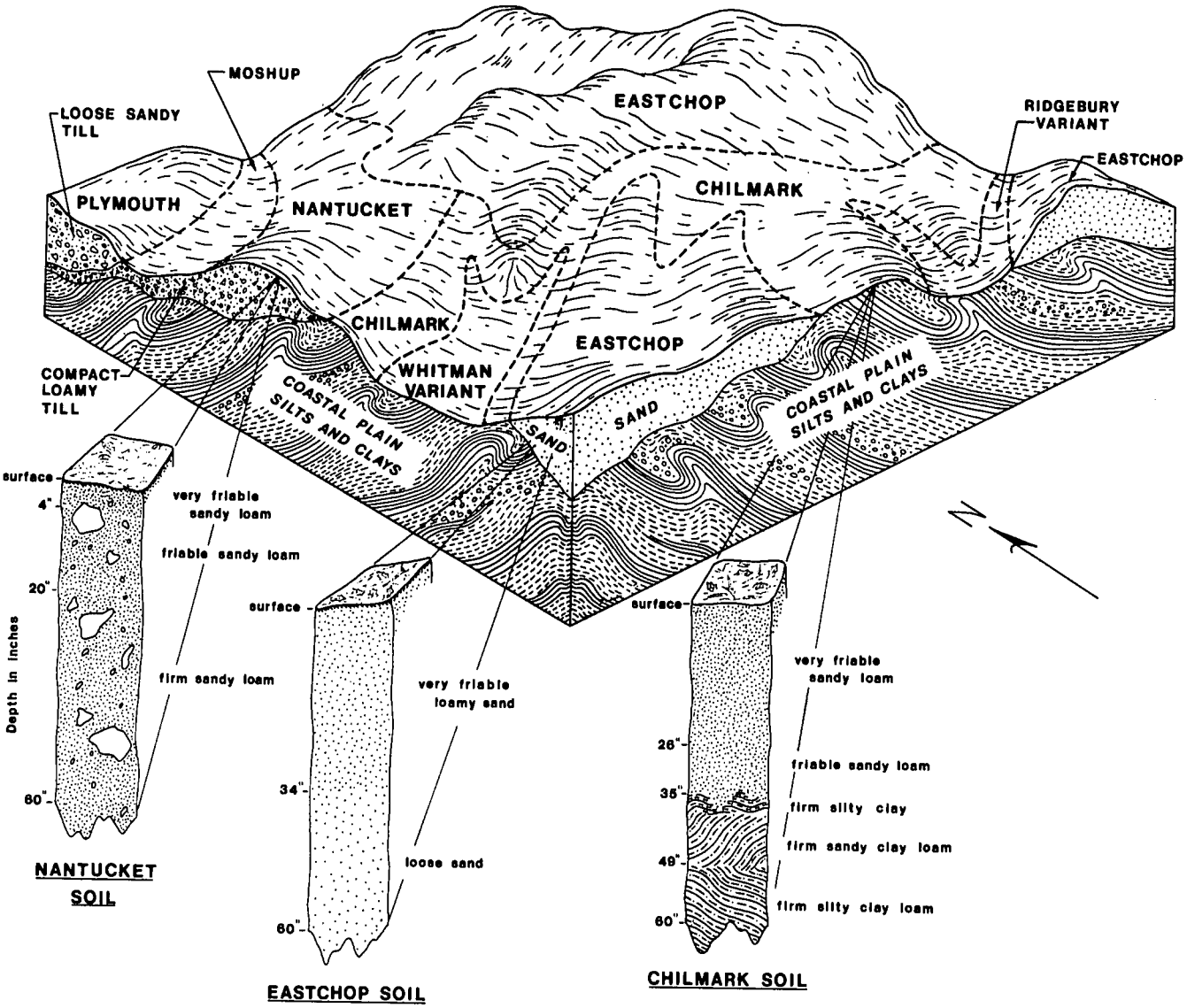

Figure 6.—Typical pattern of soils and underlying material in the Eastchop-Chilmark-Nantucket general soil map unit.

Nearly level to gently sloping, broad areas of Haven soils are throughout this map unit. Typically, the surface layer is dark brown very fine sandy loam about 2 inches thick. The subsoil is 21 inches thick. The upper part is dark yellowish brown very fine sandy loam, the middle part is yellowish brown very fine sandy loam, and the lower part is light olive brown very fine sandy loam. The substratum is stratified yellowish brown, yellowish red, and brownish yellow coarse sand to a depth of 60 inches or more.

The dominant minor soils in this unit are moderately well drained Tisbury and Klej soils, somewhat poorly drained Pompton soils, and very poorly drained Berryland soils, all of which have a seasonal high water table. These soils generally are in swales and valleys and in low areas adjacent to ponds and swamps. The Klej and Berryland soils formed in sandy outwash. The Tisbury and Pompton soils formed in sandy and loamy outwash.

Most areas of this unit are in woodland. Some areas are in cropland, and a few areas are used as homesites.

Figure 7.—A typical area of the Eastchop-Chilmark-Nantucket general soil map unit.

This unit is well suited to crops and pasture, and there are no major limitations for use as a building site. The sides of some excavations cave in, however, because of the instability of the substratum. There is a hazard of pollution to the ground water if septic systems are installed or if areas of the unit are used for sanitary landfills.

5. Eastchop-Chilmark-Nantucket

Nearly level to steep, very deep, excessively drained and well drained, sandy and loamy soils formed in reworked glacial outwash, ice-thrusted coastal plain sediments, or glacial till; on moraines

This unit makes up about 27 percent of the survey area and is about 57 percent Eastchop soils, 13 percent Chilmark soils, 10 percent Nantucket soils, and 20 percent soils of minor extent (fig. 6).

Nearly level to steep Eastchop soils are throughout this unit. Typically, the surface is covered with a 3-inch-thick organic layer. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is about 29 inches thick. The upper part is dark brown loamy sand. The lower part is yellowish brown loamy sand. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Gently sloping to steep Chilmark soils are mostly in the central and northern parts of this unit. Typically, the surface is covered with a 3-inch-thick organic layer. The surface layer is dark brown sandy loam about 2 inches thick. The subsoil is about 33 inches thick. The upper part is brown sandy loam, and the lower part is yellowish brown and strong brown sandy loam. The substratum extends to a depth of 60 inches or more. It consists of multicolored layers of silty clay, sandy clay loam, and silty clay loam.

Gently sloping to moderately steep areas of Nantucket soils are throughout this unit. Typically, the surface is covered with a 2-inch-thick organic layer. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is 16 inches thick. The upper part is dark brown sandy loam, and the lower part is yellowish brown sandy loam. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

The common minor soils in this unit are excessively drained Plymouth soils, moderately well drained Moshup soils, poorly drained Ridgebury Variant soils, and very

poorly drained Whitman Variant soils. The Plymouth soils have a gravelly substratum and are intermingled with Nantucket soils near the town of Gay Head. The Moshup, Ridgebury Variant, and Whitman Variant soils have a seasonal high water table and are in swales, at the base of long slopes, and in low areas adjacent to ponds and swamps. They formed in loamy, ice-thrusted coastal plain deposits and in glacial till.

Most areas of this unit are in woodland. Some areas are in cropland, and a few areas are used as homesites (fig. 7). Low available water capacity causes the Eastchop soils to be droughty and makes them poorly suited to crops and pasture. Steep slopes in this map unit are a limitation for building sites. In places, the sides of excavations in the Eastchop soils are unstable and cave in. There is a hazard of pollution of the ground water in the Eastchop soils if septic systems are installed or if the soils are used as a site for sanitary landfills. The substratum in Chilmark and Nantucket soils is slowly permeable and thus does not readily accept effluent in septic tank absorption fields.

6. Eastchop-Plymouth-Montauk

Nearly level to steep, very deep, excessively drained and well drained, sandy and loamy soils formed in reworked glacial outwash or in glacial till; on moraines

This unit makes up about 12 percent of the survey area and is about 31 percent Eastchop soils, 29 percent Plymouth soils, 11 percent Montauk soils, and 29 percent soils of minor extent.

Nearly level to steep areas of Eastchop soils are throughout this unit and commonly are near Plymouth and Montauk soils. Typically, the surface of the Eastchop soils is covered with a 3-inch-thick organic layer. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is about 29 inches thick. The upper part is dark brown loamy sand, and the lower part is yellowish brown loamy sand. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Gently sloping to moderately steep areas of Plymouth soils are throughout this unit and are mapped only with

Figure 8.—Part of the Eastchop-Plymouth-Montauk general soil map unit.

Eastchop and Montauk soils. Typically, the surface layer of the Plymouth soils is dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part is dark brown loamy coarse sand, and the lower part is yellowish brown loamy coarse sand and coarse sand. The substratum extends to a depth of 60 inches or more. The upper part is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Strongly sloping or moderately steep areas of Montauk soils are throughout this unit and are mapped only with Eastchop and Plymouth soils. Typically, the surface layer of the Montauk soils is very dark gray sandy loam about 7 inches thick. The subsoil is 17 inches thick. The upper part is dark brown sandy loam, and the lower part is yellowish brown sandy loam. The substratum extends to a depth of 60 inches or more. It is light olive brown sandy loam in the upper portion and olive, firm gravelly sandy loam in the lower part.

The common minor soils in this unit are well drained Canton and Nantucket soils and very poorly drained Freetown and Swansea soils. The Canton and Nantucket soils formed in loamy material and are throughout the unit. The Canton soils are underlain by sandy glacial till, and the Nantucket soils are underlain by loamy and silty glacial till. The Freetown and Swansea soils formed in organic material and have a water table at or near the surface for most of the year. They are in depressions and in low areas adjacent to ponds.

Most areas of this unit are in woodland, and many areas are in native pasture (fig. 8). Low available water capacity causes the Eastchop and Plymouth soils to be droughty and makes them poorly suited to crops and pasture. Steep slopes limit the soils for use as building sites. The sides of excavations in the Eastchop and Plymouth soils are unstable. There is a hazard of ground-water pollution in the Eastchop and Plymouth soils if septic systems are installed or if the soils are used as sites for sanitary landfills. The substratum in the Montauk soils is slowly permeable and thus does not readily accept effluent from septic tank absorption fields.

Detailed Soil Map Units

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Riverhead sandy loam, 0 to 3 percent slopes, is one of several phases in the Riverhead series.

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Nantucket-Plymouth complex, rolling, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Pawcatuck and Matunuck mucky peats, 0 to 1 percent slopes, is an undifferentiated group in this survey area.

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

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

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

Soil Descriptions

Ba—Beaches. This unit is dominantly nearly level, but some areas adjacent to the ocean are gently sloping. The unit has no plant cover and is continually washed and rewashed by waves. The areas of this unit typically are long and narrow and are 50 to 300 feet wide. The areas range from 5 to 150 acres and make up about 1.7 percent of the survey area.

This unit consists of deep sand that mainly is fine- or medium- or coarse-textured. Some areas have a gravelly or cobbly surface. The area nearest to the water is inundated twice daily by tides. The entire beach generally is flooded by spring tides and storm tides.

Included with this unit in mapping are small areas of Udipsamments, rolling, and small areas of Matunuck and Pawcatuck soils. Also included are areas of sand dunes with no plant cover. Included areas make up about 15 percent of this unit.

Beaches are mainly used for recreation and are not assigned to a capability subclass.

BeA—Berryland loamy sand, 0 to 2 percent slopes. This soil is very deep, nearly level, and very poorly drained. It is in closed depressions, at the base of swales, in low areas which border ponds and swamps, and in drainageways. The areas of this soil are throughout the survey area, are irregular in shape, and range from 3 to 25 acres. They make up about 1 percent of the survey area.

Typically the surface layer is black loamy sand about 5 inches thick. The subsurface layer is gray sand about 4 inches thick. The subsoil is sand about 23 inches thick. The upper 11 inches of the subsoil is very dark brown, the next 7 inches is mottled and dark gray, and the lower 5 inches is mottled and dark brown. The substratum is light brownish gray, mottled sand to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of Freetown, Swansea, and Pompton soils. Also included are soils that have firm to extremely firm layers in the subsoil. In some areas the subsoil and substratum have layers of silty clay or clay. Included areas make up about 25 percent of this unit.

The permeability of this Berryland soil is moderately rapid in the subsoil and moderately rapid or rapid in the substratum. Available water capacity is low. The soil has a seasonal high water table at or near the surface in the fall, winter, and spring. Water is ponded on the surface of some areas.

This soil is poorly suited to woodland productivity because of the seasonal high water table and a high rate of seedling mortality. Low strength of the soil limits the use of equipment to periods when the soil is dry or frozen. The common trees on this soil are red maple and tupelo.

The seasonal high water table makes this soil generally unsuitable for farming and is a major limitation for most types of nonfarm uses. The soil is well suited to use as wetland wildlife habitat. The native plant communities common to this soil provide adequate food and cover for wildlife nesting.

This unit is in capability subclass Vw.

CaC—Canton-Montauk-Plymouth complex, rolling. This unit consists of undulating and rolling, very deep soils on side slopes and crests of hills. Slopes range from 3 to 15 percent. The areas are irregular in shape and range generally from 10 to 25 acres. They are on the Elizabeth Islands and make up less than 1 percent of the survey area. The areas are about 40 percent Canton soils, 25 percent Montauk soils, 20 percent Plymouth soils, and 15 percent other soils. These soils are so intermingled or so small that it was not practical to map them separately.

Typically, the Canton soils have a surface layer of very dark gray sandy loam about 7 inches thick. The subsoil is 23 inches thick. The upper 16 inches of the subsoil is dark brown and yellowish brown sandy loam, and the lower 7 inches is light olive brown loamy sand. The substratum extends to a depth of 60 inches or more. The upper part is olive loamy sand, and the lower part is pale olive brown gravelly sand.

Typically, the Montauk soils have a surface layer of very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Typically, the Plymouth soils have a surface layer of dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper portion is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part is brownish yellow gravelly coarse sand. The lower part is light yellowish brown loose sand.

Included with these soils in mapping are small areas of Eastchop soils. Also included are areas with slopes of 0 to 3 percent and 15 to 30 percent. Some map units have a few boulders on the surface.

The permeability of these Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the surface layer and subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Plymouth soils is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more than 6 feet.

Most areas of this unit are in pasture. A few areas are used for homesites.

This unit is suitable for cultivated crops, but erosion is a hazard. Stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil.

These soils are suited to hay and pasture. Use of proper stocking rates and restricted and rotational grazing help to maintain pasture-plant densities and reduce surface compaction.

This unit is fairly well suited to woodland productivity. Droughtiness in the Plymouth soils causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture, and removal or control of competing vegetation will help to increase the survival rate of

seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong winds and salt spray severely hinder tree growth in areas near the shoreline.

Slope is a limitation of the unit as a building site in areas where the slope is more than 8 percent, and land grading generally is needed in such areas. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This unit is limited as a site for septic tank absorption fields because in some areas the Canton and Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Montauk soils do not readily accept effluent, making seepage a hazard.

This unit is in capability subclass IIIe.

CcC—Canton-Montauk-Plymouth complex, rolling, extremely bouldery. This unit consists of undulating and rolling, very deep soils on side slopes and crests of hills. Slopes range from 3 to 15 percent, and stones and boulders cover 3 to 15 percent of the surface of the unit. The areas are irregular in shape and generally range from 20 to 200 acres. They are on the Elizabeth Islands and make up less than 1 percent of the survey area. The areas are about 40 percent Canton soils, 25 percent Montauk soils, 20 percent Plymouth soils, and 15 percent other soils. These soils are so intermingled or so small that it was not practical to map them separately.

Typically, the Canton soils have a surface layer of very dark gray sandy loam about 7 inches thick. The subsoil is 23 inches thick. The upper 16 inches of the subsoil is dark brown and yellowish brown sandy loam, and the lower 7 inches is light olive brown loamy sand. The substratum extends to a depth of 60 inches or more. The upper part is olive loamy sand, and the lower part is pale olive gravelly sand.

Typically, the Montauk soils have a surface layer of very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Typically, the Plymouth soils have a surface layer of dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper portion is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part is brownish yellow gravelly coarse sand. The lower part is light yellowish brown loose sand.

Included with these soils in mapping are small areas of Eastchop soils. Also included are areas with slopes of 0 to 3 percent and 15 to 30 percent. Some areas do not have boulders on the surface.

The permeability of these Canton soils is moderately rapid in the surface layer and subsoil and rapid in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the surface layer and subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Plymouth soils is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more thn 6 feet.

Most areas of this unit are in woodland. Some areas are in native pasture with patches of shrubby vegetation.

The stones and boulders on the surface limit the use of equipment and make these soils poorly suited to row crops. The soils are suited to pasture, but the limitations for the use of equipment make the soils poorly suited to hay. Use of proper stocking rates and restricted and rotational grazing help to maintain pasture-plant densities and reduce surface compaction.

This unit is fairly well suited to woodland productivity. Droughtiness in the Plymouth soils causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture, and removal or control of competing vegetation will help to increase the survival rate of seedlings. The stones and boulders in places restrict the use of equipment to prepared trails and make hand planting necessary. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong winds and salt spray severely hinder tree growth in areas near the shoreline.

Slopes of more than 8 percent limit the use of the soils as building sites. Land grading is generally needed in such areas. Establishing plant cover as soon as possible helps to control erosion on slopes. The stones and boulders on the surface further hamper construction. This unit is limited as a site for septic tank absorption fields because the Canton and Plymouth soils in some areas do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Montauk soils do not readily accept effluent, making seepage a hazard.

This unit is in capability subclass VIs.

CeA—Carver loamy coarse sand, 0 to 3 percent slopes. This soil is very deep, nearly level, and excessively drained. It is in large, broad areas on outwash plains mostly in the central and eastern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 1,500 acres. They make up about 11 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1

inch thick. The subsoil is about 26 inches thick. The upper 10 inches of the subsoil is strong brown loamy coarse sand, and the lower 16 inches is brownish yellow coarse sand. The substratum is light yellowish brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Eastchop, Haven, Klej, and Riverhead soils. Also included are soils that have a subsoil and substratum of gravelly coarse sand and small areas of soils with slopes of 3 to 8 percent. Included areas make up about 20 percent of this unit.

The permeability of this Carver soil is very rapid throughout. Available water capacity is very low. This soil is droughty in late summer. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in cropland, and some are in residential development.

This soil is poorly suited to cultivated crops and hay and pasture because of the very low available water capacity. Mixing crop residue and manure into the surface layer helps to retain the limited available water, maintain tilth, and increase the organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

This soil has few limitations for use as a site for buildings with or without basements. The droughtiness of this soil is a limitation for lawns, shallow-rooted trees, and shrubs. Adding a layer of topsoil and frequent watering during dry periods will help to overcome this limitation. In some areas this soil does not adequately filter effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IVs.

CeB—Carver loamy coarse sand, 3 to 8 percent slopes. This soil is very deep, gently sloping, and excessively drained. It is in large, broad areas on the outwash plain and terminal moraines, mostly in the northern, central, and eastern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 1,000 acres. They make up about 15 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper 10 inches of the subsoil is strong brown loamy coarse sand, and the lower 16 inches is brownish yellow coarse sand. The substratum is light yellowish brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Eastchop, Haven, Klej, and Riverhead soils. Also included are soils that have a subsoil and substratum of gravelly coarse sand and small areas of soils with slopes of 0 to 3 percent and 8 to 15 percent. A few small areas, generally at the base of swales, have a redder subsoil and substratum than this Carver soil has. Included areas make up about 20 percent of this unit.

The permeability of this Carver soil is very rapid throughout. Available water capacity is very low. This soil is droughty in late summer. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in cropland, and some are in residential development.

This soil is poorly suited to cultivated crops and hay and pasture because of the very low available water capacity. Mixing crop residue and manure into the surface layer helps to retain the limited available water, maintain tilth, and increase the organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

This soil has few limitations for use as a site for buildings with or without basements. The droughtiness of this soil is a limitation for lawns, shallow-rooted trees, and shrubs. Adding a layer of topsoil and frequent watering during dry periods will help to overcome this limitation. In some areas this soil does not adequately filter effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IVs.

CeC—Carver loamy coarse sand, 8 to 15 percent slopes. This soil is very deep, strongly sloping, and excessively drained. It is on small hills and ridges on moraines and on the side slopes of swales on the outwash plain. Most areas are in the northern and eastern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 200 acres. They make up about 7 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper 10 inches of the subsoil is strong brown loamy

coarse sand, and the lower 16 inches is brownish yellow coarse sand. The substratum is light yellowish brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Riverhead and Klej soils. Also included are soils that have subsoil and substratum of gravelly coarse sand and small areas of soils with slopes of 3 to 8 percent and 15 to 30 percent. Some small areas, generally at the base of swales, have a redder subsoil and substratum than this Carver soil has. Included areas make up about 25 percent of this unit.

The permeability of this Carver soil is very rapid throughout. Available water capacity is very low. This soil is droughty in late summer. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used for pasture and hay, and some are in residential development.

The very low available water capacity, slope, and a hazard of erosion make this soil generally unsuitable for cultivated crops and hay and pasture.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope limits the use of this soil as a site for buildings; land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because in some areas the soil does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIIs.

CeD—Carver loamy coarse sand, 15 to 25 percent slopes. This soil is very deep, moderately steep, and excessively drained. It is on hills and ridges on moraines and on the side slopes of swales on outwash plains. The areas of this soil are irregular in shape and range from 5 to 50 acres. They make up about 2 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy coarse sand about 3 inches thick. The subsurface layer is light brownish gray loamy coarse sand about 1 inch thick. The subsoil is about 26 inches thick. The upper 10 inches of the subsoil is strong brown loamy coarse sand, and the lower 16 inches is brownish yellow coarse sand. The substratum is light yellowish brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Riverhead, Klej, Pompton, and Berryland soils. Also included are areas of soils that have a subsoil and substratum of gravelly coarse sand and soils with slopes of 0 to 3 percent and 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Carver soil is very rapid throughout. Available water capacity is very low. This soil is droughty in late summer. The depth to the seasonal high water table is more than 6 feet.

The very low available water capacity, slope, and a severe hazard of erosion make this soil generally unsuitable for cultivated crops and hay and pasture.

Most areas are wooded, but the soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help the growth of desirable species. The hazard of erosion is a management concern, particularly in disturbed areas such as skid trails, landings, and access roads. Constructing access roads and trails at a slope of 2 to 10 percent and installing water bars will help to prevent erosion. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope limits the use of this soil as a site for buildings; land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because the soil in some areas does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIIs.

ChB—Chilmark sandy loam, 3 to 8 percent slopes. This soil is very deep, gently sloping, and well drained. It is on small hills and knolls in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 3 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil is yellowish brown and strong brown sandy loam about 27 inches thick. The substratum extends to a depth of 60 inches or more. It consists of multicolored, firm layers of silty clay, sandy clay loam, and silty clay loam.

Included with this soil in mapping are areas of Eastchop, Nantucket, and Moshup soils. Also included are small areas of soils with slopes of 0 to 3 percent and 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Chilmark soil is moderately rapid in the subsoil and slow in the substratum. Available

water capacity is moderate. The depth to a seasonal high water table is more than 6 feet.

Many areas of this soil are used for hay, improved pasture, or cultivated crops. Some areas are in woodland, and a few have been developed for homesites.

This soil is well suited to cultivated crops, hay, and pasture. Good tilth is easily maintained in cultivated areas, but erosion is a hazard. Stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help maintain desirable pasture plant species.

This soil is suited to woodland productivity. Minimizing soil disturbance to retain the mulch of leaves and designing regeneration cuts to optimize shade and reduce evapotranspiration will help to retain the soil moisture. The common trees on this soil are white oak, eastern white pine, and scarlet oak.

This soil has essentially no limitations as a site for dwellings with or without basements, but the slow permeability in the substratum is a limitation for use as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome this limitation.

This soil is in capability subclass IIe.

ChC—Chilmark sandy loam, 8 to 15 percent slopes. This soil is very deep, strongly sloping, and well drained. It is on small hills and ridges in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 3 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil is yellowish brown and strong brown sandy loam about 27 inches thick. The substratum extends to a depth of 60 inches or more. It consists of multicolored, firm layers of silty clay, sandy clay loam, and silty clay loam.

Included with this soil in mapping are areas of Eastchop, Nantucket, and Moshup soils. Also included are small areas of soils with slopes of 3 to 8 percent and 15 to 30 percent. Included areas make up about 25 percent of this unit.

The permeability of this Chilmark soil is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The depth to a seasonal high water table is more than 6 feet.

Most areas of this soil are used for hay or are in improved pasture. Some areas are used for cultivated crops or are in woodland.

This soil is suited to cultivated crops, hay, and pasture. Good tilth is easily maintained in cultivated areas, but erosion is a hazard. Stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help maintain desirable pasture plant species.

This soil is suited to woodland productivity. Minimizing soil disturbance to retain the mulch of leaves and designing regeneration cuts to optimize shade and reduce evapotranspiration will help to retain the soil moisture. The common trees on this soil are white oak, eastern white pine, and scarlet oak.

Slope is a limitation to use of this soil as a site for dwellings with or without basements. Land grading helps to overcome this limitation. The slow permeability in the substratum and slope are limitations of this soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the permeability. Installing distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass IIIe.

CsB—Chilmark sandy loam, 3 to 8 percent slopes, very stony. This soil is very deep, gently sloping, and well drained. It is on broad areas and small hills in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 100 acres. They make up about 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer comprised of 2 inches of loose, undecomposed organic material over 1 inch of matted, partly decomposed and well decomposed organic material. The surface layer is dark brown sandy loam about 2 inches thick. The subsoil is brown, yellowish brown, and strong brown sandy loam 33 inches thick. The substratum extends to a depth of 60 inches or more. It consists of firm, multicolored layers of silty clay, sandy clay loam, and silty clay loam.

Included with this soil in mapping are areas of Eastchop, Nantucket, and Moshup soils. Also included are small areas of soils with slopes of 0 to 3 percent and 8 to 15 percent. In some areas stones cover 3 to 15 percent of the surface area. Included areas make up about 25 percent of this unit.

The permeability of this Chilmark soil is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The depth to a seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few areas are used for homesites.

The stones and boulders on the surface limit the use of equipment and make this soil generally unsuitable for

cultivated crops. The soil is suited to pasture, but the equipment limitation makes the soil poorly suited to hay. Using proper stocking rates and restricted grazing during wet periods will help to maintain pasture-plant densities and reduce surface compaction.

This soil is suited to woodland productivity. Minimizing soil disturbance to retain the mulch of leaves and designing regeneration cuts to optimize shade and reduce evapotranspiration will help to retain the soil moisture. The common trees on this soil are white oak, eastern white pine, and scarlet oak.

This soil has essentially no limitations as a site for dwellings with or without basements, but the slow permeability in the substratum is a limitation of the soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the permeability.

This soil is in capability subclass VIs.

CsC—Chilmark sandy loam, 8 to 15 percent slopes, very stony. This soil is very deep, strongly sloping, and well drained. It is on small hills and ridges in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 75 acres. They make up slightly less than 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer comprised of 2 inches of loose, undecomposed organic material over 1 inch of matted, partly decomposed and well decomposed organic material. The surface layer is dark brown sandy loam about 2 inches thick. The subsoil is brown, yellowish brown, and strong brown sandy loam 33 inches thick. The substratum extends to a depth of 60 inches or more. It consists of firm, multicolored layers of silty clay, sandy clay loam, and silty clay loam.

Included with this soil in mapping are areas of Eastchop, Nantucket, and Moshup soils. Also included are small areas of soils with slopes less than 8 percent and more than 15 percent. In some areas stones cover 3 to 15 percent of the surface area. Included areas make up about 25 percent of this unit.

The permeability of this Chilmark soil is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The depth to a seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few areas are used for homesites.

The stones and boulders on the surface limit the use of equipment and make this soil generally unsuitable for cultivated crops. The soil is suited to pasture, but the equipment limitation makes the soil poorly suited to hay. Using proper stocking rates and restricted grazing during wet periods will help to maintain pasture-plant densities and reduce surface compaction.

This soil is suited to woodland productivity. Minimizing soil disturbance to retain the mulch of leaves and designing regeneration cuts to optimize shade and reduce evapotranspiration will help to retain the soil moisture. The common trees on this soil are white oak, eastern white pine, and scarlet oak.

Slope is a limitation to use of this soil as a site for dwellings with or without basements. Land grading helps to overcome this limitation. The slow permeability in the substratum is a limitation of this soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the permeability.

This soil is in capability subclass VIs.

CsD—Chilmark sandy loam, 15 to 25 percent slopes, very stony. This soil is very deep, moderately steep, and well drained. It is on hills and ridges in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 75 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer comprised of 2 inches of loose, undecomposed organic material over 1 inch of matted, partly decomposed and well decomposed organic material. The surface layer is dark brown sandy loam about 2 inches thick. The subsoil is brown, yellowish brown, and strong brown sandy loam 33 inches thick. The substratum extends to a depth of 60 inches or more. It consists of firm, multicolored layers of silty clay, sandy clay loam, and silty clay loam.

Included with this soil in mapping are areas of Eastchop, Nantucket, Ridgebury Variant, and Whitman Variant soils. Also included are small areas of soils with slopes of less than 15 percent and more than 25 percent. In some areas stones cover 3 to 15 percent of the surface area. Included areas make up about 25 percent of this unit.

The permeability of this Chilmark soil is moderately rapid in the subsoil and slow in the substratum. Available water capacity is moderate. The depth to a seasonal high water table is more than 6 feet.

The stones and boulders on the surface, slope, and an erosion hazard make this soil generally unsuitable for farming.

Most areas are wooded, and the soil is suited to woodland productivity. Minimizing soil disturbance to retain the mulch of leaves will help to retain the soil moisture. The hazard of erosion is a management concern, particularly in disturbed areas such as skid trails, landings, and access roads. Constructing access roads and trails with slopes of 2 to 10 percent and installing water bars will help to prevent soil erosion. The common trees on this soil are white oak, eastern white pine, and scarlet oak.

Slope is a limitation of this soil as a site for dwellings with or without basements. Land grading helps to overcome this limitation. The slow permeability in the substratum and slope are limitations of the soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the permeability. Installing distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIs.

EcA—Eastchop loamy sand, 0 to 3 percent slopes. This soil is very deep, nearly level, and excessively drained. It is on broad areas on outwash plains in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 100 acres. They make up about 1 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsoil is yellowish brown loamy sand about 27 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Riverhead, and Klej soil soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum and small areas of soils with slopes of 3 to 8 percent. Included areas make up about 20 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as cropland.

This soil is poorly suited to cultivated crops, hay, and pasture because of the low available water capacity. Mixing crop residue and manure into the surface layer helps to retain water, maintain tilth, and increase organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

This soil is generally suitable as a site for buildings with or without basements. The droughty nature of the soil is a limitation for lawns and shallow-rooted trees and shrubs. Adding a layer of topsoil and frequent watering during dry periods will help to overcome this limitation. In some areas this soil does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIIs.

EcB—Eastchop loamy sand, 3 to 8 percent slopes. This soil is very deep, gently sloping, and excessively drained. It is on small hills and knolls in the western part of Martha's Vineyard and on the Elizabeth Islands. The areas of this soil are irregular in shape and range from 4 to 75 acres. They make up about 3 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsoil is yellowish brown loamy sand about 27 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Chilmark, Klej, Nantucket, and Riverhead soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum and small areas of soils with slopes of 0 to 3 percent or 8 to 15 percent. Included areas make up about 20 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in cropland.

This soil is poorly suited to cultivated crops, hay, and pasture because of the low available water capacity. Mixing crop residue and manure into the surface layer helps to retain water, maintain tilth, and increase organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

This soil is generally suitable as a site for buildings with or without basements. The droughty nature of the soil is a limitation for lawns and shallow-rooted trees and shrubs. Adding a layer of topsoil and frequent watering during dry periods will help to overcome this limitation. In some areas this soil does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIIs.

EcC—Eastchop loamy sand, 8 to 15 percent slopes. This soil is very deep, strongly sloping, and excessively drained. It is on small hills and ridges in the western part of Martha's Vineyard and on the Elizabeth Islands. The areas of this soil are irregular in shape and

range from 4 to 25 acres. They make up about 3 percent of the survey area.

Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsoil is yellowish brown loamy sand about 27 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Moshup soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum and small areas of soils with slopes of 3 to 8 percent and 15 to 30 percent. Included areas make up about 20 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as cropland.

The low available water capacity, slope, and a hazard of erosion make this soil poorly suited to cultivated crops and hay and pasture. Conservation tillage, leaving large amounts of crop residue on the surface, and mixing manure into the surface layer help to retain moisture, reduce erosion, maintain tilth, and increase organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope limits the use of this soil as a site for buildings; land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because in some areas the soil does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass IVs.

EcD—Eastchop loamy sand, 15 to 35 percent slopes. This soil is very deep, moderately steep and steep, and excessively drained. It is on hills and ridges in the western part of Martha's Vineyard and in a few areas on the Elizabeth Islands. The areas of this soil are irregular in shape and range from 3 to 75 acres. They make up about 1 percent of the survey area.

Typically, the surface is covered with a layer of loose, undecomposed and decomposed leaves and twigs 3 inches thick. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is dark brown and yellowish brown loamy sand about 29 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this Eastchop soil in mapping are small areas of Berryland, Chilmark, Nantucket, and Whitman Variant soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum and soils with slopes of 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

The low available water capacity, slope, and a hazard of erosion make this soil generally unsuited to farming.

Most areas are wooded, but the soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help the growth of desirable species. The hazard of erosion is a management concern, particularly in disturbed areas such as skid trails, landings, and access roads. Constructing access roads and trails at a slope of 2 to 10 percent and installing water bars will help to prevent erosion. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope limits the use of this soil as a site for buildings; land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because in some areas the soil does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIIs.

EdB—Eastchop loamy sand, 3 to 8 percent slopes, very stony. This soil is very deep, gently sloping, and excessively drained. It is on small hills and knolls in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 100 acres. They make up about 2 percent of the survey area.

Typically, the surface is covered with a layer of loose, undecomposed and decomposed leaves and twigs 3 inches thick. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is dark brown and yellowish brown loamy sand about 29 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Moshup soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum, small areas of soils with slopes of 0 to 3 percent and 8 to 15 percent, and areas where stones cover more than 3 percent of the surface. Included areas make up about 25 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few areas are used as homesites.

The low available water capacity and the stones and boulders on the surface make this soil generally unsuitable for cultivated crops and poorly suited to hay and pasture. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species. The stones and boulders limit the use of equipment.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

This soil is generally suitable as a site for buildings with or without basements. The droughty nature of the soil is a limitation for lawns and shallow-rooted trees and shrubs. Adding a layer of topsoil and frequent watering during dry periods will help to overcome this limitation. In some areas this soil does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass VIs.

EdC—Eastchop loamy sand, 8 to 15 percent slopes, very stony. This soil is very deep, strongly sloping, and excessively drained. It is on small hills and ridges in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 100 acres. They make up about 3 percent of the survey area.

Typically, the surface is covered with a layer of loose, undecomposed and decomposed leaves and twigs 3 inches thick. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is dark brown and yellowish brown loamy sand about 29 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Moshup soils. Also included are soils that are 20 to 30 percent gravel in the subsoil and substratum, soils with slopes of 3 to 8 percent and 15 to 30 percent, and areas where stones cover 3 to 15 percent of the surface. Included areas make up about 25 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few are used as homesites.

The low available water capacity, the stones and boulders on the surface, and slope make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture. The stones and boulders on the surface limit the use of equipment. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture species.

This soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help to increase growth of desirable species. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope is a limitation of this soil as a site for buildings, and land shaping is generally needed. Establishing plant cover as soon a possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because the soil in some areas does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIs.

EdD—Eastchop loamy sand, 15 to 35 percent slopes, very stony. This soil is very deep, moderately steep and steep, and excessively drained. It is on hills and ridges in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 75 acres. They make up about 4 percent of the survey area.

Typically, the surface is covered with a layer of loose, undecomposed and decomposed leaves and twigs 3 inches thick. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is dark brown and yellowish brown loamy sand about 29 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berryland, Chilmark, Nantucket, and Whitman Variant soils. Also included are soils that are 20 to 30 percent gravel, small areas of soils that have slopes of 8 to 15 percent, and areas where stones cover 3 to 15 percent

of the surface. Included areas make up about 25 percent of this unit.

The permeability of this Eastchop soil is rapid or very rapid in the subsoil and substratum. Available water capacity is low. The depth to the seasonal high water table is more than 6 feet.

The low available water capacity, slope, the stones and boulders on the surface, and a hazard of erosion make this soil generally unsuited to farming.

Most areas are wooded, but the soil is poorly suited to woodland productivity because of droughtiness. Thinning crowded stands, especially those that contain undesirable species, will help the growth of desirable species. The hazard of erosion is a management concern, particularly in disturbed areas such as skid trails, landings, and access roads. Constructing access roads and trails at a slope of 2 to 10 percent and installing water bars will help to prevent erosion. The common trees on this soil are pitch pine, scrub oak, scarlet oak, black oak, and white oak.

Slope is a limitation of this soil as a site for buildings, and land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because in some areas the soil does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass VIIs.

EmC—Eastchop-Montauk complex, rolling. This unit consists of undulating and rolling, very deep soils on the side slopes and crests of hills on the Elizabeth Islands. Slopes range from 3 to 15 percent. The areas are irregular in shape and generally range from 10 to 50 acres. They make up less than 1 percent of the survey area. The unit is about 70 percent Eastchop soils, 15 percent Montauk soils, and 15 percent other soils. The soils are in areas so intermingled or so small that it was not practical to map them separately.

Typically, the surface layer of the Eastchop soils is dark grayish brown loamy sand about 7 inches thick. The subsoil is yellowish brown loamy sand about 27 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Typically, the surface layer of the Montauk soils is very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown, friable sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Included with these soils in mapping are small areas of Canton and Nantucket soils. Also included are areas of soils with slopes of 0 to 3 percent or 15 to 30 percent. Some areas have stones and boulders on the surface, and some areas are as much as 15 percent Plymouth soils.

The permeability in the subsoil and substratum of these Eastchop soils is rapid or very rapid. Available water capacity is low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the surface layer and subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

Most areas of this unit are in pasture and patches of shrubby vegetation.

The low available water capacity of the Eastchop soils, slope, and a hazard of erosion make this unit poorly suited to cultivated crops and hay and pasture. Conservation tillage and mixing manure into the surface layer help to retain the available moisture, reduce erosion, maintain tilth, and increase organic matter content. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This unit is fairly well suited to woodland productivity. Droughtiness in the Eastchop soils causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Strong winds and salt spray severely hinder the growth of trees that are common in areas near the shoreline. The common trees on this unit are eastern white pine and white oak; pitch pine and scrub oak are common in areas of the Eastchop soils.

Slope is a limitation of the unit as a building site in areas where the slope is more than 8 percent. Land grading is generally needed in such areas. Establishing a plant cover as soon as possible helps to control erosion at construction sites. The unit is limited as a site for septic tank absorption fields because some areas of the Eastchop soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Montauk soil does not readily accept effluent, causing a hazard of seepage.

This unit is in capability subclass IVs.

EnC—Eastchop-Montauk complex, rolling, very bouldery. This unit consists of undulating and rolling, very deep soils on the side slopes and crests of uplands on the Elizabeth Islands. Stones and boulders cover 1 to 3 percent of the surface area. Slopes range from 3 to 15 percent. The areas are irregular in shape and generally range from 20 to 600 acres. They make up about 3 percent of the survey area. The unit is about 70 percent Eastchop soils, 15 percent Montauk soils, and 15 percent other soils. The soils are in areas so

intermingled or so small that it was not practical to map them separately.

Typically, the Eastchop soils are covered by a 3-inch layer of undecomposed and decomposed leaves and twigs. The surface layer is very dark brown loamy sand about 5 inches thick. The subsoil is dark brown and yellowish brown loamy sand about 29 inches thick. The substratum is brownish yellow and light yellowish brown sand to a depth of 60 inches or more.

Typically, the surface layer of the Montauk soils is very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown, friable sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Included with these soils in mapping are small areas of Canton and Nantucket soils. Also included are areas of soils with slopes of 0 to 3 percent or 15 to 30 percent. Some areas are as much as 15 percent Plymouth soils.

The permeability of the subsoil and substratum of these Eastchop soils is rapid or very rapid. Available water capacity is low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the surface layer and subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

Many areas are in native pasture. There are patches of shrubby vegetation. Some areas are in woodland.

The stones and boulders on the surface, slope, and limited available water capacity make this unit generally unsuitable for cropland (fig. 9). The soils are poorly suited to pasture, and the stones and boulders limit the use of equipment, making the soils generally unsuited to hay. Using proper stocking rates and restricted and rotational grazing help to maintain pasture plant densities and reduce surface compaction.

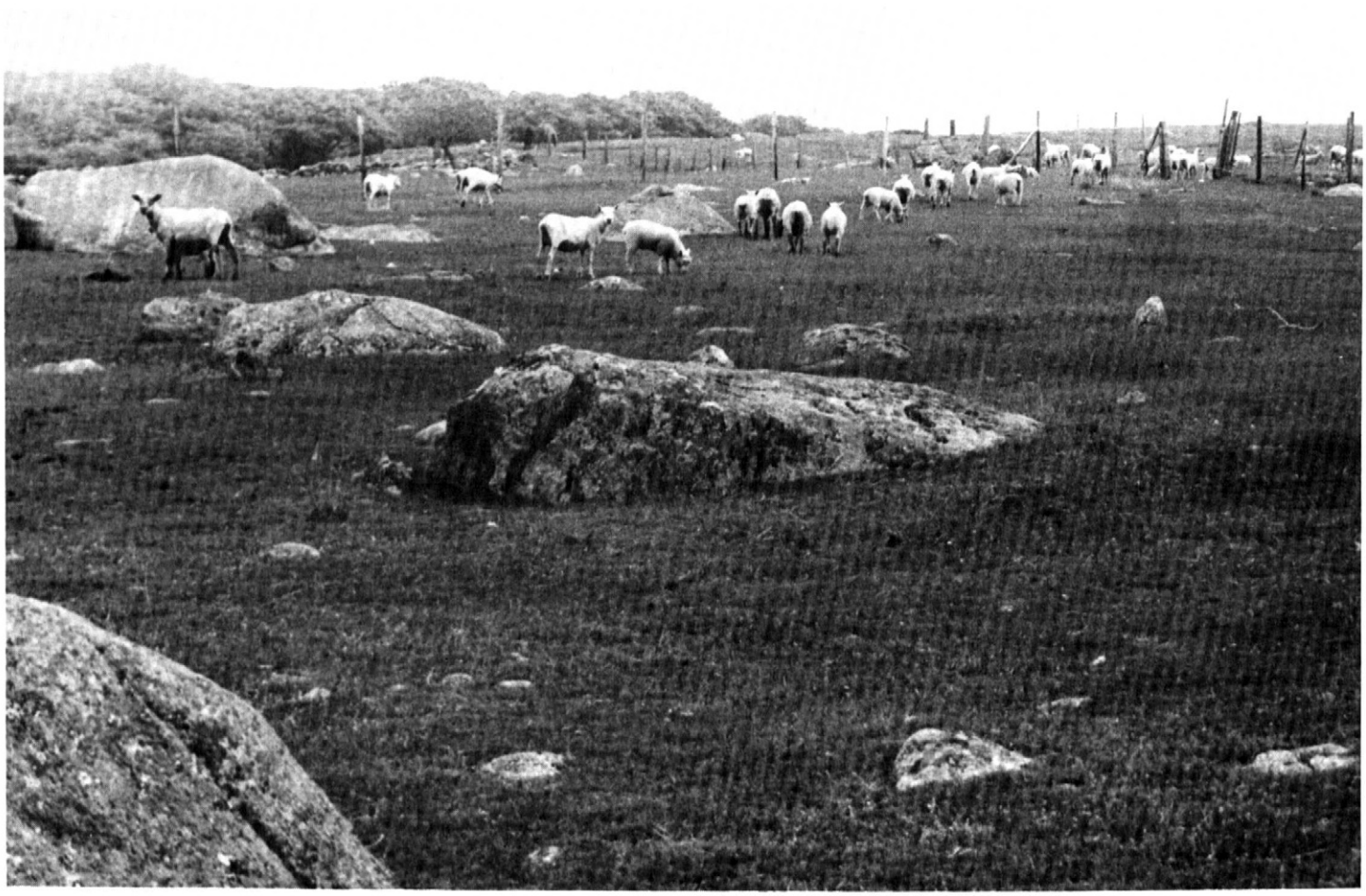

Figure 9.—An area of Eastchop-Montauk complex, rolling, very bouldery.

This unit is fairly well suited to woodland productivity. Droughtiness in the Eastchop soils causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Strong winds and salt spray severely hinder tree growth in areas of this unit near the shoreline. The common trees on this unit are eastern white pine and white oak; pitch pine and scrub oak are common in areas of the Eastchop soils.

Slopes of more than 8 percent limit the use of the soils as building sites. Land grading is generally needed in such areas. Establishing a plant cover as soon as possible helps to control erosion at construction sites. The unit is limited as a site for septic tank absorption fields because some areas of the Eastchop soils do not adequately filter the effluent, causing a hazard of groundwater pollution, and the Montauk soil does not readily accept effluent, causing a hazard of seepage. The stones and boulders on the surface limit excavation in some areas.

This map unit is in capability subclass VIs.

FsA—Freetown and Swansea mucks, 0 to 1 percent slopes. These soils are very deep, level, and very poorly drained. They are in depressions and areas adjacent to streams and bodies of open water. The areas are irregular in shape and range from 3 to 50 acres. They make up about 2 percent of the survey area. Some areas consist mostly of Freetown soils, some mostly of Swansea soils, and some of both. The Freetown and Swansea soils were mapped together because there are no major differences in their use and management. The total acreage of the unit is about 45 percent Freetown soils, 35 percent Swansea soils, and 20 percent other soils.

Typically, the Freetown soils consists of layers of dark reddish brown and black muck to a depth of 60 inches or more.

Typically, the Swansea soils have a surface layer of dark reddish brown muck about 19 inches thick. The substratum is multicolored coarse sand to a depth of 60 inches or more.

Included with this unit in mapping are areas of Berryland, Pompton, and Whitman soils. Also included are areas that were formerly cranberry bogs. They have a surface layer of coarse sand 5 to 12 inches thick over the muck. Some areas have water ponded on the surface most of the year.

The permeability of these Freetown soils is moderate or moderately rapid. The permeability of these Swansea soils is moderate or moderately rapid in the organic material and very rapid in the substratum. Available water capacity is very high in both soils. A high water table is at or near the surface most of the year, and water is ponded on some areas.

Most areas of these soils are wooded or have shrubby vegetation.

The high water table makes these soils generally unsuited to cultivated crops except cranberries. Drainage is hampered because suitable outlets are difficult to establish and maintain.

These soils are poorly suited to woodland productivity because of a high water table, a high rate of seedling mortality, and a hazard of uprooting. Because of low soil strength, equipment can be used only when the soil is frozen. The common trees on this unit are red maple, tupelo, and Atlantic white-cedar.

The high water table and low strength limit these soils for most types of nonfarm use other than as wetland wildlife habitat.

This unit is in capability subclass Vw.

HaA—Haven very fine sandy loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and well drained. It is in broad areas on outwash plains mostly in the central and southern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 4 to 300 acres. They make up nearly 4 percent of the survey area.

Typically, the surface layer is dark brown very fine sandy loam about 2 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown very fine sandy loam 21 inches thick. The substratum is stratified yellowish brown, yellowish red, and brownish yellow coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Riverhead, and Tisbury soils. Also included are small areas of soils that have slopes of 3 to 8 percent. The included areas make up about 20 percent of the map unit.

The permeability of this Haven soil is moderate in the subsoil and very rapid in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in cropland, and a few areas are used for homesites.

This soil is well suited to cultivated crops and to hay and pasture. Incorporating crop residue into the soil and adding manure to the surface layer increase the organic matter content of the soil and improve tilth. The main pasture management concern is the prevention of overgrazing, which reduces the density and hardiness of plants. The use of proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pastures and reduce soil compaction.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help to attain optimum growth of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

This soil is in capability class I.

HaB—Haven very fine sandy loam, 3 to 8 percent slopes. This soil is very deep, gently sloping, and well

Figure 10.—A vineyard in West Tisbury on Haven very fine sandy loam, 3 to 8 percent slopes.

drained. It is in broad areas and on small hills mostly in the central and southern parts of Martha's Vineyard. The areas are irregular in shape and range from 4 to 300 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is dark brown very fine sandy loam about 2 inches thick. The subsoil is dark yellowish brown, yellowish brown, and light olive brown very fine sandy loam 21 inches thick. The substratum is stratified yellowish brown, yellowish red, and brownish yellow coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Riverhead, and Tisbury soils. Also included are a few areas of soils with slopes of 0 to 3 percent and 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Haven soil is moderate in the subsoil and very rapid in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in cropland, and a few areas are used as homesites.

This soil is well suited to cultivated crops and to hay and pasture (fig. 10). Conservation tillage and the use of cover crops and grasses and legumes in the cropping system help to control an erosion hazard, improve tilth, and increase the organic matter content of the soil. The main pasture management concern is the prevention of overgrazing, which reduces the density and hardiness of plants. The use of proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pastures and reduce soil compaction.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help to attain optimum growth of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

This soil is generally suitable as a building site. The soil in some areas does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIe.

KaA—Katama sandy loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and well drained. It is in broad areas in the southeastern corner of the town of Edgartown. The areas of this soil are irregular in shape and range from 10 to 200 acres. They make up about 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown sandy loam 6 inches thick. The subsurface layer is dark brown sandy loam 3 inches thick. The subsoil is 17 inches thick. The upper 7 inches of the subsoil is dark yellowish brown sandy loam, and the lower 10 inches is light olive brown loamy coarse sand. The substratum is yellowish brown and strong brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Riverhead and Carver soils that make up about 15 percent of the unit.

The permeability of this Katama soil is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate. The depth to seasonal high water table is more than 6 feet.

Many areas of this soil are in cropland. A few areas are used as homesites, and some areas are in native vegetation.

This soil is well suited to cultivated crops and to hay and pasture (fig. 11). Good tilth is easily maintained in cultivated areas, but the soil is droughty during periods of low rainfall. Incorporating crop residue into the soil and adding manure to the surface layer increase the organic matter content of the soil. The use of proper stocking rates, deferred grazing during wet periods, and rotational grazing help to maintain the desirable pasture plant species.

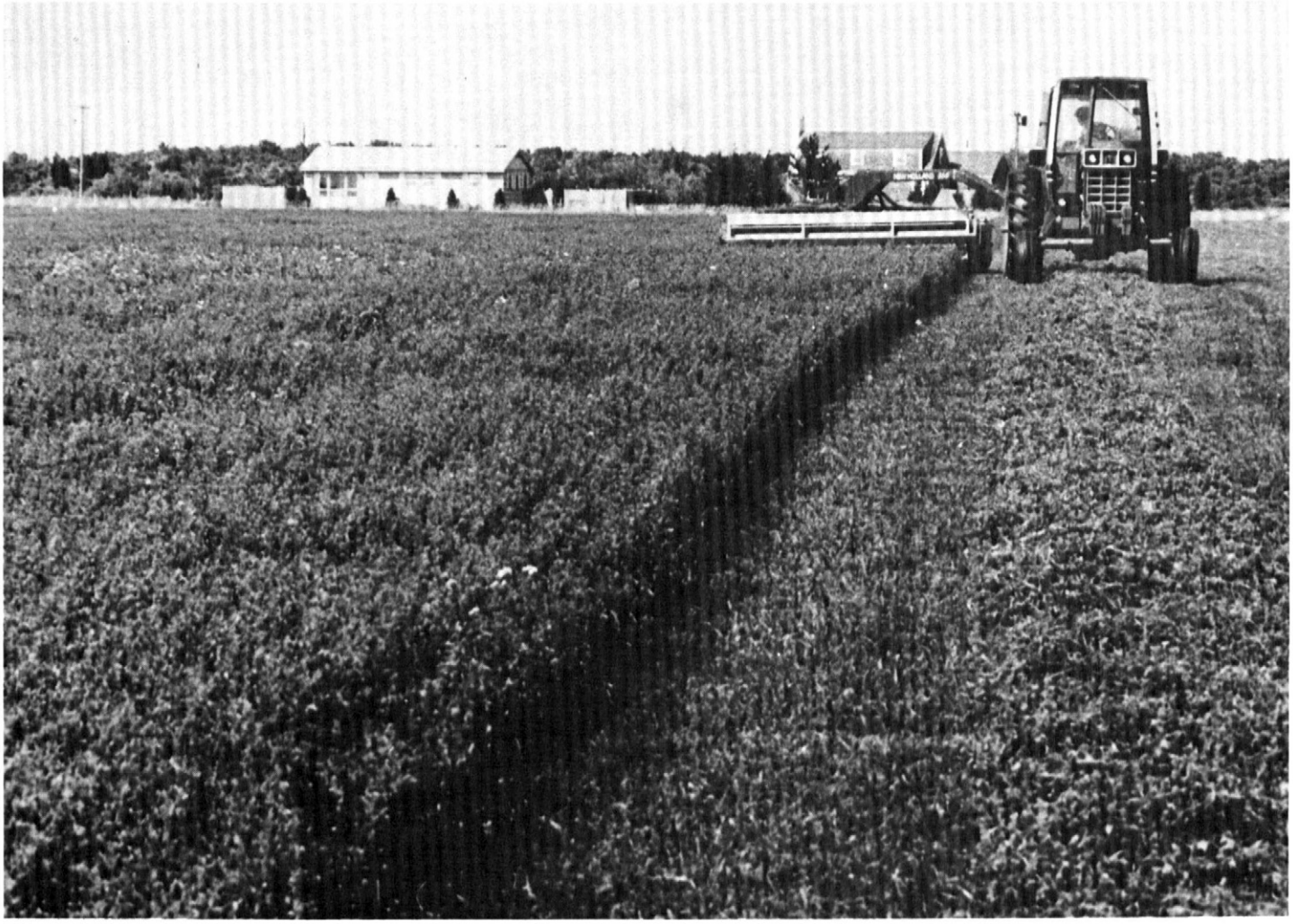

Figure 11.—Cutting alfalfa on Katama sandy loam, 0 to 3 percent slopes.

There are no major soil limitations for woodland management, but strong winds and salt spray severely hinder tree growth.

This soil is generally suitable as a site for buildings with or without basements. The soil in some areas does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIs.

KeA—Klej loamy coarse sand, sandy substratum, 0 to 5 percent slopes. This soil is very deep, nearly level to gently sloping, and moderately well drained. It is in depressions and in low areas adjacent to bodies of open water. The areas of this soil are irregular in shape and range from 5 to 40 acres. They make up about 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer undecomposed and decomposed leaves and twigs. The surface layer is light brownish gray loamy coarse sand about 4 inches thick. The subsoil is about 26 inches thick. The upper 7 inches of the subsoil is dark brown loamy coarse sand, and the lower 19 inches is yellowish brown coarse sand. The subsoil is mottled at a depth of 27 inches. The substratum is mottled, yellowish brown coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Pompton, and Tisbury soils. Also included are a few places where the subsoil and substratum are gravelly. Included areas make up about 20 percent of this unit.

The permeability of this Klej soil is rapid or very rapid throughout. Available water capacity is very low. The seasonal high water table is at a depth of 1.5 to 3.5 feet in winter and spring.

Most areas of this soil are in woodland. Some areas are in cropland.

This soil is suited to cultivated crops and to pasture and hay. The very low available water capacity and the seasonal high water table are the main limitations for cultivated crops. Erosion is a hazard on the gently sloping cleared areas. The main management practices for crops are drainage, irrigation during dry periods, using cover crops, and incorporating crop residue and manure into the surface layer. The main pasture management concern is the prevention of overgrazing and surface compaction, which reduce the hardiness and density of plants. The use of proper stocking rates and restricting grazing and equipment use during wet periods help to maintain plant densities and reduce surface compaction.

This soil is fairly well suited to woodland productivity. Droughtiness causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves and designing regeneration cuts to maintain shade and reduce evapotranspiration will help to retain the limited soil moisture. The common trees on this soil are white oak, black oak, scarlet oak, and red maple.

The seasonal high water table is the main limitation of this soil as a site for buildings and septic tank absorption fields. The permeability in some areas of this soil prevents adequate filtering of septic tank effluent, causing a pollution hazard to ground water. Using drainage or fill helps to overcome the water table. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIIw.

MoA—Moshup loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and moderately well drained. It is on broad tops of hills and at the base of slopes. It is in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 30 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 1-inch-thick layer of loose leaves and twigs. The surface layer is very dark grayish brown and dark grayish brown loam about 8 inches thick. The subsoil is dark yellowish brown loam and silty clay loam about 15 inches thick and is mottled in the lower 4 inches. The substratum is light brownish gray, mottled, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Ridgebury Variant soils. Also included are areas of soils where the subsoil and substratum have thin strata of loamy sand, sand, gravelly loamy sand, or gravelly sand and small areas of soils with slopes of 3 to 8 percent. Included areas make up about 25 percent of this unit.

The permeability of this Moshup soil is moderate or slow in the subsoil and slow to very slow in the substratum. Available water capacity is moderate. A seasonal high water table is perched above the substratum in late fall, in winter, and in spring.

Most areas of this soil are in abandoned pasture and shrubby vegetation. Some areas are in cropland, and some are used as homesites.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table is the main management concern. Good tilth is easily maintained in cultivated areas. The use of cover crops and grasses and legumes in the cropping system and mixing crop residue and manure into the surface layer help to maintain tilth and increase the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species. Deferred grazing when the pasture is wet helps to prevent damage to the sod.

This soil is well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main

management practices. The common trees on this soil are black oak, white oak, red maple, and tupelo.

The seasonal high water table is a main limitation of the soil as a site for dwellings and septic tank absorption fields, and the permeability in the substratum is a further limitation for septic tank absorption fields. Adding fill and using regional drainage help to overcome the water table. Enlarging the absorption field helps to overcome the permeability.

This soil is in capability subclass IIw.

MoB—Moshup loam, 3 to 8 percent slopes. This soil is very deep, gently sloping, and moderately well drained. It is on broad tops of hills and on the lower parts of long slopes. It is in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 40 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 1-inch-thick layer of loose leaves and twigs. The surface layer is very dark grayish brown and dark grayish brown loam about 8 inches thick. The subsoil is dark yellowish brown loam and silty clay loam about 15 inches thick and is mottled in the lower 4 inches. The substratum is light brownish gray, mottled, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Ridgebury Variant soils. Also included are areas of soils where the subsoil and substratum have thin strata of loamy sand, sand, gravelly loamy sand, or gravelly sand and small areas of soils with slopes of 0 to 3 percent or 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Moshup soil is moderate or moderately rapid in the subsoil and slow to very slow in the substratum. Available water capacity is moderate. The seasonal high water table is perched above the substratum in late fall, in winter, and in spring.

Most areas of this soil are in abandoned pasture and shrubby vegetation. Some areas are in cropland, and some are used as homesites.

This soil is suited to cultivated crops and to hay and pasture. The seasonal high water table is the main management concern. Good tilth is easily maintained, but erosion is a hazard in cultivated areas. The use of cover crops and grasses and legumes in the cropping system and mixing crop residue and manure into the surface layer help to maintain tilth, increase the organic matter content, and reduce the erosion hazard. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species. Deferred grazing when the pasture is wet helps to prevent damage to the sod.

This soil is well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, white oak, red maple, and tupelo.

The seasonal high water table is a main limitation of the soil as a site for dwellings and septic tank absorption fields, and the permeability in the substratum is a further limitation for septic tank absorption fields. Adding fill and using regional drainage help to overcome the water table. Enlarging the absorption field helps to overcome the permeability.

This soil is in capability subclass IIw.

MsB—Moshup loam, 0 to 8 percent slopes, very stony. This soil is very deep, nearly level and gently sloping, and moderately well drained. It is on broad hilltops and on the lower parts of long slopes. It is in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 30 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 1-inch-thick layer of loose leaves and twigs. The surface layer is very dark grayish brown and dark grayish brown loam about 8 inches thick. The subsoil is dark yellowish brown loam and silty clay loam about 15 inches thick and is mottled in the lower 4 inches. The substratum is light brownish gray, mottled, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Chilmark, Nantucket, and Ridgebury Variant soils. Also included are areas of soils where the subsoil and substratum have thin strata of loamy sand, sand, gravelly loamy sand, or gravelly sand and small areas of soils with slopes of 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Moshup soil is moderate or slow in the subsoil and slow to very slow in the substratum. Available water capacity is moderate. The seasonal high water table is perched above the substratum in late fall, in winter, and in spring.

The stones and boulders on the surface and the seasonal high water table make this soil generally unsuitable for cultivated crops. Erosion is a hazard in cultivated areas. This soil is suited to pasture, but the stones on the surface limit the use of equipment, making the soil poorly suited to hay. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species. Deferred grazing when the soil is wet helps to prevent damage to the sod.

This soil is well suited to woodland productivity, and most areas are wooded. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, white oak, red maple, and tupelo.

The seasonal high water table is a main limitation of the soil as a site for dwellings and septic tank absorption fields, and the permeability in the substratum is a further limitation for septic tank absorption fields. Adding fill and using regional drainage help to overcome the water table. Enlarging the absorption field helps to overcome the permeability.

This soil is in capability subclass VIs.

NaB—Nantucket sandy loam, 3 to 8 percent slopes. This soil is very deep, gently sloping, and well drained. It is on the crests and sides of ridges and hills in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 40 acres. They make up nearly 1 percent of the survey area.

Typically, the surface layer is dark brown sandy loam about 7 inches thick. The subsoil is yellowish brown sandy loam about 13 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Chilmark, Eastchop, Plymouth, and Moshup soils. Also included are small areas of soils with slopes of 0 to 3 percent or 8 to 15 percent. Included areas make up about 25 percent of this unit.

The permeability of this Nantucket soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in abandoned pasture and shrubby vegetation. Some areas are in woodland, and a few are used as homesites.

This soil is well suited to cultivated crops and hay and pasture. Good tilth is easily maintained in cultivated areas, but erosion is a hazard. Stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer helps maintain tilth and increase the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help maintain desirable pasture plant species.

This soil is fairly well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, scarlet oak, and white oak.

This soil has essentially no limitations as a site for dwellings with or without basements. The moderately slow to slow permeability in the substratum is a limitation of the soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome this limitation.

This soil is in capability subclass IIs.

NaC—Nantucket sandy loam, 8 to 15 percent slopes. This soil is very deep, strongly sloping, and well drained. It is on small hills and ridges in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 60 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is dark brown sandy loam about 7 inches thick. The subsoil is yellowish brown sandy loam about 13 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Chilmark, Eastchop, Plymouth, and Moshup soils. Also included are small areas of soils with slopes of 3 to 8 percent or 15 to 30 percent. Included areas make up about 25 percent of this unit.

The permeability of this Nantucket soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in abandoned pasture and shrubby vegetation. Some areas are in woodland, and a few are used as homesites.

This soil is well suited to cultivated crops, orchards, and hay and pasture. Good tilth is easily maintained in cultivated areas, but erosion is a hazard and the soil is droughty during periods of low rainfall, stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer helps maintain tilth and increase the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help maintain desirable pasture plant species.

This soil is fairly well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, scarlet oak, and white oak.

Slope is a limitation to use of this soil as a site for dwellings with or without basements. Land grading helps to overcome this limitation. The slow permeability in the substratum and slope are limitations to use as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the slow permeability. Installing distribution lines on the contour or in areas that were graded during construction will help to offset the slope.

This soil is in capability subclass IIIe.

NnB—Nantucket sandy loam, 3 to 8 percent slopes, very stony. This soil is very deep, gently sloping, and well drained. It is on the crests and sides of ridges and hills in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and

range from 5 to 40 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 2-inch-thick layer of undecomposed and decomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Chilmark, Eastchop, Plymouth, and Moshup soils. Also included are small areas of soils with slopes of 0 to 3 percent or 8 to 15 percent. In some areas stones cover 3 to 15 percent of the surface. Included areas make up about 25 percent of this unit.

The permeability of this Nantucket soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few areas are used as homesites.

The stones and boulders on the surface make this soil generally unsuitable for cultivated crops. The soil is suited to pasture, but the stones and boulders limit the use of equipment, making the soil poorly suited to hay. The use of proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pasture plant densities and reduce surface compaction.

This soil is fairly well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, scarlet oak, and white oak.

This soil has essentially no limitations as a site for dwellings with or without basements. The moderately slow to slow permeability in the substratum is a limitation of the soil as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome this limitation.

This soil is in capability subclass VIs.

NnC—Nantucket sandy loam, 8 to 15 percent slopes, very stony. This soil is very deep, strongly sloping, and well drained. It is on small hills and ridges in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of the soil are irregular in shape and range from 5 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 2-inch-thick layer of undecomposed and decomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Included with his soil in mapping are areas of Chilmark, Eastchop, Plymouth, and Moshup soils. Also included are small areas of soils with slopes of 3 to 8 percent or 15 to 30 percent. In some areas stones cover 3 to 15 percent of the surface. Included areas make up about 25 percent of this unit.

The permeability of this Nantucket soil is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are used as pasture, and a few are used as homesites.

The stones and boulders on the surface make this soil generally unsuitable for cultivated crops. The soil is suited to pasture, but the stones and boulders limit the use of equipment, making the soil poorly suited to hay. The use of proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pasture plant densities and reduce surface compaction.

This soil is fairly well suited to woodland productivity. Thinning crowded stands and removal or control of vegetation that competes with seedlings are the main management practices. The common trees on this soil are black oak, scarlet oak, and white oak.

Slope is a limitation to use of this soil as a site for dwellings with or without basements. Land grading helps to overcome this limitation. The slow permeability in the substratum and slope are limitations to use as a site for septic tank absorption fields. Enlarging the absorption field helps to overcome the slow permeability. Installing distribution lines on the contour or in areas that were graded during construction will help to offset the slope.

This soil is in capability subclass VIs.

NpC—Nantucket-Plymouth complex, rolling. This unit consists of undulating and rolling, very deep soils on the side slopes and crests of uplands in the southwestern section of Martha's Vineyard. The areas are irregular in shape and generally range from 10 to 100 acres. They make up less than 1 percent of the survey area. Slopes range from 3 to 15 percent. The unit is about 60 percent Nantucket soils, 20 percent Plymouth soils, and 20 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the Nantucket soils have a surface layer of dark brown sandy loam about 7 inches thick. The subsoil is yellowish brown sandy loam about 13 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Typically, the Plymouth soils have a surface layer of dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part is dark brown and

yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Included with these soils in mapping are small areas of Chilmark, Eastchop, and Moshup soils. Also included are areas of soils with slopes of 15 to 30 percent. Some areas have stones on the surface.

The permeability of these Nantucket soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate in the Nantucket soils and very low in the Plymouth soils. The depth to the seasonal high water table is more than 6 feet in both soils.

Most areas of this unit are in abandoned pasture and scattered shrubby vegetation. Many areas have reverted to woodland, and a few areas are used as cropland or homesites.

This unit is suitable for cultivated crops and hay and pasture, but soil erosion is a hazard. Stripcropping, terracing, conservation tillage, and the use of cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion in cultivated areas. Mixing crop residue and manure into the surface layer improves tilth and increases the organic matter content of the soil. The use of proper stocking rates and deferred grazing and rotational grazing help to maintain desirable pasture plant species.

This unit is fairly well suited to woodland productivity. The rate of seedling mortality on the Plymouth soils is high because of droughtiness. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help the survival of seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Areas of this unit near the shore are subject to winds and salt spray that severely hinder tree growth.

Slope is a limitation of the unit as a building site in areas where the slope is more than 8 percent, and land grading commonly is needed. Establishing a plant cover as soon as possible helps to prevent erosion at construction sites. The unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Nantucket soils do not readily accept effluent, causing a hazard of seepage.

This unit is in capability subclass IIIe.

NsB—Nantucket-Plymouth complex, undulating, very stony. This unit consists of very deep soils on side slopes and crests of uplands in the southwestern section of Martha's Vineyard. Stones cover 1 to 3 percent of the surface area. The areas of the unit are irregular in shape and range from 10 to 150 acres. They make up less than 1 percent of the survey area. Slopes range from 3 to 8 percent. This unit is about 60 percent Nantucket soils, 20 percent Plymouth soils, and 20 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface of the Nantucket soils is covered with a 2-inch-thick layer of undecomposed and decomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam about 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Typically, the Plymouth soils have a surface layer of dark brown coarse sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Included with these soils in mapping are small areas of Chilmark, Eastchop, and Moshup soils. Also included are areas of soils with slopes of 0 to 3 percent or 8 to 15 percent. Some areas do not have stones on the surface.

The permeability of these Nantucket soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate in the Nantucket soils and very low in the Plymouth soils. The depth to the seasonal high water table is more than 6 feet in both soils.

Most areas of this unit are in woodland. Some areas are used as pasture, and a few areas are used as homesites.

The stones and boulders on the surface make this unit generally unsuitable for crops. The soils are suited to pasture, but the stones and boulders limit the use of equipment, making the soils poorly suited to hay. Using proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pasture plant densities and reduce surface compaction.

This unit is fairly well suited to woodland productivity. The rate of seedling mortality on the Plymouth soils is high because of droughtiness. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Areas of this unit near the shore are subject to winds and salt spray that severely hinder tree growth.

This unit has essentially no limitations as a site for dwellings with or without basements. The unit is limited as a site for septic tank absorption fields, however, because in some areas the Nantucket soils do not readily accept effluent, causing a hazard of seepage, and the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution.

This unit is in capability subclass VIs.

NsC—Nantucket-Plymouth complex, rolling, very stony. This unit consists of undulating and rolling, very deep soils on slopes and crests of uplands in the southwestern section of Martha's Vineyard and on the Elizabeth Islands. Stones and boulders cover 1 to 3 percent of the surface area. The areas are irregular in shape and range from 10 to 500 acres. They make up about 2 percent of the survey area. Slopes range from 3 to 15 percent. The unit is about 60 percent Nantucket soils, 20 percent Plymouth soils, and 20 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface of the Nantucket soils is covered with a 2-inch-thick layer of decomposed and undecomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam about 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Typically, the Plymouth soils have a surface layer of dark brown coarse sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Included with these soils in mapping are small areas of Chilmark, Eastchop, and Moshup soils. Also included are areas of soils with slopes of 15 to 30 percent. Some areas do not have stones on the surface.

The permeability of these Nantucket soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate in the Nantucket soils and very low in the Plymouth soils. The depth to the seasonal high water table is more than 6 feet in both soils.

Most areas of this unit are in woodland. Some areas are used as pasture, and a few areas are used as homesites.

The stones and boulders on the surface make this unit generally unsuitable for cultivated crops. The soils are suited to pasture, but the stones and boulders limit the use of equipment, making the soils poorly suited to hay. Using proper stocking rates, restricted grazing during wet periods, and rotational grazing help to maintain pasture plant densities and reduce surface compaction.

This unit is fairly well suited to woodland productivity. The rate of seedling mortality on the Plymouth soils is high because of droughtiness. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Areas of this unit near the shore are subject to winds and salt spray that severely hinder tree growth.

Slope is a limitation of the unit as a building site in areas where the slope is more than 8 percent, and land grading commonly is needed. Establishing a plant cover as soon as possible helps to prevent erosion at construction sites. The unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Nantucket soils do not readily accept effluent, causing a hazard of seepage.

This unit is in capability subclass VIs.

NsD—Nantucket-Plymouth complex, hilly, very stony. This unit consists of hilly and steep, very deep soils on side slopes and ridges on uplands in the southwestern section of Martha's Vineyard and on the Elizabeth Islands. Stones and boulders cover 1 to 5 percent of the surface area. The areas are irregular in shape and generally range from 10 to 60 acres. They make up less than 1 percent of the survey area. Slopes range from 15 to 35 percent. The unit is about 40 percent Nantucket soils, 40 percent Plymouth soils, and 20 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface of the Nantucket soils is covered with a 2-inch-thick layer of decomposed and undecomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam about 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Typically, the Plymouth soils have a surface layer of dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Included with these soils in mapping are small areas of Chilmark, Eastchop, and Whitman Variant soils. Also included are areas of soils with slopes of 8 to 15 percent

or 35 to 40 percent. Some areas do not have stones on the surface.

The permeability of these Nantucket soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. The available water capacity is moderate in the Nantucket soils and very low in the Plymouth soils. The depth to the seasonal high water table is more than 6 feet in both soils.

These soils are generally unsuitable for cultivated crops and hay and pasture because of stones and boulders on the surface, slope, and limited available water capacity.

The unit is fairly well suited to woodland productivity, and most areas are wooded, but droughtiness in the Plymouth soils causes a high rate of seedling mortality. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help the survival rate of seedlings. The hazard of erosion is a management concern, particularly in disturbed areas such as skid trails, landings, and access roads. Constructing access roads and trails with slopes of 2 to 10 percent and installing water bars will help to prevent erosion. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Areas of the unit near the shore are subject to winds and salt spray that severely hinder tree growth.

Slope is the main limitation of the unit as a building site, and extensive land shaping is generally needed. Establishing a plant cover as soon as possible helps to control a severe erosion hazard at construction sites. The unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of groundwater pollution, and the Nantucket soils do not readily accept effluent, causing a hazard of side-slope seepage. Slope is a further limitation of the unit as a site for septic tank absorption fields.

This unit is in capability subclass VIs.

PaA—Pawcatuck and Matunuck mucky peats, 0 to 1 percent slopes. This unit consists of very deep, level, very poorly drained soils in tidal areas subject to daily inundation. The soils are adjacent to shore areas and brackish ponds. The areas are irregular in shape and range from 4 to 50 acres. They make up about 1 percent of the survey area. Some areas consist mostly of Pawcatuck soils, some mostly of Matunuck soils, and some of both. The Pawcatuck and Matunuck soils are mapped together because there are no major differences in their use and management. The total acreage of the unit is about 50 percent Pawcatuck soils, 35 percent Matunuck soils, and 15 percent other soils.

Typically, the Pawcatuck soils have a surface layer of very dark grayish brown mucky peat about 10 inches thick. The next layer is black mucky peat about 9 inches thick. The substratum is light brownish gray loose sand to a depth of 60 inches or more.

Typically, the Matunuck soils have a surface layer of very dark grayish brown mucky peat about 10 inches thick. The substratum is black and gray coarse sand to a depth of 60 inches or more.

Included with this unit in mapping are small areas of Berryland soils, Beaches, and Udipsamments. Also included are small areas where the organic material is more than 51 inches thick.

The permeability of these Pawcatuck soils is moderate to rapid in the organic material and very rapid in the substratum. The permeability of these Matunuck soils is rapid in the organic material and very rapid in the substratum. Available water capacity is moderate in the Matunuck soils and high in the Pawcatuck soils.

Most areas of this unit are in salt-tolerant grasses. The daily tidal flooding limits the unit for most uses other than as wetland wildlife habitat.

This unit is in capability subclass VIIIw.

Pg—Pits, sand and gravel. This unit consists of irregularly shaped areas from which sand and gravel have been removed for construction purposes. The areas range from 3 to 30 acres. They are throughout the survey area and make up less than 1 percent of the survey area. The pits are 5 to 25 feet deep and mainly have steep sides and a nearly level floor. Some areas have small pools of water.

These pits are generally devoid of vegetation, although some older ones have scattered bushes and grass. Most pits are droughty, but some have been excavated to the level of the seasonal high water table.

The areas of this unit are variable in soil properties and slope and are generally poorly suited to farming, woodland, and residential development. Onsite investigation is necessary to determine the suitability for any use.

This unit is not assigned to a capability subclass.

PnC—Plymouth-Canton-Nantucket complex, rolling, very bouldery. This unit consists of undulating and rolling, very deep soils on side slopes and crests of uplands on the Elizabeth Islands. Stones and boulders cover 1 to 3 percent of the surface area. Slopes range from 3 to 15 percent. The areas of the unit are irregular in shape and generally range from 10 to 150 acres. They make up nearly 1 percent of the survey area. The unit is about 30 percent Plymouth soils, 30 percent Canton soils, 20 percent Nantucket soils, and 20 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface layer of the Plymouth soils is dark brown coarse sandy loam about 4 inches thick. The

subsoil is 19 inches thick. The upper part of the subsoil is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Typically, the surface layer of the Canton soils is very dark gray sandy loam about 7 inches thick. The subsoil is 23 inches thick. The upper part of the subsoil is dark brown and yellowish brown sandy loam. The lower part is light olive brown loamy sand. The substratum extends to a depth of 60 inches or more. It is olive loamy sand in the upper part and pale olive gravelly sand in the lower part.

Typically, the surface of the Nantucket soils is covered with a 2-inch-thick layer of decomposd and undecomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam about 16 inches thick. The substratum is light olive brown, mottled, firm sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Eastchop and Montauk soils. Also included are areas of soils with slopes of 0 to 3 percent or 15 to 30 percent. Some areas do not have stones and boulders on the surface.

The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Canton soils is moderately rapid in the subsoil and rapid in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Nantucket soils is moderate or moderately rapid in the surface layer and subsoil and moderately slow or slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

Most areas of this unit are in native pasture and patches of shrubby vegetation. Some areas on Cuttyhunk Island are used as homesites.

The stones and boulders on the surface make this unit generally unsuitable for crops and poorly suited to hay. The soils are suited to pasture. Using proper stocking rates and restricted and rotational grazing help to maintain pasture plant densities and reduce surface layer compaction.

This unit is fairly well suited to woodland productivity. Seedling mortality is a limitation in areas of the Plymouth soils. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will increase the survival rate of seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong winds and salt spray severely hinder tree growth in areas of this unit near the shore.

Slope is a limitation of the unit as a building site in areas where the slope is more than 8 percent, and land grading is needed in such areas. Establishing a plant cover as soon as possible will help to control erosion at construction sites. The unit is limited as a site for septic tank absorption fields because in some areas the Plymouth and Canton soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Nantucket soils do not readily accept effluent, causing a hazard of seepage.

This unit is in capability subclass VIs.

PtC—Plymouth-Montauk complex, rolling, extremely bouldery. This unit consists of undulating and rolling, very deep soils on side slopes and crests of uplands on the Elizabeth Islands. Stones and boulders cover 3 to 15 percent of the surface area. Slopes range from 3 to 15 percent. The areas are irregular in shape and generally range from 20 to 200 acres. They make up about 1 percent of the survey area. The unit is about 70 percent Plymouth soils, 15 percent Montauk soils, and 15 percent other soils (fig. 12). The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface layer of the Plymouth soils is dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part of the subsoil is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Typically, the surface layer of the Montauk soils is very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Included with these soils in mapping are small areas of Canton and Nantucket soils. Also included are areas of soils with slopes of 0 to 3 percent or 15 to 30 percent. Some areas do not have stones and boulders on the surface. In some areas up to 20 percent of the unit consists of Eastchop soils.

The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

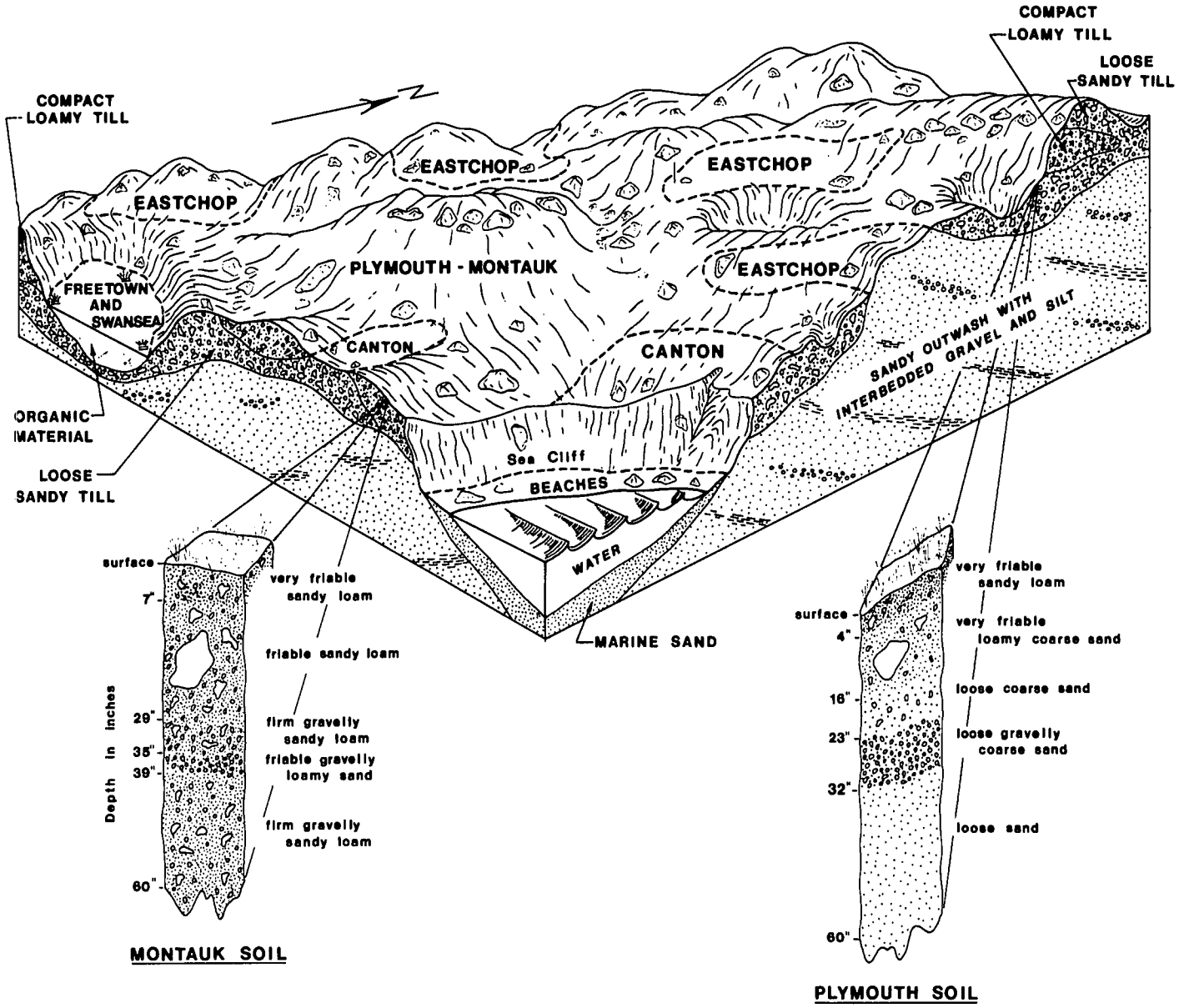

Figure 12.—Typical pattern of soils and underlying material in the Plymouth-Montauk complex, rolling, extremely bouldery.

Most areas of this unit are in woodland. Some areas are in native pasture. There are patches of shrubby vegetation.

The stones and boulders on the surface make this unit generally unsuitable for crops and poorly suited to hay. The soils are suited to pasture. Using proper stocking rates and restricted and rotational grazing help to maintain pasture plant densities and reduce surface-layer compaction.

This unit is fairly well suited to woodland productivity. Seedling mortality is a limitation in areas of the Plymouth soils. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will increase the survival rate of seedlings. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong

winds and salt spray severely hinder tree growth in areas of this unit near the shore.

Where it is more than 8 percent, slope is a limitation to use of the soils as a building site. Land grading is needed in such areas. Establishing a plant cover as soon as possible helps to control erosion at construction sites. This unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Montauk soils do not readily accept effluent, causing a hazard of seepage.

This unit is in capability subclass VIIs.

PtD—Plymouth-Montauk complex, hilly, extremely bouldery. This unit consists of hilly and steep, very deep soils on side slopes and ridges of uplands on the Elizabeth Islands. Stones and boulders cover 3 to 15 percent of the surface area. Slopes range from 15 to 35 percent. The areas are irregular in shape and generally range from 20 to 600 acres. They make up about 3 percent of the survey area. The unit is about 70 percent Plymouth soils, 15 percent Montauk soils, and 15 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface layer of the Plymouth soils is dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part of the subsoil is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Typically, the surface layer of the Montauk soils is very dark gray sandy loam about 7 inches thick. The subsoil is dark brown and yellowish brown sandy loam 17 inches thick. The substratum extends to a depth of 60 inches or more. It is light olive brown sandy loam in the upper part and olive, firm gravelly sandy loam in the lower part.

Included with these soils in mapping are small areas of Canton and Nantucket soils. Also included are areas of soils with slopes of 8 to 15 percent and areas that are very gravelly in the substratum. Some areas do not have stones and boulders on the surface. Up to 15 percent of some areas of this unit consists of Eastchop soils.

The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Montauk soils is moderate to moderately rapid in the subsoil and slow to moderately slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

Most areas of this unit are in woodland. Some areas are in native pasture and shrubby vegetation.

The stones and boulders on the surface, slope, and the available water capacity in the Plymouth soils make this unit generally unsuitable for farming. The unit is fairly well suited to woodland productivity. Seedling mortality is a limitation in areas of the Plymouth soils. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help increase the survival rate of seedlings. In some areas the stones and boulders and the slope restrict equipment use to prepared trails or make hand planting necessary. The hazard of erosion is a management concern, particularly in disturbed areas. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong winds and salt spray severely hinder tree growth in areas of this unit that are near the shore.

Slope is the main limitation to use of the soils as a building site; extensive land shaping is generally needed. Establishing a plant cover as soon as possible at construction sites helps to control a severe hazard of erosion. This unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Montauk soils do not readily accept effluent, causing a hazard of side-slope seepage. Slope is also a limitation for septic tank absorption fields.

This unit is in capability subclass VIIs.

PwD—Plymouth-Nantucket complex, hilly, extremely bouldery. This unit consists of hilly and steep, very deep soils on upland side slopes and ridges on the Elizabeth Islands. Boulders and stones cover 3 to 15 percent of the surface area. Slopes range from 15 to 35 percent. The areas are irregular in shape and generally range from 20 to 300 acres. They make up less than 1 percent of the survey area. The unit is about 70 percent Plymouth soils, 15 percent Nantucket soils, and 15 percent other soils. The soils are so intermingled or so small that it was not practical to map them separately.

Typically, the surface layer of the Plymouth soils is dark brown sandy loam about 4 inches thick. The subsoil is 19 inches thick. The upper part of the subsoil is dark brown and yellowish brown loamy coarse sand, and the lower part is yellowish brown coarse sand. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is brownish yellow gravelly coarse sand. The lower part is light yellowish brown sand.

Typically, the surface of the Nantucket soils is covered with a 2-inch-thick layer of decomposed and undecomposed leaves and twigs. The surface layer is dark brown sandy loam about 4 inches thick. The subsoil is dark brown and yellowish brown sandy loam about 16 inches thick. The substratum is light olive brown,

mottled, firm sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Canton and Montauk soils. Also included are areas of soils with slopes of 8 to 15 percent and areas that are very gravelly in the substratum. Some areas do not have stones and boulders on the surface. Up to 15 percent of some areas of this unit consists of Eastchop soils.

The permeability of these Plymouth soils is rapid in the subsoil and very rapid in the substratum. Available water capacity is very low, and the depth to the seasonal high water table is more than 6 feet.

The permeability of these Nantucket soils is moderate or moderately rapid in the subsoil and moderately slow or slow in the substratum. Available water capacity is moderate, and the depth to the seasonal high water table is more than 6 feet.

Most areas of this complex are in woodland. Some areas are in native pasture. There are patches of shrubby vegetation.

The stones and boulders on the surface, slope, and the available water capacity in the Plymouth soils make this unit generally unsuitable for farming. The unit is fairly well suited to woodland productivity. Seedling mortality is a limitation in areas of the Plymouth soils. Minimizing soil disturbance to retain the mulch of leaves will help to retain the limited soil moisture. Removal or control of competing vegetation will help increase the survival rate of seedlings. In some areas the stones and boulders and the slope restrict equipment use to prepared trails or make hand planting necessary. The hazard of erosion is a management concern, particularly in disturbed areas. The common trees on this unit are black oak and white oak; pitch pine and scrub oak are common in areas of the Plymouth soils. Strong winds and salt spray severely hinder tree growth in areas of this unit that are near the shore.

Slope is the main limitation to use of the soils as a building site; extensive land shaping is generally needed. Establishing a plant cover as soon as possible will help to control erosion at construction sites. This unit is limited as a site for septic tank absorption fields because in some areas the Plymouth soils do not adequately filter the effluent, causing a hazard of ground-water pollution, and the Nantucket soils do not readily accept effluent, causing a hazard of side-slope seepage. Slope is also a limitation of this unit for septic tank absorption fields.

This unit is in capability subclass VIIs.

PyA—Pompton sandy loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and somewhat poorly drained. It is in closed depressions, at the base of swales, in low areas which border ponds and swamps, and in drainageways. The areas of this soil are throughout the survey area, are irregular in shape, and range from 4 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown sandy loam about 10 inches thick. The subsoil is mottled, olive brown and light olive brown sandy loam 22 inches thick. The substratum is light brownish gray and light brown, mottled loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Berryland, Klej, and Tisbury soils. Included areas make up about 25 percent of this unit.

The permeability of this Pompton soil is moderate or moderately rapid in the subsoil and rapid or very rapid in the substratum. Available water capacity is moderate. This soil has a seasonal high water table at a depth of 1 foot to 2 feet in late fall, in winter, and in spring.

Most areas of this soil are in woodland. Some areas have a shrubby vegetation.

This soil is suited to cultivated crops, hay, and pasture. The seasonal high water table is the main limitation for those uses, and drainage is a major management need. Surface drainage, open ditches, or tile drains or a combination of the three will help to remove excess water from the soil. The use of proper stocking rates, deferred grazing and rotational grazing, and restricted grazing when the soil is wet help to maintain desirable pasture plant species.

This soil is poorly suited to woodland productivity because of the seasonal high water table and a high rate of seedling mortality. Low strength of the soil limits the use of equipment to periods when the soil is dry or frozen. The common trees on this soil are red maple, tupelo, and white oak.

The seasonal high water table limits the use of this soil as a site for dwellings or septic tank absorption fields.

This soil is in capability subclass IIw.

RgA—Ridgebury Variant fine sandy loam, 0 to 3 percent slopes. This soil is nearly level, very deep, and poorly drained and somewhat poorly drained. It is in depressions and low-lying areas adjacent to drainageways in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 40 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer of decomposed and undecomposed leaves and twigs. The surface layer is very dark gray fine sandy loam about 2 inches thick. The subsurface layer is light gray fine sandy loam 5 inches thick. The subsoil is light olive brown, mottled silt loam 5 inches thick. The substratum is light brownish gray and light olive brown, mottled, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Whitman Variant and Moshup soils. Also included are areas of soils in which the upper part is loamy sand, sand, and gravelly material and small areas of soils with

slopes of 3 to 8 percent. In a few areas stones and boulders cover 1 to 3 percent of the surface. Included areas make up about 30 percent of this unit.

The permeability of this Ridgebury Variant soil is slow to moderate in the subsoil and slow or very slow in the substratum. Available water capacity is high. A seasonal high water table is at or near the surface in late fall, in winter, in spring, and after periods of heavy rainfall.

Most areas of this soil are in woodland. Some areas are used for pasture.

This soil is suited to cultivated crops. The seasonal high water table is the main limitation. Surface drainage, diversions, or tile drains or a combination of those practices will help to remove the excess water. Conservation tillage and mixing crop residue and animal manure into the soil will help to improve tilth.

This soil is suited to grasses and legumes for hay and pasture. Because of the seasonal high water table, drainage generally is needed and water-tolerant plants are generally more suitable. Using proper stocking rates, rotational grazing, and prevention of grazing when the soil is wet help to maintain desirable plant species and prevent surface-layer compaction.

This soil is poorly suited to woodland productivity. The seasonal high water table causes a high rate of seedling mortality. Low soil strength limits the use of equipment and restricts equipment use to periods when the soil is dry or frozen. The common trees on this soil are red maple and tupelo.

The seasonal high water table limits the use of this soil as a site for dwellings and septic tank absorption fields. The permeability in the substratum further limits the soil as a site for septic tank absorption fields.

This unit is in capability subclass IVw.

RsA—Ridgebury Variant fine sandy loam, 0 to 3 percent slopes, very stony. This soil is nearly level, very deep, and poorly drained and somewhat poorly drained. It is in depressions and low-lying areas adjacent to drainageways in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil are irregular in shape and range from 5 to 40 acres. They make up less than 1 percent of the survey area.

Typically, the surface is covered with a 3-inch-thick layer of undecomposed and decomposed leaves and twigs. The surface layer is very dark gray fine sandy loam about 2 inches thick. The subsurface layer is light gray fine sandy loam about 5 inches thick. The subsoil is light olive brown, mottled silt loam about 5 inches thick. The substratum is light brownish gray and light olive brown, mottled, firm silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Whitman Variant and Moshup soils. Also included are areas of soils in which the upper part is loamy sand, sand, and gravelly material and small areas of soils with slopes of 3 to 8 percent. In a few areas stones and boulders cover 3 to 15 percent of the surface. Included areas make up about 30 percent of this unit.

The permeability of this Ridgebury Variant soil is slow to moderate in the subsoil and slow or very slow in the substratum. Available water capacity is high. A seasonal high water table is at or near the surface in late fall, in winter, in spring, and after periods of heavy rainfall.

This soil is poorly suited to cultivated crops and to hay and pasture. The seasonal high water table and the stones and boulders on the surface are the major limitations.

Most areas of this soil are wooded, but the soil is poorly suited to woodland productivity. The seasonal high water table causes a high rate of seedling mortality. Low soil strength limits the use of equipment and restricts equipment use to periods when the soil is dry or frozen. The common trees on this soil are red maple and tupelo.

The seasonal high water table limits the use of this soil as a site for dwellings and septic tank absorption fields. The permeability in the substratum further limits the soil as a site for septic tank absorption fields.

This unit is in capability subclass VIIs.

RvA—Riverhead sandy loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and well drained. It is in large, broad areas on outwash plains in the central and southern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 4 to 20 acres. They make up about 8 percent of the survey area.

Typically, the surface layer is dark grayish brown sandy loam about 4 inches thick. The subsoil is 20 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy loam, and the lower 8 inches is yellowish brown loamy sand. The substratum is brownish yellow coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Haven, Klej, and Tisbury soils. Also included are small areas of soils with slopes of 3 to 8 percent. Included areas make up about 20 percent of this unit.

The permeability of this Riverhead soil is moderately rapid in the subsoil and very rapid in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Many areas are in grassland, and some areas are in cropland. A few areas are used as homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained in cultivated areas, but the soil is droughty during periods of low rainfall. Incorporating crop residue into the soil and adding manure to the surface layer increase the organic matter content of the soil. The use of proper stocking rates, deferred grazing during wet periods, and rotational

grazing help to maintain the desirable pasture plant species.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

This soil is generally suitable as a site for buildings with or without basements. The soil in some areas does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIs.

RvB—Riverhead sandy loam, 3 to 8 percent slopes. This soil is very deep, gently sloping, and well drained. It is on broad, undulating areas and small hills on outwash plains in the central and southern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 4 to 100 acres. They make up about 2 percent of the survey area.

Typically, the surface layer is dark grayish brown sandy loam about 4 inches thick. The subsoil is 20 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy loam, and the lower 8 inches is yellowish brown loamy sand. The substratum is brownish yellow coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Haven, Klej, and Tisbury soils. Also included are a few areas of soils with slopes of less than 3 percent or 8 to 15 percent. Included areas make up about 20 percent of this unit.

The permeability of this Riverhead soil is moderately rapid in the subsoil and very rapid in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Many areas are in grassland, and some areas are used for cropland. A few areas are used as homesites.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained, but erosion is a hazard and the soil is droughty during periods of low rainfall. Incorporating crop residue into the soil and adding manure to the surface layer increase the organic matter content of the soil. The use of proper stocking rates, deferred grazing during wet periods, and rotational grazing help to maintain the desirable pasture plant species.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

This soil is generally suitable as a site for buildings with or without basements. The soil in some areas does not adequately filter the effluent from septic tank absorption fields, causing a hazard of pollution to ground water. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIs.

RvC—Riverhead sandy loam, 8 to 15 percent slopes. This soil is very deep, moderately sloping, and well drained. It is on small hills and ridges in the central and western parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 4 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is dark grayish brown sandy loam about 4 inches thick. The subsoil is 20 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy loam, and the lower 8 inches is yellowish brown loamy sand. The substratum is brownish yellow coarse sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carver, Eastchop, Haven, Klej, and Tisbury soils. Also included are a few areas of soils with slopes of 3 to 8 percent or 15 to 30 percent. Included areas make up about 25 percent of this unit.

The permeability of this Riverhead soil is moderately rapid in the subsoil and very rapid in the substratum. Available water capacity is moderate. The depth to the seasonal high water table is more than 6 feet.

Most areas of this soil are in woodland. Some areas are in grassland, and some areas are in cropland. A few areas are used as homesites.

This soil is suited to cultivated crops and to hay and pasture. Good tilth is easily maintained, but erosion is a hazard and the soil is droughty during periods of low rainfall. Incorporating crop residue into the soil and adding manure to the surface layer increase the organic matter content of the soil. The use of proper stocking rates, deferred grazing during wet periods, and rotational grazing help to maintain the desirable pasture plant species.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

Slope is a limitation of this soil as a site for buildings, and land shaping is generally needed. Establishing plant cover as soon as possible helps to control erosion on slopes at construction sites. This soil is limited as a site for septic tank absorption fields because of the slope and because in some areas the soil does not adequately filter the effluent, making pollution of ground water a hazard. Low density housing reduces the volume of effluent, thus lessening the pollution hazard. Installing septic tank distribution lines on the contour or in areas that were graded during construction will help to overcome the slope.

This soil is in capability subclass IIIe.

TaA—Tisbury very fine sandy loam, 0 to 3 percent slopes. This soil is very deep, nearly level, and moderately well drained. It is in depressions and low areas adjacent to open water in the central and southern parts of Martha's Vineyard. The areas of this soil are irregular in shape and range from 4 to 50 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown very fine sandy loam 1 inch thick. The subsoil is dark yellowish brown, yellowish brown, and light yellowish brown very fine sandy loam 29 inches thick and is mottled in the lower part. The substratum is brownish yellow, mottled sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Haven, Klej, Pompton, and Riverhead soils. Included areas make up about 20 percent of this unit.

The permeability of this Tisbury soil is moderate in the subsoil and rapid or very rapid in the substratum. Available water capacity is high. This soil has a seasonal high water table at a depth of 1.5 to 3 feet in late fall, in winter, and in spring.

Most areas of this soil are in woodland. Many areas are in grassland, and a few are in cropland.

This soil is well suited to cultivated crops and to hay and pasture. Good tilth is easily maintained, but the seasonal high water table commonly keeps the soil wet in early spring and delays cultivation. Drainage is commonly needed in areas used for crops but is generally not needed for hay or pasture. Mixing crop residue and manure into the surface layer helps to maintain tilth and increase the organic matter content of the soil. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

This soil is well suited to woodland productivity. Removal or control of competing vegetation will help the survival rate of seedlings. The common trees on this soil are white oak, eastern white pine, scarlet oak, black oak, and red pine.

The seasonal high water table limits this soil as a site for dwellings with or without basements and as a site for septic tank absorption fields. The permeability in the substratum of some areas prevents adequate filtering of septic tank effluent, causing a hazard of ground water pollution. Regional drainage or fill helps to overcome the water table. Low density housing reduces the volume of effluent, thus lessening the pollution hazard.

This soil is in capability subclass IIw.

UaC—Udipsamments, rolling. These soils are very deep and excessively drained. They are on sand dunes along the coast. Slopes are complex and generally range from 3 to 15 percent. The areas generally are long and narrow or are irregular in shape, and they range from 4 to 500 acres. They make up nearly 3 percent of the survey area.

Udipsamments are pale brown sand to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Matunuck and Pawcatuck soils and small, narrow areas of Beaches. Also included are areas of recently deposited sand on which there is little or no vegetation. Some areas in depressions have a seasonal high water table near the surface. Included areas make up about 20 percent of this unit.

The permeability of these Udipsamments is rapid or very rapid. Available water capacity is very low. The depth to the seasonal high water table is more than 6 feet.

Most areas of these soils have a cover of grasses and shrubs (fig. 13). Most of the vegetation is fragile and easily destroyed by foot or vehicular traffic.

Droughtiness and low fertility make this soil poorly suited to farming or woodland. Trees are difficult to establish and grow slowly. The common plants on these soils are beachgrass, poison ivy, beach plum, and bayberry.

Slope and the permeability and instability of these soils are major limitations for most types of nonfarm use.

This unit is not assigned to a capability subclass.

Ur—Urban land. This unit consists of nearly level to moderately steep areas where urban works and structures such as buildings, industrial areas, and other paved areas cover at least 85 percent of the surface. The areas are irregular in shape and range from 5 to 200 acres. They make up nearly 1 percent of the survey area.

Included with this unit in mapping are many small areas where the original soil material has been disturbed by construction and areas where fill has been added. Also included are small areas of undisturbed soils. Included areas make up about 15 percent of this unit.

The soil properties and characteristics of this map unit are so variable that onsite investigation is needed to determine the limitations and suitabilities of the unit for any use.

This unit is not assigned to a capability subclass.

WhA—Whitman Variant silt loam, 0 to 3 percent slopes. This soil is nearly level, very deep, and very poorly drained. It is in depressions and in low-lying areas adjacent to drainageways. It is in the western part of Martha's Vineyard. The areas of this soil are irregular in shape and range from 5 to 20 acres. They make up less than 1 percent of the survey area.

Typically, the surface layer is very dark grayish brown silt loam about 5 inches thick. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is light brownish gray, mottled sandy loam. The middle part is light brownish gray mottled, sandy clay loam. The lower part is gray, mottled, firm clay loam.

Figure 13.—The vegetation in the foreground distinguishes Udipsamments, rolling, from the adjacent beach.

Included with this soil in mapping are small areas of Freetown, Ridgebury Variant, and Swansea soils. Also included are areas of soils where the upper part is loamy sand, sand, and gravelly material. In some areas stones cover 1 to 3 percent of the surface. Included areas make up about 30 percent of this unit.

The permeability of this Whitman Variant soil is moderately rapid or moderate in the upper part of the substratum and slow or very slow in the lower part. Available water capacity is moderate. A seasonal high water table is at or near the surface in fall, winter, and spring and after periods of heavy rainfall.

Most areas of this soil are covered with brush and trees.

The seasonal high water table makes this soil generally unsuitable for cultivated crops. Surface drainage, diversions, or tile drainage or a combination of those practices will help remove water from this soil. Conservation tillage and using crop residue help to maintain tilth and organic matter content in cultivated areas.

The seasonal high water table makes the soil poorly suited to hay and pasture. Drainage and water-tolerant plants are needed. Restriction of grazing when the soil is wet, using proper stocking rates, and rotational grazing are management practices needed to maintain plant densities and desirable species.

This soil is poorly suited to woodland productivity because of the seasonal high water table and a high rate of seedling mortality. Low strength of the soil limits the use of equipment to periods when the soil is dry or frozen. The common trees on this soil are red maple and tupelo.

The seasonal high water table limits the use of this soil as a site for dwellings and septic tank absorption fields. The permeability in the substratum is a further limitation for septic tank absorption fields.

This soil is well suited to use as wetland wildlife habitat. The native plant communities common to this soil provide adequate food and cover.

This soil is in capability subclass Vw.

WmA—Whitman Variant silt loam, 0 to 3 percent slopes, very stony. This soil is nearly level, very deep, and very poorly drained. It is in depressions and in low-lying areas adjacent to drainageways in the western part of Martha's Vineyard. Stones and boulders cover 1 to 3 percent of the surface area. The areas of this soil range from 5 to 40 acres. They make up less than 1 percent of the survey area. The areas are irregular in shape and in

many places conform to drainage patterns of the landscape.

Typically, the surface is covered by a 4-inch-thick layer of undecomposed leaves and twigs and well decomposed organic material. The surface layer consists of very dark grayish brown silt loam about 5 inches thick. The substratum extends to a depth of 60 inches or more. It is light brownish gray, mottled sandy clay loam in the upper part and gray, mottled, firm clay loam in the lower part.

Included with this soil in mapping are small areas of Freetown, Ridgebury Variant, and Swansea soils. Also included are areas of soils where the upper part is loamy sand, sand, and gravelly material. In some areas stones and boulders cover 3 to 15 percent of the surface. Included areas make up about 30 percent of this unit.

The permeability of this Whitman Variant soil is moderately rapid or moderate in the upper part of the substratum and slow or very slow in the lower part. Available water capacity is moderate. A seasonal high water table is at or near the surface in fall, winter, and spring and after periods of heavy rainfall.

The seasonal high water table and the stones and boulders on the surface make this soil generally unsuitable for farming.

Most areas are wooded, but the soil is poorly suited to woodland productivity. The seasonal high water table causes a high rate of seedling mortality. Low soil strength limits the use of equipment and restricts use to periods when the soil is dry or frozen. The common trees on this soil are red maple and tupelo.

The seasonal high water table limits the use of this soil as a site for dwellings and septic tank absorption fields. The permeability in the substratum is a further limitation for septic tank absorption fields.

This soil is well suited to use as wetland wildlife habitat. The native plant communities common to this soil provide adequate food and cover.

This soil is in capability subclass VIs.

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland may now be in crops, pasture, woodland, or other land, but not urban or built-up land or water areas. It must either be used for producing food or fiber or be available for these uses.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation or irrigation. It also has favorable temperature and growing season and acceptable levels of acidity or alkalinity. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the growing season. The slope range is mainly from 0 to 6 percent. For more detailed information on the criteria for prime farmland consult the local staff of the Soil Conservation Service.

About 11,200 acres, or nearly 17 percent of Dukes County, meets the soil requirements for prime farmland. The areas are throughout the county, but most are in map units 2, 4, and 5 of the general soil map. Crops cover about 600 acres of the prime farmland in the county. The crops commonly grown in the survey area are corn for silage, alfalfa hay, vegetables for roadside markets, and grapes.

The map units that make up prime farmland in Dukes County are listed in this section. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication.

The map units that meet the soil requirements for prime farmland are:

ChB—Chilmark sandy loam, 3 to 8 percent slopes
HaA—Haven very fine sandy loam, 0 to 3 percent slopes
HaB—Haven very fine sandy loam, 3 to 8 percent slopes
KaA—Katama sandy loam, 0 to 3 percent slopes
NaB—Nantucket sandy loam, 3 to 8 percent slopes
RvA—Riverhead sandy loam, 0 to 3 percent slopes
RvB—Riverhead sandy loam, 3 to 8 percent slopes
TaA—Tisbury very fine sandy loam, 0 to 3 percent slopes

Use and Management of the Soils

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

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

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

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

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

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

Crops and Pasture

William Wilcox, district conservationist, Soil Conservation Service, assisted with this section.

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

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

The 1978 Census of Agriculture showed 55 farms in Dukes County, an increase from the 22 reported in the 1974 Census of Agriculture. The 1978 acreage in farms (includes all land on the farm) was 11,858 acres, an increase of more than 2,000 acres from the 1974 data.

Most of the farming in the county is done on Martha's Vineyard. The main types of farming consist of raising saddle horses and sheep, beef and dairy products, and orchards, garden crops, and hay, and an acreage of wine and table grapes.

Frequent fogs prevent the proper drying of hay in some areas, but the fogs are an important source of moisture during dry periods. Typically, the dominantly sandy soils do not hold significant amounts of moisture, and irrigation is required for most garden crops.

Erosion by water is generally not a major concern in the area. Porous, sandy soils absorb most rainfall, and steep slopes are not common on farmland. Wind erosion is a hazard, and using a winter cover crop helps to control this hazard, as well as providing organic matter for the soil, resulting in improved tilth and water-holding capacity.

Natural fertility is low in the soils in the area, and the soils generally are strongly acid or very strongly acid. Thus, lime is needed for most crops.

The special crops grown commercially in the area are vegetables, grapes, and some nursery plants. The common vegetables are sweet corn, tomatoes, potatoes, snap beans, lettuce, and squash. Deep, well-drained Haven and Riverhead soils, for example, are well suited to those crops but do require irrigation for maximum productivity.

Yields Per Acre

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

of variations in rainfall and other climatic factors. The table also gives the capability classification of each soil.

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 insures the smallest possible loss.

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

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

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider 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. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for 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 limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is 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 6. The capability classification of each map unit is given in the section "Detailed soil map units" and on table 5.

Woodland Management and Productivity

Forests cover about 46,700 acres in Dukes County. The dominant tree species are scarlet oak, black oak, eastern white pine, and pitch pine (fig. 14). Strong winds and salt spray are major limitations for tree growth in some areas.

Martha's Vineyard State Forest, covering 4,366 acres in the center of the island, illustrates two main points basic to forest management in the county. First, the tall, vigorous stands of eastern white pine and white spruce indicate that the soils are better suited to those species than to hardwoods. Second, the large areas of diseased red pine indicate that this species has poor suitability and that single-species planting is subject to a high degree of risk.

Figure 14.—A forest of pitch pine and scrub oak on Carver loamy coarse sand, 3 to 8 percent slopes.

The main timber products in the county are beams, rough boards, and landscape timbers and some logs for pilings, firewood, slabs, and sawdust. Because of transportation costs, the market for those products is exclusive to the county, mainly to Martha's Vineyard.

The climate of Martha's Vineyard is not suited to the production of high-quality sawtimber, but harvesting firewood-quality hardwoods to reduce stands to optimum stocking levels will increase growth. Hardwoods and eastern white pine of good form are suitable for pilings, landscape timbers, beams, and boards.

Planting pine seedlings under the existing forest canopy for 3 to 5 years prior to harvesting will increase the percentage of pine sawtimber, particularly on the sandy soils. The root system established during this period will aid in seedling survival during the postharvest competition for growing space.

Understory planting prior to harvest, the use of shelterwood cuts where appropriate, and reducing the area of individual seed-tree cuts and clearcuts will minimize the hazards of soil erosion and wind damage.

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

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, t, d, c, s, f, and r.

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

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

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

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

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that few trees may be blown down by strong winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown

down during periods of excessive soil wetness and moderate or strong winds.

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

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

Recreation

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

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

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

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Kathleen Hinkel, biological technician, Soil Conservation Service, and Susan B. Whiting, naturalist, Felix Neck Wildlife Trust, assisted with this section.

The farmland, fields, hardwood and coniferous forests, freshwater wetlands, saltmarshes, and barrier beaches make up the diverse wildlife habitat of Dukes County.

A wide variety of waterfowl and wading birds inhabit the abundant nesting sites provided by the extensive freshwater and ocean shorelines. The main species are great blue heron, black-crowned night heron, snowy egret, Virginia rail, spotted sandpipers, black duck, wood duck, mallard, gadwall, green-winged teal, Canada goose, and mute swan. Other waterfowl that winter in the county are American widgeon, greater and lesser scaup, goldeneye, bufflehead, redhead, canvasback, harlequin duck, American merganser, redbreasted merganser, and hooded merganser and in some years large numbers of black ducks, eiders, and black and white winged scoters.

The main upland gamebirds in Dukes County are woodcock, snipe, ruffed grouse, ringnecked pheasant, and bobwhite quail. The most common nongame bird is the rufous-sided towhee.

Large and varied populations of warblers and hawks nest in and pass through the county. The osprey population, aided by the installation of 23 nesting poles by the Felix Neck Wildlife Sanctuary, is especially large in the county. Other species of nongame birds that nest in Dukes County are longeared owl, whipoorwill, downy woodpecker, mockingbird, mourning dove, northern oriole, purple finch, eastern kingbird, eastern phoebe, and redbreasted nuthatch.

The largest game species in the county is the white-tailed deer. Some other game species of mammals are eastern cottontail, a few New England cottontail, and raccoons. The population of nongame mammals is large and varied, including the skunk, grey fox, and eastern American mole. Two races of mammals are unique to Dukes County: the Martha's Vineyard white-footed mouse and the Martha's Vineyard short-tailed shrew.

Dukes County is home for a number of reptiles. The common snakes are red-bellied, ribbon, garter, ring-necked, milk, green, and black racer. Spotted, box, painted, and snapping turtles all live in the county, as do a number of marine turtle species, mainly leatherbacks.

The freshwater fish habitat in the county supports such species as brown and brook trout, white and yellow perch, largemouth bass, brown bullheads, bluegills, and chain pickerel. The brackish ponds, lagoons, and inlets of Dukes County are habitat for snapper blues, white perch, and a variety of shellfish.

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

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

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, 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, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, milkweed, and ragweed.

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, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, apple, hawthorn, dogwood, hickory, blackberry, huckleberry, beach plum, beech, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, Tatarian honeysuckle 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, spruce, 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, slope, and surface stoniness. Examples of wetland plants are smartweed, cattail, pickerel-weed, saltgrass, cordgrass, rushes, sedges, and reeds.

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

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

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

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, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, chipmunk, and deer.

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

Engineering

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

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

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

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

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

Building Site Development

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

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The

ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

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

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

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

Sanitary Facilities

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

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

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

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

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

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

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

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

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

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

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

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

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

Construction Materials

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

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

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

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

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

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the

thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

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

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

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

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

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal 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 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

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

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

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

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

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely

affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

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

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

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

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

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

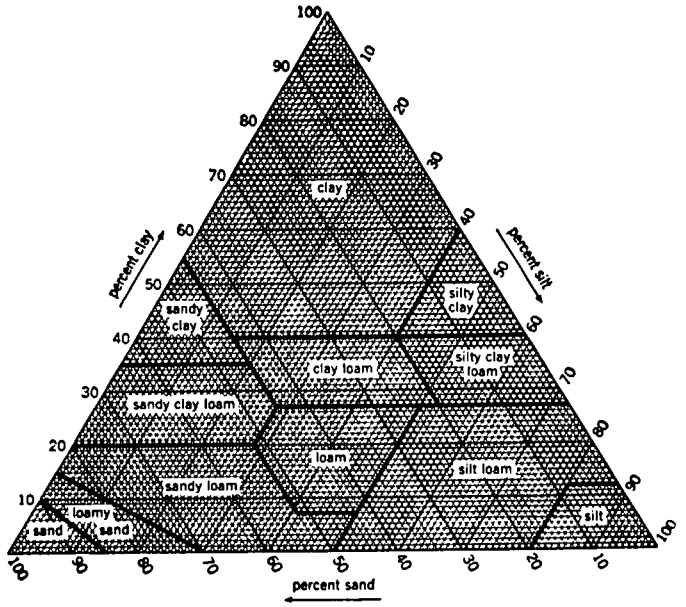

Figure 15.—Percentages of clay, silt, and sand in the basic USDA textural classes.

Engineering Index Properties

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

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 15). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*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.

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

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

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

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

Physical and Chemical Properties

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

Clay as a soil separate 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 shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving 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 downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

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

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

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

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

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

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

The four hydrologic soil groups are:

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

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

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

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, 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.

Some soils in table 15 are assigned to two hydrologic soil groups. Dual grouping is used for some soils that have a seasonal high water table but that can be drained. The first letter applies to the drained condition of the soil and the second letter to the undrained condition.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

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

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

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

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

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

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

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

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of

segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

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

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

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*4*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

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 Aquept (*Aqu*, meaning water, plus *ept*, from Inceptosol).

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 Haplaquepts (*Hapl*, meaning minimal horizonation, plus *aquepts*, the suborder of the Inceptosols that have 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 Haplaquepts.

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*3*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*4*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Berryland series

The Berryland series consists of very deep, very poorly drained soils. The soils formed in sandy deposits on outwash plains. Slopes range from 0 to 2 percent.

Berryland soils are similar to Klej and Pompton soils and commonly are near Freetown and Swansea soils. The Berryland soils are grayer in the upper part of the subsoil than the Klej or Pompton soils. The Berryland soils are mineral; the Freetown and Swansea soils formed entirely in organic material.

Typical pedon of Berryland loamy sand, 0 to 2 percent slopes, 100 feet south of Menemsha Cross Road and 700 feet east of North Road, in the town of Chilmark:

A—0 to 5 inches; black (10YR 2/1) loamy sand; weak fine granular structure; very friable; many roots; extremely acid; abrupt wavy boundary.
E—5 to 9 inches; gray (10YR 5/1) sand; single grain; loose; few roots; extremely acid; abrupt wavy boundary.
Bhs—9 to 20 inches; very dark brown (10YR 2/2) sand; single grain; loose; few roots; extremely acid; abrupt wavy boundary.
Bw1—20 to 27 inches; dark gray (10YR 4/1) sand; common medium prominent yellowish red (5YR 5/8) and gray (10YR 6/1) mottles; single grain; loose; very strongly acid; abrupt wavy boundary.
Bw2—27 to 32 inches; dark brown (10YR 4/3) sand; common medium distinct strong brown (7.5YR 5/8) and grayish brown (10YR 5/2) mottles; single grain; loose; very strongly acid; abrupt wavy boundary.
C—32 to 60 inches; light brownish gray (2.5Y 6/2) sand; many coarse prominent strong brown (7.5YR 5/8) mottles; single grain; loose; very strongly acid.

The thickness of the solum ranges from 28 to 40 inches. The content of rock fragments ranges mainly from 0 to 5 percent throughout, but some pedons have thin strata that are as much as 10 percent rock fragments. Reaction is very strongly or extremely acid in the solum and strongly or very strongly acid in the substratum.

The A and Ap horizons have hue of 10YR, value of 2 or 3, and chroma of 1 or 2. They are fine sand, sand, or loamy sand or their mucky or peaty analogs.

The E horizon is neutral or has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 0 to 2. It is fine sand, sand, or loamy sand.

The Bhs horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 to 4. The Bw horizon is neutral or has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 0 to 3. The B horizon is sand or loamy sand. Firm and noncemented to strongly cemented iron accumulations and concretions are in some pedons.

The C horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 1 through 3. It is sand, loamy sand, or coarse sand. The C horizon in some pedons does not have mottles.

Canton series

The Canton series consists of very deep, well drained soils on moraines. The soils formed in a loamy mantle underlain by loose, sandy glacial till. Slopes range from 3 to 15 percent.

Canton soils are similar to Plymouth soils and are near Eastchop, Montauk, and Nantucket soils. The Canton soils have more silt and clay in the solum than the Plymouth soils. The Canton soils have more coarse fragments in the subsoil and substratum than the Eastchop soils. The substratum of the Canton soils is loose glacial till; the substratum of the Montauk and Nantucket soils is dense glacial till.

Typical pedon of Canton sandy loam, in an area of Canton-Montauk-Plymouth complex, rolling, extremely bouldery, 0.4 mile east of the bridge connecting Veckatimest and Nonamesset Islands, and 0.1 mile north of Monsod Bay, in the town of Gosnold:

A—0 to 7 inches; very dark gray (10YR 3/1) sandy loam; weak medium granular structure; very friable; many very fine roots; 5 percent gravel, 2 percent stones, 5 percent boulders; strongly acid; clear wavy boundary.
Bs—7 to 12 inches; dark brown (7.5YR 4/4) sandy loam; massive; friable; many very fine roots; 5 percent gravel, 5 percent cobbles, 2 percent stones, 5 percent boulders; strongly acid; clear wavy boundary.
Bw1—12 to 23 inches; yellowish brown (10YR 5/6); sandy loam; massive; friable; common very fine roots; 5 percent gravel, 2 percent cobbles, 2 percent stones, 5 percent boulders; strongly acid; clear wavy boundary.
2Bw2—23 to 30 inches; light olive brown (2.5Y 5/4) loamy sand; massive; friable; common very fine roots; 10 percent gravel, 2 percent cobbles, 2 percent stones, 2 percent boulders; moderately acid; clear wavy boundary.
2C1—30 to 42 inches; olive (5Y 5/3) loamy sand; massive; friable; few small pockets and thin lenses of firm sandy loam; few very fine roots; 10 percent gravel, 5 percent cobbles, 2 percent stones; moderately acid; clear wavy boundary.
2C2—42 to 60 inches; pale olive (5Y 6/3) gravelly sand; single grain; loose; 15 percent gravel, 5 percent cobbles; moderately acid.

The solum thickness ranges from 18 to 36 inches and corresponds closely to the depth to the coarse-textured till. The solum is 5 to 20 percent gravel and 0 to 5 percent cobbles. Stones and boulders make up 0 to 20 percent of the surface layer and 0 to 5 percent of the subsoil. The substratum is 10 to 30 percent gravel, 5 to 10 percent cobbles, and 0 to 10 percent stones and boulders. Reaction throughout the soil ranges from extremely acid through moderately acid.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. It is sandy loam or fine sandy loam.

The Bs horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. The Bw horizon has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 4 or 6. The B horizon is fine sandy loam or sandy loam.

The 2C horizon has hue of 10YR, 2.5Y, or 5Y; value of 5 to 7; and chroma of 2 or 4. It is loamy sand or sand or

their gravelly analog. Some pedons do not have thin lenses or small pockets of firm sandy loam at a depth of more than 36 inches.

Carver series

The Carver series consists of very deep, excessively drained soils on glacial outwash plains. The soils formed in glaciofluvial deposits. Slopes range from 0 to 25 percent.

Carver soils are similar to Riverhead, Haven, Eastchop, and Klej soils. The Carver soils have more sand in the solum than the Riverhead or Haven soils and are not mottled as are the Klej soils. The Carver soils are coarse sand or loamy coarse sand; the Eastchop soils are sand or loamy sand.

Typical pedon of Carver loamy coarse sand, 3 to 8 percent slopes, on the southern bank of a gravel pit, 200 feet west of County Road and 0.7 mile south of its intersection with Wing Road, in the town of Oak Bluffs:

A—0 to 3 inches; dark grayish brown (10YR 4/2) loamy coarse sand; weak medium granular structure; very friable; many roots; 5 percent fine gravel; very strongly acid; abrupt wavy boundary.

E—3 to 4 inches; light brownish gray (10YR 6/2) loamy coarse sand; single grain; loose; common roots; 5 percent fine gravel; very strongly acid; abrupt wavy boundary.

Bw1—4 to 14 inches; strong brown (7.5YR 5/6) loamy coarse sand; single grain; loose; few roots at top; 10 percent fine gravel; very strongly acid; clear wavy boundary.

Bw2—14 to 30 inches; brownish yellow (10YR 6/6) coarse sand; single grain; loose; 10 percent gravel; very strongly acid; abrupt wavy boundary.

C—30 to 60 inches; light yellowish brown (2.5Y 6/4) coarse sand; single grain; loose; 10 percent gravel; strongly acid.

The solum thickness ranges from 15 to 35 inches. The content of rock fragments ranges from 0 to 20 percent. Reaction ranges from strongly to very strongly acid throughout the soil.

The A horizon is neutral or has hue of 10YR, value of 2 to 4, and chroma of 0 to 2. It is single grain and loose or has weak fine granular structure and is very friable. It is loamy sand, loamy coarse sand, or coarse sand. Some pedons have an Ap horizon similar to the A horizon.

The E horizon is neutral or has hue of 7.5YR or 10YR, value of 3 to 7, and chroma of 0 to 2. It is loamy sand, loamy coarse sand, or coarse sand.

The B horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8. It is loamy coarse sand or coarse sand. The upper part of the B horizon has very friable, weak, granular structure, or it is single grained and loose.

The C horizon has hue of 7.5YR to 2.5Y, value of 5 to 8, and chroma of 3 to 6. It typically is coarse sand, but some pedons have thin strata of fine sand or fine gravel.

Chilmark series

The Chilmark series consists of very deep, well drained soils on uplands. The soils formed in a loamy or sandy eolian mantle underlain by ice-thrusted, fine textured or moderately fine textured coastal plain sediments. Slopes range from 3 to 25 percent.

Chilmark soils are similar to Moshup soils and are near Eastchop, Nantucket, Plymouth, and Ridgebury Variant soils. The Chilmark soils have an argillic horizon which is not typical of the other soils. The Chilmark soils are underlain by fine textured sediments; the Eastchop and Plymouth soils are underlain by sandy glacial outwash and loose till. The Chilmark soils are not mottled; the Moshup and Ridgebury Variant soils are mottled in the solum.

Typical pedon of Chilmark sandy loam, 8 to 15 percent slopes, in the south bank of a borrow pit, 1,000 feet south of Indian Hill Road and 1/4 mile southwest of Witch Brook, in the town of West Tisbury:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

Bw—8 to 26 inches; yellowish brown (10YR 5/6) sandy loam; massive; very friable; common fine roots; moderately acid; abrupt irregular boundary.

Bt—26 to 35 inches; strong brown (7.5YR 5/6) sandy loam; weak medium angular blocky structure; friable; few fine roots; thin clay films on some ped faces; moderately acid; abrupt irregular boundary.

2C1—35 to 38 inches; red (2.5YR 4/8), strong brown (7.5YR 5/6), and light brownish gray (2.5Y 6/2) silty clay; thin lens of loamy sand; weak medium angular blocky structure; firm; few thin clay films on some ped faces; moderately acid; abrupt wavy boundary.

2C2—38 to 49 inches; light reddish brown (5YR 6/4) yellowish brown (10YR 5/6), and light brownish gray (2.5Y 6/2) sandy clay loam; weak medium angular blocky structure; firm; moderately acid; abrupt wavy boundary.

2C3—49 to 60 inches; yellowish red (5YR 5/6), brownish yellow (10YR 6/8), and light gray (10YR 7/2) silty clay loam; massive; firm; moderately acid.

The thickness of the solum ranges from 25 to 38 inches. The rock fragment content ranges from 0 to 10 percent. Reaction ranges from very strongly acid to moderately acid throughout.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 3, and chroma of 2 or 3. The A horizon is fine sandy loam, sandy loam, or loamy sand.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is sandy loam or loamy sand. It is massive or has angular blocky structure and is friable or very friable. The Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 6. Structure is weak angular blocky or subangular blocky.

The 2C horizon has hue of 2.5YR to 5Y, value of 4 to 7, and chroma of 1 to 8. It is sandy clay loam, silty clay loam, silty clay, or clay and is firm or very firm. Structure is angular blocky or prismatic or it is massive.

Eastchop series

The Eastchop series consists of very deep, excessively drained soils on uplands. The soils formed in glaciofluvial and moraine deposits. Slopes range from 0 to 35 percent.

Eastchop soils are similar to Carver, Klej, Haven, and Riverhead soils. The solum of the Eastchop soils is sand or loamy sand and is not mottled; the Carver soils are loamy coarse sand or coarse sand in the solum, and the solum in the Klej soils is mottled. The Eastchop soils do not have as much silt and clay in the solum as do the Haven and Riverhead soils.

Typical pedon of Eastchop loamy sand, 3 to 8 percent slopes, 400 feet west of Lambert Cove Road and 1.4 miles north of the intersection of Lambert Cove Road and Vineyard Haven Road, in the town of West Tisbury:

Oi—2 inches to 1 inch; loose leaves and twigs.
Oe—1 inch to 0; partially and well decomposed organic material.
A—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; massive; very friable; many fine and medium roots; extremely acid; abrupt wavy boundary.
Bw—7 to 34 inches; yellowish brown (10YR 5/6) loamy sand; massive; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.
C1—34 to 43 inches; brownish yellow (10YR 6/6) sand; single grain; loose; very strongly acid; abrupt wavy boundary.
C2—43 to 60 inches; light yellowish brown (2.5Y 6/4) sand; single grain; loose; strongly acid.

The thickness of the solum ranges from 24 to 36 inches. Reaction ranges from strongly acid to extremely acid. The content of rock fragments ranges from 0 to 15 percent throughout.

The A horizon has hue of 10YR, value of 2 to 5, and chroma of 1 or 2. Some pedons have an Ap horizon that has hue of 10YR, value of 4 or 5, and chroma of 2. The A horizon is loamy sand or sand.

Some pedons have an E horizon with hue of 10YR, value of 5, and chroma of 1 or 2. It is loamy sand or sand.

The B horizon mainly has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. It is loamy sand or sand. Some pedons have thin lamellae of strong brown (7.5YR 5/6).

The C horizon mainly has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 3 to 6. Some pedons have thin lamellae of strong brown (7.5YR 5/6).

Freetown series

The Freetown series consists of very deep, very poorly drained soils on uplands and outwash plains. The soils formed in thick deposits of organic material. Slopes range from 0 to 1 percent.

Freetown soils are similar to Swansea, Matunuck, and Pawcatuck soils and are near Berryland and Whitman Variant soils. The Freetown soils formed in freshwater organic deposits that are at least 51 inches thick. The Swansea soils formed in organic deposits 16 to 51 inches thick, the Matunuck and Pawcatuck soils formed in saltwater deposits, and the Berryland and Whitman Variant soils are mineral soils that have an organic surface layer that is less than 16 inches thick.

Typical pedon of Freetown muck, in a wooded area of Freetown and Swansea mucks, 0 to 1 percent slopes, 500 feet south of Lambert's Cove Road, at its intersection with the Tisbury-West Tisbury town line, in the town of West Tisbury:

Oa1—0 to 4 inches; dark reddish brown (5YR 2/2) broken face and rubbed muck (sapric material); 35 percent fiber, 15 percent rubbed; weak fine granular structure; very friable; many roots; 10 percent woody fragments; extremely acid; abrupt wavy boundary.
Oa2—4 to 8 inches; black (5YR 2/1) broken face and rubbed muck (sapric material); 10 percent fiber, 5 percent rubbed; weak medium subangular blocky structure; very friable; 5 percent woody fragments; extremely acid; abrupt wavy boundary.
Oa3—8 to 39 inches; dark reddish brown (5YR 3/2) broken face and rubbed muck (sapric material); 10 percent fiber, 5 percent rubbed; massive; very friable; 10 percent woody fragments; extremely acid; abrupt wavy boundary.
Oa4—39 to 60 inches; black (5YR 2/1) broken face and rubbed muck (sapric material); 10 percent fiber, 5 percent rubbed; massive; very friable; 5 percent woody fragments; extremely acid.

The organic material extends to a depth of 51 inches or more. Woody fragments are in some part of the profile or throughout the profile in most pedons and make up as much as 25 percent of some horizons.

The surface tier is neutral or has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 2. It is dominantly sapric material, but in some pedons it is various proportions of sapric and hemic materials and in some

pedons the upper 4 to 10 inches of the surface tier is single grain and loose sand or coarse sand.

The subsurface tier and bottom tiers are neutral or have hue of 5YR to 10YR, value of 2 to 4, and chroma of 0 to 4. The subsurface tier is dominated by sapric material with a rubbed fiber content of less than 16 percent of the organic volume. It has granular, subangular blocky or platy structure, or it is massive. The bottom tier has platy or subangular blocky structure, or it is massive.

Haven series

The Haven series consists of very deep, well drained soils on outwash plains. The soils formed in a loamy eolian mantle over sandy glaciofluvial sediments. Slopes range from 0 to 8 percent.

Haven soils are similar to Carver, Eastchop, Riverhead, and Tisbury soils. The Haven soils have a solum of very fine sandy loam; the Carver soils have a solum of loamy coarse sand, the Eastchop soils a solum of loamy sand, and the Riverhead soils a solum of sandy loam. The Haven soils are not mottled as are the Tisbury soils.

Typical pedon of Haven very fine sandy loam, 0 to 3 percent slopes, in a wooded area on the side of a small pit on the west side of Quansoo Road, 1/2 mile southeast of the intersection of Quansoo Road and Quenames Road, in the town of Chilmark:

A—0 to 2 inches; dark brown (10YR 3/3) very fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; 2 percent coarse fragments; very strongly acid; abrupt wavy boundary.

Bw1—2 to 5 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; massive; very friable; many fine and medium roots; 2 percent coarse fragments; very strongly acid; abrupt wavy boundary.

Bw2—5 to 16 inches; yellowish brown (10YR 5/8) very fine sandy loam; massive; very friable; common fine and medium roots; 2 percent coarse fragments; very strongly acid; abrupt wavy boundary.

Bw3—16 to 23 inches; light olive brown (2.5Y 5/6) very fine sandy loam; massive; very friable; common fine and medium roots; 2 percent coarse fragments; very strongly acid; clear wavy boundary.

2C—23 to 60 inches; stratified yellowish brown (10YR 5/6), yellowish red (5YR 5/8), and brownish yellow (10YR 6/6) coarse sand; single grain; loose; 10 percent coarse fragments; very strongly acid.

The thickness of the solum ranges from 18 to 36 inches and corresponds to the depth to the lithologic discontinuity. The gravel content ranges from 2 to 15 percent in the solum and from 10 to 65 percent in the C horizon. Reaction ranges from moderately acid to very strongly acid.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is very fine sandy loam, silt loam, or loam.

Some pedons have a thin E horizon.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. It is very fine sandy loam, silt loam, or loam. Some pedons have a thin BC horizon of sandy loam.

The 2C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. It ranges from loamy fine sand to coarse sand or their gravelly analogs.

Katama series

The Katama series consists of very deep, well drained soils that formed in a loamy mantle and in the underlying sandy glacial outwash deposits. Slopes range from 0 to 3 percent.

Katama soils are similar to Carver, Haven, Eastchop, Riverhead, and Tisbury soils. The Katama soils have more silt and clay in the solum than the Carver or Eastchop soils, do not have as much clay and silt in the solum as the Haven or Tisbury soils, and have a thicker and darker surface layer than the Riverhead soils.

Typical pedon of Katama sandy loam, 0 to 3 percent slopes, in a pasture, 0.2 mile south of the intersection of Airport Road and Slough Cove Road, 30 feet west of Airport Road:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam, dark gray (10YR 4/1) dry; weak fine and medium granular structure; friable; 2 percent gravel; many fine roots; very strongly acid; abrupt wavy boundary.

A—6 to 9 inches; dark brown (7.5YR 3/2) sandy loam, dark gray (10YR 4/1) dry; massive; friable; 2 percent gravel; many fine roots; strongly acid; abrupt irregular boundary.

Bw1—9 to 16 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; friable; 10 percent gravel; many fine roots; strongly acid; clear wavy boundary.

2Bw2—16 to 26 inches; light olive brown (2.5Y 5/4) loamy coarse sand; single grain; loose; 15 percent gravel; few fine roots; strongly acid; abrupt irregular boundary.

2C1—26 to 40 inches; yellowish brown (10YR 5/6) coarse sand; single grain; loose; 10 percent gravel; strongly acid; abrupt irregular boundary.

2C2—40 to 60 inches; strong brown (7.5YR 5/6) coarse sand coarsely marbled with brown (7.5YR 4/4), yellowish brown (10YR 5/6), and yellowish red (5YR 4/6) single grain; loose; 10 percent gravel; strongly acid.

The solum thickness ranges from 23 to 40 inches. The gravel content is 15 percent or less throughout the soil.

Reaction in unlimed areas ranges from extremely acid to strongly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 or 2. It is fine sandy loam or sandy loam.

The Bw1 horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. It is sandy loam or coarse sandy loam. The Bw2 horizon has hue of 10YR or 2.5YR, value of 4 or 5, and chroma of 3 or 4. It is sand, loamy coarse sand, or coarse sand.

The C horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 3 to 6. It is sand, loamy coarse sand, or coarse sand.

Klej series

The Klej series consists of very deep, moderately well drained soils on outwash plains. The soils formed in sandy glaciofluvial deposits. Slopes range from 0 to 5 percent.

Klej soils are similar to Carver, Tisbury, and Pompton soils and are near Berryland soils. The Klej soils have less silt and clay in the solum than the Tisbury soils and are not as gray in the solum as the Berryland soils. The Klej soils are mottled in the lower part of the solum; the Pompton soils are mottled at a shallower depth, and the Carver soils are not mottled.

Typical pedon of Klej loamy coarse sand, sandy substratum, 0 to 5 percent slopes, in a wooded area 0.2 mile west of an unnamed dirt road which extends the length of Kanomik Neck, 0.45 mile southwest of its intersection with Meeting House Road, in the town of Edgartown:

Oi—3 to 2 inches; loose leaves and twigs.

Oe—2 inches to 0; black (10YR 2/1) partly and well decomposed organic material.

E—0 to 4 inches; light brownish gray (10YR 6/2) loamy coarse sand; single grain; loose; few fine and medium roots; very strongly acid; abrupt wavy boundary.

Bhs—4 to 6 inches; dark brown (7.5YR 3/2) loamy coarse sand; massive; very friable; common fine and medium roots; very strongly acid; abrupt wavy boundary.

Bw1—6 to 11 inches; dark brown (7.5YR 4/4) loamy coarse sand; massive; very friable; common fine and medium roots; strongly acid; gradual wavy boundary.

Bw2—11 to 27 inches; yellowish brown (10YR 5/6) coarse sand; single grain; loose; few fine roots; 2 percent coarse fragments; strongly acid; gradual wavy boundary.

BC—27 to 30 inches; yellowish brown (10YR 5/6) coarse sand; common medium distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/4) mottles; single grain; loose; few fine roots; 2 percent coarse fragments; strongly acid; gradual wavy boundary.

C—30 to 60 inches; yellowish brown (10YR 5/4) coarse sand; common medium distinct yellowish red (5YR 5/6) and yellowish brown (10YR 5/6) mottles; single grain; loose; 2 percent coarse fragments; strongly acid.

The thickness of the solum ranges from 24 to 36 inches. The rock fragment content ranges from 0 to 3 percent in the solum and 0 to 15 percent in the C horizon. Soil reaction ranges from extremely acid to moderately acid.

Some pedons have an A horizon that has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 or 2. It is coarse sand, sand, loamy coarse sand, or loamy sand.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is coarse sand, sand, loamy coarse sand, or loamy sand. Some pedons do not have an E horizon.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 6. It ranges from loamy sand to coarse sand. The lower part of the B horizon is mottled.

The C horizon has hue of 7.5YR to 2.5Y, value of 5 and 6, and chroma of 2 to 6. It is sand or coarse sand.

The Klej soils in this survey area are a taxadjunct to the Klej series because they have slightly redder hue in the upper part of the subsoil, are less acid in the substratum, and contain more coarse sand throughout the profile than defined in the range for the series. These differences, however, do not significantly affect the use and management of the soils.

Matunuck series

The Matunuck series consists of very deep, very poorly drained soils in tidal marshes that are subject to daily flooding by saltwater. The soils formed in 8 to 16 inches of organic material over thick sandy deposits. Slopes range from 0 to 1 percent. Matunuck soils in this survey area are mapped only with Pawcatuck soils.

Matunuck soils are similar to Pawcatuck, Berryland, Freetown, and Swansea soils. The Pawcatuck, Freetown, and Swansea soils consist of organic material more than 16 inches thick, and the Berryland soils are on uplands.

Typical pedon of Matunuck mucky peat, in an area of Pawcatuck and Matunuck mucky peat, 0 to 1 percent slopes, 100 feet south of Edgartown-Oak Bluffs Road, and 1 mile southeast of the Edgartown-Oak Bluffs town line, in the town of Edgartown:

Oe—10 inches to 0; very dark grayish brown (10YR 3/2) mucky peat (hemic material); 80 percent fiber, 50 percent rubbed; dense mat of roots and stems; 30 percent mineral matter; neutral; abrupt wavy boundary.

C1—0 to 7 inches; black (10YR 2/1) coarse sand; single grain; loose; neutral; clear wavy boundary.

C2—7 to 60 inches; gray (10YR 6/1) coarse sand; single grain; loose; neutral.

The thickness of the organic layer ranges from 8 to 16 inches. The soil ranges from moderately acid to neutral.

The O horizon is neutral or has hue of 10YR to 5Y, value of 2 to 4, and chroma of 0 to 2. The organic matter content ranges from 25 to 75 percent. The fiber content is 25 to 80 percent and 15 to 50 percent rubbed.

The C horizon is neutral or has hue of 10YR to 5GY, value of 2 to 7, and chroma of 0 to 3. The C1 horizon ranges from fine sandy loam to coarse sand. The C2 horizon is loamy sand, sand, or coarse sand. Some pedons do not have a C1 horizon.

Montauk series

The Montauk series consists of very deep, well drained soils on glacial moraines. The soils formed in dense glacial till. Slopes range from 3 to 25 percent. Montauk soils in this survey area are mapped only with Canton and Plymouth soils, with Eastchop soils, or with Plymouth soils.

Montauk soils are similar to Nantucket soils and are near Canton, Eastchop, and Plymouth soils. The Montauk soils have less silt and clay in the substratum than the Nantucket soils. The Montauk soils have dense till in the substratum; the Canton, Eastchop, and Plymouth soils do not.

Typical pedon of Montauk sandy loam, in an area of Canton-Montauk-Plymouth complex, rolling, extremely bouldery, 0.2 mile northwest of the caretaker's home on Robinsons Hole, in a sea cut on the north shore of Pasque Island, in the town of Gosnold:

A—0 to 7 inches; very dark gray (10YR 3/1) sandy loam; weak medium granular structure; very friable; many very fine roots; 5 percent gravel, 2 percent cobblestones, 2 percent stones, 5 percent boulders; extremely acid; clear wavy boundary.

Bs—7 to 10 inches; dark brown (7.5YR 4/4) sandy loam; weak medium granular structure; friable; many very fine roots; 5 percent gravel, 5 percent cobblestones, 2 percent stones, 5 percent boulders; very strongly acid; clear wavy boundary.

Bw1—10 to 24 inches; yellowish brown (10YR 5/6) sandy loam; massive; friable; common very fine roots; 10 percent gravel, 2 percent cobblestones, 2 percent stones, 2 percent boulders; strongly acid; clear wavy boundary.

Bw2—24 to 29 inches; light olive brown (2.5Y 5/4) sandy loam; massive; friable; few very fine roots; 10 percent gravel, 2 percent cobbles; strongly acid; clear wavy boundary.

2Cr—29 to 35 inches; olive (5Y 5/3) gravelly sandy loam; weak fine and medium platy structure; firm; 15 percent gravel, 5 percent cobblestones; strongly acid; abrupt broken boundary.

2C—35 to 39 inches; pale olive (5Y 6/3) gravelly loamy sand; massive; friable; 20 percent gravel; strongly acid; abrupt wavy boundary.

2Cr—39 to 60 inches; olive (5Y 5/3) gravelly sandy loam; weak fine and medium platy structure; firm; 15 percent gravel, 5 percent cobblestones; strongly acid.

The thickness of the solum ranges from 18 to 36 inches. The content of rock fragments ranges from 3 to 35 percent in the solum and 5 to 50 percent in the C horizon. The soil ranges from extremely acid to moderately acid throughout.

The A horizon has hue of 10YR or 7.5YR, value of 2 to 5, and chroma of 1 to 4. It is fine sandy loam or sandy loam.

The Bs horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. The Bw horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is fine sandy loam or sandy loam or their gravelly analogs.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 1 to 6. It is loamy sand or sandy loam or their gravelly analogs, and at least one subhorizon is loamy fine sand or coarser. Pockets and thin lenses of sand or gravelly sand are in the C horizon in many pedons.

Moshup series

The Moshup series consists of very deep, moderately well drained soils on uplands. The soils formed in glacial till and ice-thrusted coastal plain sediments. Slopes range from 0 to 8 percent.

Moshup soils are similar to Chilmark, Nantucket, and Ridgebury Variant soils and in many places are near Whitman Variant soils. The Moshup soils are mottled in the lower part of the subsoil; the Chilmark and Nantucket soils are not mottled in the subsoil. The Moshup soils are brown below the surface layer; the Whitman Variant soils are gray below the surface layer.

Typical pedon of Moshup loam, 3 to 8 percent slopes, 30 feet northwest of the Moshup Trail, 0.65 mile southwest of the intersection of the Moshup Trail and South Road, in the town of Gay Head:

Oi—1 inch to 0; loose leaves and twigs.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many very fine roots; strongly acid; abrupt wavy boundary.

Ap—2 to 8 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; many very fine roots; very strongly acid; abrupt wavy boundary.

Bw1—8 to 19 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium granular structure;

friable; common medium roots; very strongly acid; clear wavy boundary.
2Bw2—19 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate fine and medium angular blocky structure; friable; slightly sticky, plastic; few fine roots; strongly acid; clear wavy boundary.
2Cr—23 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; many coarse prominent strong brown (7.5YR 5/8) and light olive brown (2.5Y 5/4) mottles; moderate medium and coarse angular blocky structure; firm, slightly sticky, plastic; few thin clay films in pores and some on ped faces; few fine roots in upper 6 inches; strongly acid.

The thickness of solum ranges from 20 to 38 inches. The rock fragment content ranges from 0 to 15 percent. Reaction in unlimed areas is very strongly acid or strongly acid in the surface layer and very strongly acid to strongly acid below.

The A and Ap horizons have hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. They are loam, silt loam, fine sandy loam, or sandy loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6. It ranges from sandy loam to silty clay. The B horizon is mottled in the lower part.

The Cr horizon has hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 to 6, and it is mottled. It mainly is silty clay loam or silty clay. Some pedons have thin strata of sand, loamy sand, and sandy loam at a depth of more than 40 inches.

Nantucket series

The Nantucket series consists of very deep, well drained soils on uplands. The soils formed in dense glacial till and in silts and clays. Slopes range from 3 to 35 percent.

Nantucket soils are similar to Ridgebury Variant and Moshup soils and are near Chilmark and Plymouth soils. The mottles in the Nantucket soils are at a greater depth than in the Ridgebury Variant and Moshup soils. The substratum of the Nantucket soils is dense till; the substratum of the Chilmark and Plymouth soils is not.

Typical pedon of Nantucket sandy loam, 3 to 8 percent slopes, very stony, in a wooded area on the north side of an unnamed dirt road, 160 feet southeast of the Moshup Trail, 0.3 mile southwest of the intersection of the Moshup Trail and South Road, in the town of Gay Head:

Oi—2 inches to 1 inch; loose leaves and twigs.
Oe—1 inch to 0; black (10YR 2/1) partially and well decomposed organic material.
A—0 to 4 inches; dark brown (7.5YR 3/2) sandy loam; weak medium granular structure; very friable; many very fine and fine roots; 5 percent gravel, 5 percent cobblestones, 2 percent stones; very strongly acid; abrupt wavy boundary.
Bs—4 to 7 inches; dark brown (7.5YR 4/4) sandy loam; massive; friable; common fine and medium roots; 5 percent gravel, 5 percent cobblestones, 2 percent stones; very strongly acid; abrupt wavy boundary.
Bw—7 to 20 inches; yellowish brown (10YR 5/6) sandy loam; massive; friable; few fine roots; 5 percent gravel, 5 percent cobblestones, 2 percent stones; very strongly acid; clear wavy boundary.
2Cr—20 to 60 inches; light olive brown (2.5Y 5/4) sandy loam; few fine distinct strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; moderate very coarse platy structure; slightly sticky, firm, brittle; 5 percent gravel, 2 percent cobblestones, 2 percent stones; common clay films in pores and on ped faces; strongly acid.

The thickness of the solum ranges from 20 to 34 inches and corresponds closely to the depth to the contrasting material. The rock fragment content ranges from 0 to 20 percent throughout. Soil reaction is strongly acid to very strongly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. It is sandy loam, fine sandy loam, loamy fine sand, or loamy sand.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is sandy loam, fine sandy loam, or loam.

The 2Cr horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 6. It is firm or very firm and is brittle. The Cr horizon is sandy loam, sandy clay loam, or silt loam. Some pedons have thin strata and lenses of coarse-textured sediments. Bedding, where apparent, commonly is folded and distorted. The Cr horizon is not mottled in some pedons.

Pawcatuck series

The Pawcatuck series consists of very deep, very poorly drained soils in saltwater tidal marshes. The soils formed in deposits of organic material that are 16 to 51 inches thick and are underlain by sandy mineral material. Slopes range from 0 to 1 percent.

Pawcatuck soils are similar to Freetown, Matunuck, and Swansea soils and are near Berryland soils. The organic material in the Berryland and Matunuck soils is less than 16 inches thick. The Freetown and Swansea soils formed in freshwater marshes.

Typical pedon of Pawcatuck mucky peat, in an area of Pawcatuck and Matunuck mucky peats, 0 to 1 percent slopes, 125 feet east of Edgartown-Oak Bluffs Road, and 1 mile south of the Oak Bluffs Ferry terminal:

Oe1—0 to 10 inches; very dark grayish brown (10YR 3/2) mucky peat (hemic material); 80 percent fiber,

60 percent rubbed; massive; very friable; many roots; neutral; abrupt wavy boundary.
Oe2—10 to 19 inches; black (10YR 2/1) mucky peat (hemic material); 40 percent fiber, 25 percent rubbed; massive; very friable; neutral; abrupt wavy boundary.
2C—19 to 60 inches; light brownish gray (2.5Y 6/2) sand; single grain; loose; neutral.

The thickness of the organic layers ranges from 16 to 51 inches and corresponds to the depth to the underlying mineral material. Reaction ranges from strongly acid to neutral.

The surface tier is neutral or has hue of 10YR to 5Y, value of 2 to 4, and chroma of 0 to 2. The organic matter content is more than 20 percent.

The subsurface and bottom tiers are neutral or have hue of 10YR to 5Y, value of 2 to 5, and chroma of 0 to 3. The organic matter content is more than 20 percent and generally decreases with depth.

The 2C horizon is neutral or has hue of 10YR to 5Y, value of 2 to 7, and chroma of 0 to 3. It is loamy sand or sand. Some pedons have a thin layer of silt loam or sandy loam below the organic material.

Plymouth series

The Plymouth series consists of very deep, excessively drained soils on glacial moraines. The soils formed in glacial outwash and loose till. Slopes range from 3 to 35 percent.

Plymouth soils are similar to Carver and Eastchop soils and in many places are near Chilmark and Nantucket soils. The Plymouth soils have more coarse fragments in the subsoil and substratum than the Carver or Eastchop soils. The Plymouth soils are underlain by sand and gravel; the Chilmark and Nantucket soils are not.

Typical pedon of Plymouth sandy loam, in an area of Nantucket-Plymouth complex, rolling, very stony, 0.1 mile southeast of the intersection of the Moshup Trail and South Road, 10 feet northwest of Moshup Trail, in a road bank in the town of Gay Head:

Ap—0 to 4 inches; dark brown (7.5YR 3/2) sandy loam; weak medium granular structure; very fiable; many very fine roots; 5 percent gravel, 2 percent cobbles, 2 percent stones; very strongly acid; abrupt smooth boundary.
Bw1—4 to 7 inches; dark brown (7.5YR 4/4) loamy coarse sand; massive; very friable; many very fine roots; 5 percent gravel, 2 percent cobbles, 2 percent stones; very strongly acid; abrupt wavy boundary.
Bw2—7 to 16 inches; yellowish brown (10YR 5/6) loamy coarse sand; massive; very friable; common very fine roots; 5 percent gravel, 2 percent cobbles, 2 percent stones; strongly acid; clear wavy boundary.
BC—16 to 23 inches; yellowish brown (10YR 5/6) coarse sand; single grain; loose; few very fine roots; 5 percent gravel, 2 percent stones; strongly acid; clear wavy boundary.
C1—23 to 32 inches; brownish yellow (10YR 6/6) gravelly coarse sand; single grain; loose; 30 percent gravel; strongly acid; abrupt wavy boundary.
C2—32 to 60 inches; light yellowish brown (2.5Y 6/4) sand; single grain; loose; strongly acid.

The solum thickness ranges from 20 to 36 inches. The rock fragment content ranges from 5 to 25 percent in the solum and 0 to 35 percent in the substratum. Reaction is very strongly acid or strongly acid throughout.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. It is sandy loam, loamy sand, or sand.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 6. It ranges from loamy fine sand to coarse sand.

The C horizon has hue of 10YR or 2.5YR, value of 5 to 7, and chroma of 4 to 6. It is sand or coarse sand or their gravelly analogs.

Pompton series

The Pompton series consists of very deep, somewhat poorly drained soils on outwash plains. The soils formed in glaciofluvial deposits. Slopes range from 0 to 3 percent.

Pompton soils are similar to Berryland, Klej, and Tisbury soils. The mottles in the Pompton soils are at a shallower depth than in the Klej or Tisbury soils. The upper part of the subsoil in the Pompton soils is not as gray as in the Berryland soils.

Typical pedon of Pompton sandy loam, 0 to 3 percent slopes, 50 feet north of Edgartown-Oak Bluffs Road, 1,000 feet northwest of the intersection of Edgartown-Oak Bluffs Road and Vineyard Haven Road:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) sandy loam; moderate medium granular structure; very friable; many fine and medium roots; strongly acid; abrupt wavy boundary.
Bw1—10 to 16 inches; olive brown (2.5Y 4/4) sandy loam; common fine prominent strong brown (7.5YR 5/6) and brownish yellow (10YR 6/8) mottles; moderate medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
Bw2—16 to 32 inches; light olive brown (2.5Y 5/4) sandy loam; many medium prominent strong brown (7.5YR 5/8) and grayish brown (2.5Y 5/2) mottles; moderate medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.
2C1—32 to 48 inches; light brownish gray (2.5Y 6/2) loamy sand; many medium prominent strong brown

(7.5YR 5/8) mottles; massive; very friable; strongly acid; clear wavy boundary.
2C2—48 to 60 inches; light brown (7.5YR 6/4) loamy sand; many medium prominent light brownish gray (2.5Y 6/2) mottles; single grain; loose; strongly acid.

The thickness of the solum ranges from 24 to 36 inches. The coarse fragment content ranges from 0 to 25 percent in the solum and 0 to 35 percent in the C horizon. Soil reaction is strongly acid or very strongly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 2. It is fine sandy loam or sandy loam.

Some pedons have a thin E horizon.

The B horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is sandy loam or fine sandy loam.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It is sand, loamy sand, or sandy loam or their gravelly analogs.

Ridgebury Variant

The Ridgebury Variant consists of very deep, poorly drained soils on uplands. The soils formed in ice-thrusted coastal plain sediments and glacial till. Slopes range from 0 to 3 percent.

Ridgebury Variant soils are similar to Whitman Variant and Moshup soils and in many places are near Nantucket and Chilmark soils. The Ridgebury Variant soils have a subhorizon within 30 inches of the surface that is not as gray as the subsoil of the Whitman Variant soils. The Ridgebury Variant soils are mottled in the upper part of the solum; the Chilmark, Nantucket, and Moshup soils are not.

Typical pedon of Ridgebury Variant fine sandy loam, 0 to 3 percent slopes, in a wooded area, 400 feet northwest of Old South Road at a point, 1/4 mile northeast of the intersection of Old South Road and the Moshup Trail, in the town of Gay Head:

Oi—3 to 2 inches; loose leaves and twigs.
Oe—2 inches to 0; black (10YR 2/1) partially and well decomposed organic material.
A—0 to 2 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; many very fine and fine roots; 2 percent gravel; very strongly acid; abrupt wavy boundary.
E—2 to 7 inches; light gray (10YR 6/1) fine sandy loam; massive; friable; few very fine and fine roots; 2 percent gravel; very strongly acid; abrupt wavy boundary.
Bw—7 to 12 inches; light olive brown (2.5Y 5/4) silt loam; many medium prominent light brownish gray (2.5Y 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium and coarse angular blocky structure; friable; common fine and medium roots; 2 percent gravel; common clay films in pores and on ped faces; very strongly acid; clear wavy boundary.
2C1—12 to 35 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) and brownish yellow (10YR 6/6) mottles; moderate medium and coarse angular blocky structure; firm; slightly sticky; few medium roots in vertical cracks; 2 percent gravel, 2 percent cobbles, 2 percent stones; common clay films in pores and on ped faces; very strongly acid; clear wavy boundary.
2C2—35 to 60 inches; light olive brown (2.5Y 5/4) silty clay loam; common medium prominent light brownish gray (2.5Y 6/2) and strong brown (7.5YR 5/6) mottles; massive; firm; slightly sticky; 2 percent gravel, 2 percent cobbles; strongly acid.

The solum thickness ranges from 12 to 30 inches. The content of rock fragments ranges from 0 to 20 percent. Soil reaction ranges from strongly acid to extremely acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2.

The E horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 1 or 2. Textures range from sandy loam to silt loam. Some pedons do not have an E horizon.

The B horizon has hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 2 to 4 and is mottled. It ranges from sandy loam to silt loam.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 1 to 4 and is mottled. It ranges mainly from sandy clay loam to silty clay. Some pedons have layers of coarser textured material.

Riverhead series

The Riverhead series consists of very deep, well drained soils on outwash plains. The soils formed in glaciofluvial deposits. Slopes range from 0 to 15 percent.

Riverhead soils are similar to Carver, Haven, Eastchop, Katama, and Tisbury soils. The Riverhead soils have more silt and clay in the solum than the Carver or Eastchop soils and do not have as much silt and clay in the solum as the Haven or Tisbury soils. The Riverhead soils are not mottled and are underlain by sand and gravel; the Tisbury soils are mottled, and the Chilmark soils are underlain by fine-textured marine sediments.

Typical pedon of Riverhead sandy loam, 0 to 3 percent slopes, in a wooded area on the south side of West Tisbury Road, 1.1 miles west of the West Tisbury-Edgartown town line, in the town of West Tisbury:

A—0 to 4 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent gravel; very strongly acid; abrupt wavy boundary.

Bw1—4 to 16 inches; yellowish brown (10YR 5/6) sandy loam; massive; very friable; common fine and medium roots; 5 percent gravel; very strongly acid; gradual wavy boundary.
2Bw2—16 to 24 inches; yellowish brown (10YR 5/6) loamy sand; massive; very friable; few roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.
2C—24 to 60 inches; brownish yellow (10YR 6/6) coarse sand; single grain; loose; 15 percent gravel; very strongly acid.

The thickness of the solum ranges from 22 to 36 inches. The gravel content ranges from 2 to 35 percent throughout. Soil reaction ranges from strongly acid to very strongly acid.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 2 or 3. It is sandy loam or fine sandy loam. Some pedons have a thin E horizon of sandy loam or fine sandy loam.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 6. The Bw1 horizon is sandy loam or fine sandy loam. The 2Bw2 horizon ranges from sandy loam to gravelly loamy sand. The B horizon is massive, or it has weak subangular blocky structure.

The 2C horizon has hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is sand or coarse sand or their gravelly analogs.

Swansea series

The Swansea series consists of very deep very poorly drained soils on uplands and outwash plains. The soils formed in organic deposits. Slopes range from 0 to 1 percent. The Swansea soils in this survey area are mapped only with Freetown soils.

Swansea soils are similar to Freetown, Matunuck, and Pawcatuck soils and are near Berryland and Whitman Variant soils. The Swansea soils formed in freshwater organic deposits less than 51 inches thick. The Freetown soils formed in deposits that are 51 inches thick or more; the Matunuck and Pawcatuck soils formed in brackish tidal marshes; and the Berryland and Whitman Variant soils are mineral soils and have an organic surface layer that is less than 16 inches thick.

Typical pedon of Swansea muck, in a wooded area of Freetown and Swansea mucks, 0 to 1 percent slopes, on the north side of a dirt road that enters Edgartown-Oak Bluffs Road, 1,000 feet west of Edgartown-Oak Bluffs Road, 0.55 mile northwest of the intersection of Edgartown-Oak Bluffs Road and Vineyard Haven Road:

Oa1—0 to 6 inches; dark reddish brown (5YR 3/2) broken face and rubbed muck (sapric material); 15 percent fiber, 5 percent rubbed; moderate medium granular structure; very friable; many fine roots; 15 percent woody fragments; extremely acid; clear wavy boundary.
Oa2—6 to 19 inches; dark reddish brown (5YR 2/2) broken face and rubbed muck (sapric material); 10 percent fiber, 5 percent rubbed; massive; very friable; many fine roots; 5 percent woody fragments; extremely acid; abrupt wavy boundary.
C1—19 to 35 inches; grayish brown (10YR 5/2) coarse sand; single grain; loose; very strongly acid; abrupt wavy boundary.
C2—35 to 44 inches; dark grayish brown (10YR 4/2) coarse sand; single grain; loose; strongly acid; abrupt wavy boundary.
C3—44 to 50 inches; brown (10YR 5/3) loamy coarse sand; single grain; loose; very strongly acid; clear wavy boundary.
C4—50 to 60 inches; olive brown (2.5Y 4/4) coarse sand; single grain; loose; very strongly acid.

The depth to mineral material ranges from 16 to 51 inches. Woody fragments are common in some part of the organic material or throughout the organic material in some pedons and make up as much as 25 percent of some horizons. Reaction is extremely acid throughout the organic tiers.

The surface tier is neutral or has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 2. It is dominantly sapric material; however, in some pedons there are various amounts of hemic material. The upper 4 to 10 inches in some pedons is sand or coarse sand.

The subsurface and bottom tiers are neutral or have hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 2. They are massive or have platy structure.

The 2C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is mottled in some pedons. It ranges from coarse sand to loamy fine sand and their gravelly analogs. Reaction ranges from strongly acid to extremely acid. Some pedons have a layer below the organic material and above the sand that is up to 5 inches thick and is black (N2/0 or 10YR 2/1) loam or silt loam, is massive, and is firm or very firm.

Tisbury series

The Tisbury series consists of very deep, moderately well drained soils on outwash plains. The soils formed in glaciofluvial deposits. Slopes range from 0 to 3 percent.

Tisbury soils are similar to Haven, Riverhead, and Klej soils and are near Riverhead and Haven soils. The Tisbury soils are mottled, but the Haven and Riverhead soils are not, and the Tisbury soils have more silt and clay in the solum than the Klej soils.

Typical pedon of Tisbury very fine sandy loam, 0 to 3 percent slopes, 0.15 mile east of the Chicama Winery and 250 feet south of Chicama Winery Road, in the town of Tisbury:

A—0 to 1 inch; very dark grayish brown (10YR 3/2) very fine sandy loam; weak fine granular structure; very

friable; many fine and medium roots; 2 percent coarse fragments; very strongly acid; clear wavy boundary.
Bw1—1 to 5 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; 2 percent gravel; strongly acid; clear wavy boundary.
Bw2—5 to 16 inches; yellowish brown (10YR 5/6) very fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; 2 percent gravel; strongly acid; clear wavy boundary.
Bw3—16 to 30 inches; light yellowish brown (10YR 6/4) very fine sandy loam; few medium fine reddish yellow (7.5YR 6/8) and grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; very friable; 2 percent gravel; moderately acid; abrupt wavy boundary.
2C—30 to 60 inches; brownish yellow (10YR 6/6) sand; common medium prominent strong brown (7.5YR 5/8) and light brownish gray (10YR 6/2) mottles; single grain; loose; 10 percent gravel; moderately acid.

The thickness of the solum ranges from 18 to 36 inches and corresponds closely to the depth to sand and gravel. Soil reaction ranges from moderately acid to very strongly acid. The coarse fragment content ranges from 0 to 5 percent in the solum and 2 to 35 percent in the substratum.

The A horizon has value of 2 or 3 and chroma of 1 to 3. It is very fine sandy loam or silt loam.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. The lower part of the B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is very fine sandy loam or silt loam. Structure is weak subangular blocky, or the horizon is massive. The B horizon is mottled in the lower part.

The 2C horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. It is coarse sand, sand, or gravelly sand, and in some pedons it is stratified.

Udipsamments

Udipsamments consist of very deep, excessively drained soils formed in areas of wind-deposited sand blown from nearby beaches. Slopes range from 3 to 15 percent.

Udipsamments are near Matunuck and Pawcatuck soils and Beaches. Udipsamments are sandy soils; the Matunuck and Pawcatuck soils formed in organic material over sand. Udipsamments support vegetation and are not wave washed, as are Beaches.

Udipsamments in this survey area consist of many different kinds of pedons, none of which is considered typical. A pedon used as a reference for Udipsamments is in an area of Udipsamments, rolling, 200 feet east of the southern end of Katama Road, in the town of Edgartown:

C1—0 to 10 inches; pale brown (10YR 6/3) sand; single grain; loose; many roots; slightly acid; gradual wavy boundary.
C2—10 to 60 inches; pale brown (10YR 6/3) sand; single grain; loose; few thin layers of accumulated dark minerals; slightly acid.

In some pedons there is a thin A horizon that has hue of 10YR or 7.5YR, value of 2 to 6, and chroma of 2 to 4. It ranges from fine sand to coarse sand. Reaction of the A horizon ranges from slightly acid to extremely acid.

The C horizon has hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 1 to 3. It is fine sand, sand, or coarse sand. Reaction is moderately acid or strongly acid. In many pedons there are A horizons that are buried under the sand.

Whitman Variant

The Whitman Variant consists of very deep, very poorly drained soils in uplands. The soils formed in ice-thrusted coastal plain sediments and glacial till. Slopes range from 0 to 3 percent.

Whitman Variant soils are similar to Ridgebury Variant soils and in many places are near Chilmark, Freetown, Nantucket, Swansea, and Moshup soils. The Whitman Variant soils are grayer throughout than the Chilmark, Nantucket, Ridgebury Variant, or Moshup soils. The Whitman Variant soils are mineral; the Freetown and Swansea soils are organic.

Typical pedon of Whitman Variant silt loam, 0 to 3 percent slopes, in a wooded area, 50 feet south of Lighthouse Road, at a point 0.65 mile east of the intersection of an access road and South Road, in the town of Gay Head:

Oi—4 to 3 inches; loose leaves and twigs.
Oa—3 inches to 0; well decomposed organic material.
A—0 to 5 inches; very dark grayish brown (2.5Y 3/2) silt loam; moderate medium granular structure; very friable; many very fine and fine roots; 2 percent gravel; very strongly acid; abrupt wavy boundary.
2Cg1—5 to 8 inches; light brownish gray (2.5Y 6/2) sandy loam; common medium distinct yellowish brown (10YR 5/8) mottles; massive; friable; slightly sticky; 10 percent gravel; moderately acid; clear wavy boundary.
Cg2—8 to 35 inches; light brownish gray (2.5Y 6/2) sandy clay loam; many coarse prominent yellowish red (5YR 4/8) and yellowish brown (10YR 5/8) mottles; moderate medium angular blocky structure; firm; slightly sticky; 10 percent gravel; common clay films in pores and on ped faces; moderately acid; clear wavy boundary.

2Cg3—35 to 60 inches; gray (5Y 5/1) clay loam; many coarse prominent yellowish red (5YR 4/8) and yellowish brown (10YR 5/8) mottles; moderate medium angular blocky structure; firm; sticky and plastic; 5 percent gravel; slightly acid.

The solum thickness and depth to the lithologic discontinuity range from 6 to 30 inches. The content of rock fragments ranges from 0 to 20 percent. Reaction ranges from extremely acid to strongly acid in the solum and strongly acid to slightly acid in the substratum.

The A horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. It ranges from sandy loam to silt loam.

Some pedons have a B horizon that has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 2.

The C horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 2. It ranges mainly from sandy loam to silty clay. Some pedons have layers of coarser textured material.

Formation of the Soils

Soils are formed through the interaction of five major factors: time, climate, parent material, topography, and plant and animal life. The relative influence of each factor varies from place to place, but the combination of all five factors normally determines the kind of soil developing in any given place. In Dukes County, parent material and relief, as they relate to drainage, account for many of the differences in the soils.

Factors of Soil Formation

This section describes the five major factors of soil formation and gives the effect of each on the soils in this survey area.

Time

The formation of soils is a continuing process and generally takes several thousand years for changes to take place. The soils of Dukes County have developed in the period since glaciation, about 15,000 years. They are considered to be relatively young soils that have undergone some alteration of parent material and weak soil horizon development.

Climate

Climate, particularly temperature, precipitation, and frost-action, has had a profound influence on the soil-forming processes in the region. The kind of climate largely determines the nature of the weathering processes and the rate at which they occur. Climate directly affects the type of vegetation in an area, which in turn will affect those soil-forming processes related to vegetation.

Dukes County is in a transitional climate zone with conditions characteristic of humid-marine and humid-continental climates. Temperatures are moderated by the effect of the Atlantic Ocean. The temperature and precipitation allow the accumulation of organic matter in the surface layer of the soils. Moisture is sufficient enough to promote leaching of water-soluble material down through the soil. Winter temperatures create frost-action, which physically breaks apart rock fragments and promotes the granulation of soil material.

Parent Material

Parent material is the unconsolidated mineral and organic deposits in which soils are developing. It determines the mineralogical composition of the soil, contributes largely to the physical and chemical characteristics of the soil, and influences the rate at which soil-forming processes take place. Insufficient time has elapsed to allow significant alteration of the glacial and marine deposits in the county. The six kinds of parent material in the survey area are: coastal plain sediments of Cretaceous and Tertiary Ages, glacial till, glacial outwash, post-glacial eolian silts and sands, freshwater and marine organic deposits, and marine beaches and sand dunes.

Coastal plain sediments of Cretaceous and Tertiary Ages were displaced upward and forward from their original position by the ice sheet as it advanced over the area during the last glacial period. These sediments are folded, multicolored silts and clays with interbedded strata and pockets of sand, gravel, and till. Chilmark soils are representative of soils that developed in these sediments.

Glacial till is dominantly unsorted and unstratified sediments deposited by and underneath a glacier. The sediments consist of a mixture of clay, silt, sand, gravel, stones, and boulders. Two broad groupings of glacial till are in Dukes County. One has a loamy texture, few coarse fragments, and a dense, firm substratum; the Nantucket soils are representative of soils formed in this type of till. The other till has a sandy texture, a high percentage of coarse fragments, and a loose, permeable substratum; the Canton and Plymouth soils are representative soils that developed in this material.

Glacial outwash is stratified sand and gravel deposited by glacial meltwater streams. The Carver, Katama, Eastchop, and Riverhead soils are examples of soils that have developed in glacial outwash.

Post-glacial eolian sediments are fine and very fine sand and silt deposited by wind after the glacial ice melted from the area and before a permanent plant cover was established. They are in the form of a mantle that ranges in thickness from 18 to 36 inches over glacial outwash. Haven soils, for example, developed in this material. The loamy surface layer and upper part of the solum of the Riverhead and Katama soils is thought to be the result of a thin capping of eolian material that has been mixed through natural processes with the underlying sand and gravel.

Organic deposits are accumulations of plant materials of varying degrees of decomposition that have

accumulated in wet areas. Examples of soils developed in such deposits are Freetown and Swansea soils in freshwater deposits and Pawcatuck soils in tidal-marsh deposits. The thickess of the organic deposits is at least 16 inches.

Beaches are wave-washed accumulations of sand with no plant cover. Sand dunes consist of wind-blown deposits that typically have some plant cover.

Topography

The shape of the land surface, its slope, and its position in the landscape make up the topography. Some soils in Dukes County that formed in identical parent material under the same climatic conditions are different because of their position in the landscape. These differences are largely a result of drainage conditions caused by surface runoff or depth to the water table.

Soils that developed on high, sloping areas generally are excessively drained or well drained. The depth to ground water in such soils is generally more than 6 feet, and surface runoff is moderate or rapid. The soils in these areas commonly are strong brown to yellowish brown in the upper part of the subsoil and have a grayer, unweathered substratum.

Soils at low elevations, such as those in swales, adjacent to drainageways and water bodies, and in depressions, generally receive surface runoff from soils at high elevations and have a seasonal high water table at a shallow depth and are moderately well drained, poorly drained, or very poorly drained. The moderately well drained and poorly drained soils are mottled. In the very poorly drained soils, the water table is at or near the surface for prolonged periods and the surface layer is dark-colored and organic or organic-rich and is underlain by a strongly mottled or gleyed subsoil and substratum.

Plant and Animal Life

The organisms that have a major influence on soil formation are bacteria, fungi, vegetation, and animals. Their major influence is how they affect the chemical and physical environment of the soils.

Most of Dukes County was originally covered by a forest of mixed hardwoods and conifers. The mineral element content of leaves, needles, and branches varies, depending on the type of tree, and influences the characteristics of the soils that develop beneath the tree. Hardwoods characteristically take up bases (calcium, magnesium, and potassium) from the soil and return them to the soil surface in the form of organic litter, thus recycling the soil nutrients. Coniferous trees recycle fewer bases than hardwoods. Consequently, soils developed beneath conifers tend to be more acid. The bases beneath coniferous trees also are more susceptible to leaching. Mixing of the soil by tree throw is another characteristic of soils in wooded areas.

Katama soils in the southeastern part of Martha's Vineyard and small areas adjacent to the shore of the Elizabeth Islands exhibit characteristics common to soils developed under grassland. Grassland has an abundant root system. Thus, the amount of organic matter incorporated into the soils is greater under grassland than under woodland and the soils under grassland characteristically have a thicker, darker surface layer with a higher moisture- and cation-holding capacity than soils developed under woodland.

Some types of micro-organisms cause acidity and change the chemistry of the soil, which in turn influences the type of soil-forming processes that take place. Other changes are caused when microbial animals decompose organic materials and return the products of decomposition to the soil.

Larger animals, such as earthworms and burrowing animals, mix the soil and change its physical characteristics. They generally make the soil more permeable to air and water. Their waste products cause aggregation of the soil particles and improve soil structure.

Man's activities have significantly altered many areas of soils in the county. The chemical and physical properties of the soil, particularly of the plow layer, have changed with cultivation and the addition of lime and fertilizer. Artificial drainage and filling having altered the environment of some naturally wet soils.

Soil Profile Development

The interaction of the five soil-forming factors—time, climate, parent material, topography, and plant and animal life—results in the development of a soil profile. A soil profile is a vertical section of the soil through all its horizons, or layers, and extending into the parent material. A soil horizon is approximately parallel to the soil surface and has distinct characteristics produced by soil-forming processes. The physical and chemical characteristics of the soil profile are the basis for differentiating one soil from another.

The majority of the soils in the survey area are young and exhibit weak soil-profile development and little alteration of parent material. The depth of soil-profile development varies among the different soils and generally averages about 30 inches in the well drained soils. Soil profile development is generally shallower than 30 inches in the poorly drained and very poorly drained soils and is nonexistant or very weak in recently deposited material, such as Udipsamments.

Organic matter in varying degrees of decomposition has accumulated on the surface of some of the soils as an O horizon, and in some areas the organic material is mixed naturally with underlyiing mineral matter, making an A horizon. The amount of organic matter in the soils in the survey area varies with the kind of vegetation, moisture, and drainage condition. The grassland

vegetation, characteristic of areas of Katama soils, is believed to have resulted in the development of an unusually thick A horizon. The thick, mucky organic deposits of the Freetown and Swansea soils are the result of very poor drainage and a lack of air, which prevents decomposition. In areas that have been cultivated, the surface organic layers and the upper part of the subsoil have been mixed to form an Ap horizon.

The development of many excessively drained, well drained, and moderately well drained soils in the survey area is the result of movement and deposition of aluminum, iron, clay, and humified organic matter within the soil profile. Weak organic acids generated from the decomposition of surface organic litter percolate downward through the soil by rainwater. Aluminum and iron in the upper part of the soil profile are released into solution and leached downward, along with fine particles of humified organic matter and small amounts of clay. The light gray E horizon has resulted from this leaching and is more evident in the coarser textured soils than in the finer textured soils. With depth, the chemical environment within the soil changes and the aluminum, iron, clay, and organic material precipitate to the lower part of the soil profile. The greatest concentration of leached material precipitates to just below the E horizon and often forms a strong brown Bhs or Bw horizon. Undisturbed profiles of Carver, Klej, Eastchop, and Berryland soils commonly have an E horizon underlain by a bright-colored B horizon. The soil color in the subsoil consists mainly of iron oxide stains on the surface of sand-size particles, and the color generally fades with depth, eventually to the unweathered parent material of the C horizon.

Mottles are common in soils that have a water table in the profile all or part of the time. Mottles are gray or bluish to reddish spots produced by the oxidation-reduction process (aerated-saturated conditions). These spots are caused principally by migration, depletion, or concentration of iron within peds. Gleying is a condition that develops when the soil is wet for most of the year, and the soil matrix color is gray or bluish gray because of a lack of air. Soil mottling is common in the upper part of the solum of somewhat poorly drained Pompton soils and poorly drained Ridgebury Variant soils and in the lower part of the solum in moderately well drained Moshup and Tisbury soils. Gleying is a characteristic of very poorly drained Whitman Variant soils. Induration of sand grains caused by the concentration of iron occurs within the profile of some areas of very poorly drained Berryland soils.

The movement of clay in some soil profiles is evidenced by clay films on the surface of ped faces and within pores in the subsoil and substratum. The degree of clay movement within the soil profile is believed to be slight and has been observed in some of the Chilmark, Moshup, Nantuket, Ridgebury Variant, and Whitman Variant soils.

References

(1) American Association of State Highway [and Transportation] Officials. 1970. Standard specifications for highway materials and methods of sampling and testing. Ed. 10, 2 vol., illus.

(2) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.

(3) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplements replacing pp. 173-188 issued May 1962.]

(4) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(5) United States Department of Agriculture. 1925. Soil survey of Dukes and Nantucket Counties, Massachusetts. Bur. of Chem. and Soils. Ser. 1925, No. 28.

(6) United States Geological Survey. 1982. Pleistocene stratigraphy of Nantucket, Martha's Vineyard, the Elizabeth Islands, and Cape Cod, Massachusetts.

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

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—

	Inches
Very low	<2.4
Low	2.4-3.2
Moderate	3.2-5.2
High	>5.2

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Braided stream. A stream with multiple, interwoven channels.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of a standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

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.

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.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

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 vegetation. 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 sediments. Unconsolidated fluvial or marine sediments which have their margin on the shore of a large body of water, mainly the ocean.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Congeliturbate. Soil material disturbed by frost action.

Conservation tillage. A system that retains protective amounts of residue mulch on the surface throughout the year by use of no-tillage, strip tillage, stubble mulching, and other types of noninversion tillage.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not 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 grains are 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, and clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial melt water.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

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 (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

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. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Open space. A relatively undeveloped green or wooded area provided mainly within an urban area to minimize feelings of congested living.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial melt water.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

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.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). 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.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

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 degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Recessional moraine. An end moraine built during a temporary but significant halt in the final retreat of a glacier.

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.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

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.

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 from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sea cliff. A sparsely vegetated, very steep, severely eroded, wave-cut escarpment along the shoreline.

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 or of the underlying material. 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. 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, and 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.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of

climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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 and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

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.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

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.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

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.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by melt water streams, in a glacial lake or other body of still water in front of a glacier.

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.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data recorded in the period 1951-78 at Edgartown, Mass.]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	37.9	20.7	29.3	55	0	15	3.83	2.12	5.33	8	4.2
February	38.6	21.1	29.9	54	1	6	3.89	2.27	5.33	7	12.8
March	44.8	28.1	36.5	60	12	34	4.08	2.57	5.44	9	1.8
April	53.7	36.2	45.0	75	22	164	4.01	2.35	5.49	8	.1
May	63.1	44.9	54.0	81	30	434	4.07	2.06	5.81	8	.0
June	72.1	54.6	63.4	89	41	702	2.77	.76	4.37	5	.0
July	78.1	60.6	69.4	91	49	911	2.76	1.29	4.02	5	.0
August	77.8	60.0	68.9	90	46	896	4.24	2.32	5.92	6	.0
September	71.8	53.9	62.9	86	38	687	3.80	1.74	5.56	6	.0
October	63.2	44.4	53.8	79	27	428	3.52	2.00	4.85	6	.0
November	52.8	36.2	44.5	69	19	148	4.36	2.37	6.10	8	.0
December	42.5	25.5	34.0	59	5	43	4.63	2.78	6.28	9	2.8
Yearly:											
Average	58.0	40.5	49.3	---	---	---	---	---	---	---	---
Extreme	---	---	---	92	-1	---	---	---	---	---	---
Total	---	---	---	---	---	4,468	45.96	38.85	52.73	85	21.7

[1] A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data recorded in the period 1951-78 at Edgartown, Mass.]

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--	April 14	April 29	May 13
2 years in 10 later than--	April 9	April 24	May 8
5 years in 10 later than--	March 30	April 14	April 28
First freezing temperature in fall:			
1 year in 10 earlier than--	November 1	October 21	October 9
2 years in 10 earlier than--	November 7	October 27	October 13
5 years in 10 earlier than--	November 18	November 7	October 21

TABLE 3.--GROWING SEASON

[Data recorded in the period 1951-78 at Edgartown, Mass.]

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	211	181	155
8 years in 10	218	190	162
5 years in 10	232	207	176
2 years in 10	245	224	190
1 year in 10	252	233	197

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ba	Beaches	1,086	1.7
BeA	Berryland loamy sand, 0 to 2 percent slopes	631	1.0
CaC	Canton-Montauk-Plymouth complex,rolling	74	0.1
CcC	Canton-Montauk-Plymouth complex,rolling, extremely bouldery	353	0.5
CeA	Carver loamy coarse sand,0 to 3 percent slopes	6,992	10.6
CeB	Carver loamy coarse sand,3 to 8 percent slopes	10,091	15.2
CeC	Carver loamy coarse sand,8 to 15 percent slopes	4,659	7.1
CeD	Carver loamy coarse sand,15 to 25 percent slopes	1,034	1.6
ChB	Chilmark sandy loam,3 to 8 percent slopes	473	0.7
ChC	Chilmark sandy loam,8 to 15 percent slopes	231	0.4
CsB	Chilmark sandy loam, 3 to 8 percent slopes, very stony	781	1.2
CsC	Chilmark sandy loam, 8 to 15 percent slopes, very stony	566	0.9
CsD	Chilmark sandy loam, 15 to 25 percent slopes, very stony	184	0.3
EcA	Eastchop loamy sand, 0 to 3 percent slopes	690	1.0
EcB	Eastchop loamy sand, 3 to 8 percent slopes	1,784	2.7
EcC	Eastchop loamy sand, 8 to 15 percent slopes	1,716	2.6
EcD	Eastchop loamy sand, 15 to 35 percent slopes	569	0.9
EdB	Eastchop loamy sand, 3 to 8 percent slopes, very stony	1,384	2.1
EdC	Eastchop loamy sand, 8 to 15 percent slopes, very stony	2,236	3.4
EdD	Eastchop loamy sand, 15 to 35 percent slopes, very stony	2,619	4.0
EmC	Eastchop-Montauk complex, rolling	77	0.1
EnC	Eastchop-Montauk complex, rolling, very bouldery	1,974	3.0
FsA	Freetown and Swansea mucks, 0 to 1 percent slopes	1,435	2.2
HaA	Haven very fine sandy loam,0 to 3 percent slopes	2,558	3.9
HaB	Haven very fine sandy loam,3 to 8 percent slopes	277	0.4
KaA	Katama sandy loam, 0 to 3 percent slopes	660	1.0
KeA	Klej loamy coarse sand, sandy substratum, 0 to 5 percent slopes	1,082	1.6
MoA	Moshup loam, 0 to 3 percent slopes	118	0.2
MoB	Moshup loam, 3 to 8 percent slopes	349	0.5
MsB	Moshup loam, 0 to 8 percent slopes, very stony	181	0.3
NaB	Nantucket sandy loam,3 to 8 percent slopes	538	0.8
NaC	Nantucket sandy loam,8 to 15 percent slopes	165	0.3
NnB	Nantucket sandy loam, 3 to 8 percent slopes, very stony	92	0.1
NnC	Nantucket sandy loam, 8 to 15 percent slopes, very stony	207	0.3
NpC	Nantucket-Plymouth complex,rolling	195	0.3
NsB	Nantucket-Plymouth complex, undulating, very stony	66	0.1
NsC	Nantucket-Plymouth complex, rolling, very stony	1,040	1.6
NsD	Nantucket-Plymouth complex, hilly, very stony	201	0.3
PaA	Pawcatuck and Matunuck mucky peats, 0 to 1 percent slopes	945	1.4
Pg	Pits, sand and gravel	200	0.3
PnC	Plymouth-Canton-Nantucket complex, rolling, very bouldery	476	0.7
PtC	Plymouth-Montauk complex,rolling, extremely bouldery	921	1.4
PtD	Plymouth-Montauk complex, hilly, extremely bouldery	2,180	3.3
PwD	Plymouth-Nantucket complex, hilly, extremely bouldery	312	0.5
PyA	Pompton sandy loam,0 to 3 percent slopes	343	0.5
RgA	Ridgebury Variant fine sandy loam, 0 to 3 percent slopes	181	0.3
RsA	Ridgebury Variant fine sandy loam, 0 to 3 percent slopes, very stony	133	0.2
RvA	Riverhead sandy loam,0 to 3 percent slopes	5,249	8.0
RvB	Riverhead sandy loam,3 to 8 percent slopes	1,309	2.0
RvC	Riverhead sandy loam,8 to 15 percent slopes	156	0.2
TaA	Tisbury very fine sandy loam,0 to 3 percent slopes	139	0.2
UaC	Udipsamments,rolling	1,820	2.8
Ur	Urban land	577	0.9
WhA	Whitman Variant silt loam,0 to 3 percent slopes	101	0.2
WmA	Whitman Variant silt loam, 0 to 3 percent slopes, very stony	273	0.4
	Water	427	0.7
	Nomans Land (not surveyed)	650	1.0
	Total	65,760	100.0

TABLE 5.--LAND CAPABILITY CLASSES 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 silage	Grass-legume hay	Grass-clover	Sweet corn	Oats
		Tons	Tons	AUM*	Tons	Bu
Ba. Beaches						
BeA Berryland	Vw	---	---	---	---	---
CaC Canton-Montauk-Plymouth	IIIe	17	3.4	---	---	---
CcC Canton-Montauk-Plymouth	VIIs	---	---	---	---	---
CeA, CeB Carver	IVs	10	2.5	4.8	4.0	---
CeC, CeD Carver	VIIs	---	---	---	---	---
ChB Chilmark	IIe	16	3.0	5.5	5.0	70
ChC Chilmark	IIIe	---	---	---	---	---
CsB, CsC, CsD Chilmark	VIs	---	---	---	---	---
EcA, EcB Eastchop	IIIs	12	3.0	5.0	4.5	---
EcC Eastchop	IVs	---	---	---	---	---
EcD Eastchop	VIIs	---	---	---	---	---
EdB, EdC Eastchop	VIs	---	---	---	---	---
EdD Eastchop	VIIs	---	---	---	---	---
EmC Eastchop-Montauk	IVs	---	---	---	---	---
EnC Eastchop-Montauk	VIs	---	---	---	---	---
FsA Freetown and Swansea	Vw	---	---	---	---	---
HaA Haven	I	24	6.0	8.5	5.5	80
HaB Haven	IIe	24	6.0	8.5	5.5	80
KaA Katama	IIs	18	3.5	6.0	5.0	80
KeA Klej	IIIw	14	3.0	5.0	4.5	90
MoA, MoB Moshup	IIw	24	3.5	6.0	5.0	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Grass-legume hay	Grass-clover	Sweet corn	Oats
		Tons	Tons	AUM*	Tons	Bu
MsB---- Moshup	VIs	---	---	---	---	---
NaB---- Nantucket	IIs	22	4.0	8.0	---	---
NaC---- Nantucket	IIIe	20	4.0	8.0	---	---
NnB, NnC---- Nantucket	VIs	---	---	---	---	---
NpC---- Nantucket-Plymouth	IIIe	18	3.5	---	---	---
NsB, NsC---- Nantucket-Plymouth	VIIs	---	---	---	---	---
NsD---- Nantucket-Plymouth	VIs	---	---	---	---	---
PaA---- Pawcatuck and Matunuck	VIIIw	---	---	---	---	---
Pg. Pits						
PnC---- Plymouth-Canton-Nantucket	VIs	---	---	---	---	---
PtC---- Plymouth-Montauk	VIIs	---	---	---	---	---
PtD---- Plymouth-Montauk	VIIs	---	---	---	---	---
PwD---- Plymouth-Nantucket	VIIs	---	---	---	---	---
PyA---- Pompton	IIw	14	3.0	5.0	5.0	---
RgA---- Ridgebury Variant	IVw	---	---	---	---	---
RsA---- Ridgebury Variant	VIIs	---	---	---	---	---
RvA, RvB---- Riverhead	IIs	19	3.0	5.5	5.5	70
RvC---- Riverhead	IIIe	17	3.0	5.0	5.5	65
TaA---- Tisbury	IIw	22	4.5	8.5	5.5	80
UaC. Udipsamments						
Ur. Urban land						
WhA---- Whitman Variant	Vw	---	---	---	---	---
WmA---- Whitman Variant	VIs	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem. (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	2,558	---	---	---	---
II	9,455	750	949	7,756	---
III	4,327	821	1,082	2,474	---
IV	19,057	---	181	18,876	---
V	2,167	---	2,167	---	---
VI	10,014	---	---	10,014	---
VII	12,427	---	---	12,427	---
VIII	945	---	945	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
BeA--- Berryland	5w	Slight	Severe	Severe	Severe	Red maple---	55	
CaC*:								
Canton---	5o	Slight	Slight	Slight	Slight	Scarlet oak---	25	Eastern white pine, white spruce.
						Black oak---	60	
						White oak---	40	
						Pitch pine---	45	
Montauk---	4o	Slight	Slight	Slight	Slight	Scarlet oak---	30	Norway spruce, white spruce.
						Black oak---	60	
						White oak---	40	
Plymouth---	4s	Slight	Slight	Severe	Slight	Scarlet oak---	25	Eastern white pine, red pine.
						Black oak---	60	
						White oak---	40	
						Pitch pine---	45	
CcC*:								
Canton---	5o	Slight	Slight	Slight	Slight	Scarlet oak---	25	Eastern white pine, white spruce.
						Black oak---	40	
						White oak---	40	
						Pitch pine---	45	
Montauk---	4o	Slight	Slight	Slight	Slight	Scarlet oak---	30	Norway spruce, white spruce.
						Black oak---	60	
						White oak---	40	
Plymouth---	4s	Slight	Slight	Severe	Slight	Scarlet oak---	25	Eastern white pine, Japanese black pine.
						Black oak---	60	
						White oak---	60	
						Pitch pine---	45	
CeA, CeB, CeC--- Carver	5s	Slight	Slight	Severe	Slight	Eastern white pine---	50	Eastern white pine.
						Pitch pine---	45	
CeD--- Carver	5s	Slight	Moderate	Severe	Slight	Eastern white pine---	50	Eastern white pine.
						Pitch pine---	45	
ChB--- Chilmark	5o	Slight	Slight	Slight	Slight	White oak---	35	Eastern white pine, Japanese black pine.
						Eastern white pine---	35	
						Scarlet oak---	25	
ChC, CsB, CsC, CsD- Chilmark	5s	Slight	Moderate	Slight	Slight	White oak---	35	Eastern white pine, Japanese black pine.
						Eastern white pine---	35	
						Scarlet oak---	25	
EcA, EcB, EcC--- Eastchop	5s	Slight	Slight	Severe	Slight	Pitch pine---	45	Eastern white pine, Japanese black pine.
						White oak---	40	
EcD--- Eastchop	5s	Slight	Moderate	Severe	Slight	Pitch pine---	45	Eastern white pine, Japanese black pine.
						White oak---	40	
EdB, EdC--- Eastchop	5s	Slight	Slight	Severe	Slight	Pitch pine---	45	Eastern white pine, Japanese black pine.
						White oak---	40	
EdD--- Eastchop	5s	Slight	Moderate	Severe	Slight	Pitch pine---	45	Eastern white pine, Japanese black pine.
						White oak---	40	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
EmC*:								
Eastchop	5s	Slight	Slight	Severe	Slight	Pitch pine	35	Eastern white pine, Japanese black pine.
						White oak	30	
Montauk	4o	Slight	Slight	Slight	Slight	Scarlet oak	30	Norway spruce, white spruce.
						White oak	40	
						Eastern white pine	50	
EnC*:								
Eastchop	5s	Slight	Slight	Severe	Slight	Pitch pine	35	Eastern white pine, Japanese larch.
						White oak	30	
Montauk	4o	Slight	Slight	Slight	Slight	Scarlet oak	30	Norway spruce, white spruce.
						Black oak	60	
						White oak	40	
FsA*:								
Freetown	5w	Slight	Severe	Severe	Severe	Red maple	45	White spruce, eastern hemlock, balsam fir.
						Atlantic white-cedar	55	
Swansea	5w	Slight	Severe	Severe	Severe	Red maple	45	White spruce, eastern hemlock, balsam fir.
						Atlantic white-cedar	55	
HaA, HaB Haven	4o	Slight	Slight	Slight	Slight	Eastern white pine	60	Eastern white pine, Norway spruce.
						White oak	40	
						Scarlet oak	25	
						Red pine	60	
KeA Klej	4s	Slight	Moderate	Slight	Slight	Black oak	60	Virginia pine, eastern white pine, loblolly pine, sweetgum.
						Scarlet oak	30	
						White oak	70	
						Red maple	55	
MoA, MoB, MsB Moshup	4o	Slight	Slight	Slight	Slight	Scarlet oak	30	Eastern white pine.
						Black oak	55	
						White oak	55	
						Eastern white pine	60	
NaB, NaC, NnB, NnC- Nantucket	4o	Slight	Slight	Slight	Slight	Black oak	70	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	
NpC*:								
Nantucket	4o	Slight	Slight	Slight	Slight	Black oak	60	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	
Plymouth	4s	Slight	Slight	Severe	Slight	Pitch pine	45	Eastern white pine.
						Black oak	50	
						Scarlet oak	25	
NsB*, NsC*:								
Nantucket	4o	Slight	Slight	Slight	Slight	Black oak	60	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
NsB*, NsC*:								
Plymouth	4s	Slight	Slight	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine.
						Black oak	50	
						Scarlet oak	25	
NsD*:								
Nantucket	4r	Slight	Moderate	Slight	Slight	Black oak	60	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	
Plymouth	4s	Slight	Moderate	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine,
						Black oak	50	
						Scarlet oak	25	
PnC*:								
Plymouth	4s	Slight	Slight	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine.
						Black oak	50	
						Scarlet oak	25	
Canton	5o	Slight	Slight	Slight	Slight	Scarlet oak	25	Eastern white pine, white spruce.
						Black oak	60	
						White oak	40	
Nantucket	4o	Slight	Slight	Slight	Slight	Black oak	60	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	
PtC*:								
Plymouth	4s	Slight	Slight	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine.
						Black oak	50	
						Scarlet oak	25	
Montauk	4o	Slight	Slight	Slight	Slight	Scarlet oak	30	Norway spruce, white spruce.
						Black oak	60	
						White oak	40	
PtD*:								
Plymouth	4s	Slight	Moderate	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine.
						Black oak	50	
						Scarlet oak	25	
Montauk	4r	Slight	Moderate	Slight	Slight	Scarlet oak	30	Norway spruce, white spruce.
						Black oak	60	
						White oak	40	
PwD*:								
Plymouth	4s	Slight	Moderate	Severe	Slight	Pitch pine	45	Eastern white pine, Japanese black pine.
						Black oak	50	
						Scarlet oak	25	
Nantucket	4x	Slight	Severe	Slight	Slight	Black oak	60	Eastern white pine, Japanese black pine.
						Scarlet oak	30	
						White oak	55	
PyA---------- Pompton	4w	Slight	Moderate	Moderate	Moderate	Red maple	55	Eastern white pine, European larch.
						White oak	40	
RgA, RsA---------- Ridgebury Variant	5w	Slight	Severe	Severe	Severe	Red maple	55	
RvA, RvB, RvC------- Riverhead	4o	Slight	Slight	Slight	Slight	White oak	55	Eastern white pine, Norway spruce.
						Scarlet oak	30	
						Black oak	55	
						Eastern white pine	60	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
TaA--Tisbury	4o	Slight	Slight	Slight	Slight	Eastern white pine White oak Scarlet oak Black oak	60 55 30 55	Eastern white pine.
WhA, WmA--Whitman Variant	5w	Slight	Severe	Severe	Severe	Red maple	55	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ba*. Beaches					
BeA---------- Berryland	Severe: wetness.	Severe: wetness.	Severe: wetness, too sandy.	Severe: wetness.	Severe: wetness, too sandy.
CaC*:					
Canton----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
Montauk----------	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
Plymouth----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: too sandy.
CcC*:					
Canton----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight----------	Moderate: large stones, slope.
Montauk----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight----------	Moderate: small stones, large stones, slope.
Plymouth----------	Moderate: slope, too sandy, large stones.	Moderate: slope, too sandy, large stones.	Severe: large stones, slope, too sandy.	Moderate: large stones, too sandy.	Moderate: large stones, droughty, slope.
CeA---------- Carver	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Severe: droughty.
CeB---------- Carver	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.	Severe: droughty.
CeC---------- Carver	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Severe: droughty.
CeD---------- Carver	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.	Severe: droughty, slope.
ChB---------- Chilmark	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
ChC---------- Chilmark	Moderate: slope, percs slowly.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight----------	Moderate: slope.
CsB---------- Chilmark	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: large stones.	Slight----------	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CsC---------- Chilmark	Moderate: slope, percs slowly.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight----------	Moderate: slope.
CsD---------- Chilmark	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.
EcA---------- Eastchop	Moderate: large stones.	Moderate: large stones.	Moderate: small stones.	Slight----------	Moderate: droughty.
EcB---------- Eastchop	Moderate: large stones.	Moderate: large stones.	Moderate: slope, small stones.	Slight----------	Moderate: droughty.
EcC---------- Eastchop	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Slight----------	Moderate: droughty, slope.
EcD---------- Eastchop	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
EdB---------- Eastchop	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight----------	Moderate: large stones, droughty.
EdC---------- Eastchop	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight----------	Moderate: large stones, droughty, slope.
EdD---------- Eastchop	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
EmC*: Eastchop----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Slight----------	Moderate: droughty, slope.
Montauk----------	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
EnC*: Eastchop----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight----------	Moderate: large stones, droughty, slope.
Montauk----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight----------	Moderate: small stones, large stones, slope.
FsA*: Freetown----------	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.
Swansea----------	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HaA---------- Haven	Slight----------	Slight----------	Moderate: small stones.	Slight----------	Slight.
HaB---------- Haven	Slight----------	Slight----------	Moderate: slope, small stones.	Moderate: erodes easily.	Slight.
KaA---------- Katama	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
KeA---------- Klej	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
MoA, MoB---------- Moshup	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
MsB---------- Moshup	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: large stones, wetness.
NaB---------- Nantucket	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
NaC---------- Nantucket	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
NnB---------- Nantucket	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight----------	Slight.
NnC---------- Nantucket	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight----------	Moderate: slope.
NpC*: Nantucket----------	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.
Plymouth----------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: too sandy.
NsB*: Nantucket----------	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight----------	Slight.
Plymouth----------	Moderate: too sandy, large stones.	Moderate: too sandy, large stones.	Severe: large stones.	Moderate: too sandy.	Severe: droughty.
NsC*: Nantucket----------	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight----------	Moderate: slope.
Plymouth----------	Moderate: slope, too sandy, large stones.	Moderate: slope, too sandy, large stones.	Severe: slope, large stones.	Moderate: too sandy.	Severe: droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
NsD*:					
Nantucket	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
Plymouth	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Moderate: slope, too sandy.	Severe: slope, droughty.
PaA*:					
Pawcatuck	Severe: ponding, flooding, excess humus.	Severe: ponding, flooding, excess humus.	Severe: ponding, flooding, excess humus.	Severe: ponding, flooding, excess humus.	Severe: ponding, flooding, excess salt.
Matunuck	Severe: flooding, ponding, excess humus.	Severe: flooding, ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus, flooding.	Severe: excess salt, excess sulfur, ponding.
Pg*. Pits					
PnC*:					
Plymouth	Moderate: slope, too sandy, large stones.	Moderate: slope, too sandy, large stones.	Severe: large stones, slope, too sandy.	Moderate: large stones, too sandy.	Moderate: large stones, droughty, slope.
Canton	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight	Moderate: large stones, slope.
Nantucket	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Slight	Moderate: slope.
PtC*:					
Plymouth	Moderate: slope, too sandy, large stones.	Moderate: slope, too sandy, large stones.	Severe: large stones, slope, too sandy.	Moderate: large stones, too sandy.	Moderate: large stones, droughty, slope.
Montauk	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight	Moderate: small stones, large stones, slope.
PtD*:					
Plymouth	Severe: slope.	Severe: slope.	Severe: large stones, slope, too sandy.	Severe: slope.	Severe: slope.
Montauk	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
PwD*:					
Plymouth	Severe: slope.	Severe: slope.	Severe: large stones, slope, too sandy.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PwD*: Nantucket	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope.
PyA Pompton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
RgA Ridgebury Variant	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
RsA Ridgebury Variant	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: large stones, wetness, percs slowly.	Severe: wetness.	Severe: wetness.
RvA Riverhead	Slight	Slight	Slight	Slight	Slight.
RvB Riverhead	Slight	Slight	Moderate: slope.	Slight	Slight.
RvC Riverhead	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
TaA Tisbury	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
UaC. Udipsamments					
Ur*. Urban land					
WhA, WmA Whitman Variant	Severe: ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ba*. Beaches										
BeA---------- Berryland	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CaC*:										
Canton----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Montauk----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Plymouth----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
CcC*:										
Canton----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Montauk----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Plymouth----------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
CeA, CeB---------- Carver	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CeC, CeD---------- Carver	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
ChB---------- Chilmark	Good	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
ChC---------- Chilmark	Fair	Poor	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CsB---------- Chilmark	Fair	Poor	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
CsC, CsD---------- Chilmark	Fair	Poor	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
EcA, EcB, EcC------ Eastchop	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EcD---------- Eastchop	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EdB, EdC, EdD------ Eastchop	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EmC*:										
Eastchop----------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Montauk----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
EnC*:										
Eastchop	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Montauk	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
FsA*:										
Freetown	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Swansea	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HaA---- Haven	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HaB---- Haven	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KaA---- Katama	Good	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
KeA---- Klej	Fair	Fair	Good	Fair	Fair	Poor	Poor	Fair	Fair	Poor.
MoA---- Moshup	Good	Good	Good	Poor	Poor	Poor	Poor	Good	Fair	Poor.
MoB---- Moshup	Good	Good	Good	Poor	Poor	Poor	Very poor.	Good	Fair	Very poor.
MsB---- Moshup	Very poor.	Poor	Good	Poor	Poor	Poor	Very poor.	Poor	Poor	Very poor.
NaB---- Nantucket	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NaC---- Nantucket	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
NnB---- Nantucket	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
NnC---- Nantucket	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
NpC*:										
Nantucket	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
NsB*:										
Nantucket	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
NsC*, NsD*:										
Nantucket	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
NsC*, NsD*: Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
PaA*: Pawcatuck	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Matunuck	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Pg*. Pits										
PnC*: Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Canton	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Nantucket	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
PtC*, PtD*: Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Montauk	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
PwD*: Plymouth	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
Nantucket	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
PyA Pompton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RgA Ridgebury Variant	Poor	Poor	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
RsA Ridgebury Variant	Very poor.	Poor	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
RvA Riverhead	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RvB, RvC Riverhead	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TaA Tisbury	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
UaC. Udipsamments										
Ur*. Urban land										
WhA Whitman Variant	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WmA Whitman Variant	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Very poor.	Poor	Fair

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ba*. Beaches						
BeA---------- Berryland	Severe: wetness, cutbanks cave.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, too sandy.
CaC*:						
Canton----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Montauk----------	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
Plymouth---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: too sandy.
CcC*:						
Canton----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Montauk----------	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, slope.
Plymouth---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
CeA---------- Carver	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Severe: droughty.
CeB---------- Carver	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
CeC---------- Carver	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
CeD---------- Carver	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
ChB---------- Chilmark	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
ChC---------- Chilmark	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
CsB---------- Chilmark	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
CsC---------- Chilmark	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
CsD---------- Chilmark	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--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
EcA---------- Eastchop	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty.
EcB---------- Eastchop	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
EcC---------- Eastchop	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
EcD---------- Eastchop	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
EdB---------- Eastchop	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: large stones, droughty.
EdC---------- Eastchop	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
EdD---------- Eastchop	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
EmC*: Eastchop---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Montauk----------	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
EnC*: Eastchop---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
Montauk----------	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, slope.
FsA*: Freetown---------	Severe: wetness, excess humus.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength, frost action.	Severe: wetness, excess humus.
Swansea----------	Severe: wetness, excess humus, cutbanks cave.	Severe: wetness, low strength.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength, frost action.	Severe: wetness, excess humus.
HaA---------- Haven	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
HaB---------- Haven	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
KaA---------- Katama	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Slight.

See footnote at end of table.

TABLE 10.--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
KeA---------- Klej	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
MoA---------- Moshup	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: frost action, low strength.	Moderate: wetness.
MoB---------- Moshup	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, slope, shrink-swell.	Severe: frost action, low strength.	Moderate: wetness.
MsB---------- Moshup	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, slope, shrink-swell.	Severe: frost action, low strength.	Moderate: large stones, wetness.
NaB---------- Nantucket	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Moderate: low strength.	Slight.
NaC---------- Nantucket	Moderate: slope, wetness.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
NnB---------- Nantucket	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Moderate: low strength.	Slight.
NnC---------- Nantucket	Moderate: slope, wetness.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
NpC*: Nantucket--------	Moderate: slope, wetness.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
Plymouth---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: too sandy.
NsB*: Nantucket--------	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Moderate: low strength.	Slight.
Plymouth---------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
NsC*: Nantucket--------	Moderate: slope, wetness.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope.
Plymouth---------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
NsD*: Nantucket--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Plymouth---------	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, droughty.
PaA*: Pawcatuck--------	Severe: ponding, excess humus, low strength.	Severe: ponding, flooding, low strength.	Severe: ponding, flooding, low strength.	Severe: flooding, ponding, low strength.	Severe: ponding, low strength, flooding.	Severe: ponding, flooding, excess salt.

See footnote at end of table.

TABLE 10.--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
PaA*: Matunuck	Severe: cutbanks cave, excess humus, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: excess salt, excess sulfur, ponding.
Pg*. Pits						
PnC*: Plymouth	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
Canton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Nantucket	Moderate: slope, wetness.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope, large stones.
PtC*: Plymouth	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, droughty, slope.
Montauk	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, slope.
PtD*: Plymouth	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Montauk	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PwD*: Plymouth	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nantucket	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PyA--- Pompton	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action, wetness.	Moderate: wetness.
RgA, RsA--- Ridgebury Variant	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action, low strength.	Severe: wetness.
RvA--- Riverhead	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Moderate: frost action.	Slight.
RvB--- Riverhead	Severe: cutbanks cave.	Slight---	Slight---	Moderate: slope.	Moderate: frost action.	Slight.
RvC--- Riverhead	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.

See footnote at end of table.

TABLE 10.--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
TaA---------- Tisbury	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness.
UaC. Udipsamments						
Ur*. Urban land						
WhA, WmA---------- Whitman Variant	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action, low strength.	Severe: ponding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ba*. Beaches					
BeA---------- Berryland	Severe: wetness.	Severe: wetness, seepage, flooding.	Severe: wetness, seepage.	Severe: wetness, seepage.	Poor: wetness, too sandy.
CaC*: Canton----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Montauk----------	Severe: percs slowly, wetness.	Severe: slope, seepage.	Moderate: slope, wetness.	Severe: seepage.	Poor: seepage.
Plymouth----------	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, thin layer.
CcC*: Canton----------	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Montauk----------	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope.	Severe: seepage.	Poor: seepage.
Plymouth----------	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, thin layer.
CeA, CeB---------- Carver	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
CeC---------- Carver	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
CeD---------- Carver	Severe: poor filter, slope.	Severe: slope, seepage.	Severe: seepage, slope, too sandy.	Severe: slope, seepage.	Poor: seepage, too sandy, slope.
ChB---------- Chilmark	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
ChC---------- Chilmark	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.
CsB---------- Chilmark	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
CsC---------- Chilmark	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: slope, too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CsD---------- Chilmark	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
EcA, EcB---------- Eastchop	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
EcC---------- Eastchop	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
EcD---------- Eastchop	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
EdB---------- Eastchop	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
EdC---------- Eastchop	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
EdD---------- Eastchop	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
EmC*: Eastchop----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Montauk----------	Severe: percs slowly, wetness.	Severe: slope, seepage.	Moderate: slope, wetness.	Severe: seepage.	Poor: seepage.
EnC*: Eastchop----------	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
Montauk----------	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope.	Severe: seepage.	Poor: seepage.
FsA*: Freetown----------	Severe: wetness.	Severe: wetness, excess humus, seepage.	Severe: wetness, excess humus, seepage.	Severe: wetness, seepage.	Poor: excess humus, wetness.
Swansea----------	Severe: wetness, poor filter.	Severe: wetness, excess humus, seepage.	Severe: wetness, too sandy, seepage.	Severe: wetness, seepage.	Poor: wetness, excess humus, seepage.
HaA, HaB---------- Haven	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, small stones, too sandy.
KaA---------- Katama	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
KeA---------- Klej	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: seepage.
MoA---------- Moshup	Severe: wetness, percs slowly.	Slight----------	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
MoB, MsB---------- Moshup	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
NaB---------- Nantucket	Severe: percs slowly.	Severe: seepage.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
NaC---------- Nantucket	Severe: percs slowly.	Severe: slope, seepage.	Moderate: wetness, slope.	Moderate: slope, wetness.	Fair: slope, wetness.
NnB---------- Nantucket	Severe: percs slowly.	Severe: seepage.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
NnC---------- Nantucket	Severe: percs slowly.	Severe: slope, seepage.	Moderate: slope, wetness.	Moderate: slope, wetness.	Fair: slope, wetness.
NpC*: Nantucket----------	Severe: percs slowly.	Severe: slope, seepage.	Moderate: wetness, slope.	Moderate: slope, wetness.	Fair: slope, wetness.
Plymouth----------	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, thin layer.
NsB*: Nantucket----------	Severe: percs slowly.	Severe: seepage.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Plymouth----------	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, thin layer.
NsC*: Nantucket----------	Severe: percs slowly.	Severe: slope, seepage.	Moderate: slope, wetness.	Moderate: slope, wetness.	Fair: slope, wetness.
Plymouth----------	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, thin layer.
NsD*: Nantucket----------	Severe: slope, percs slowly.	Severe: slope, seepage.	Severe: slope.	Severe: slope.	Poor: slope.
Plymouth----------	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, seepage, too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PaA*:					
Pawcatuck	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: seepage, flooding, ponding.	Severe: seepage, flooding, ponding.	Poor: excess humus, ponding, excess salt.
Matunuck	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, too sandy, ponding.
Pg*.					
Pits					
PnC*:					
Plymouth	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, thin layer.
Canton	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Nantucket	Severe: percs slowly.	Severe: slope, seepage.	Moderate: slope, wetness.	Moderate: slope, wetness.	Fair: slope, wetness.
PtC*:					
Plymouth	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, thin layer.
Montauk	Severe: percs slowly, wetness.	Severe: slope.	Moderate: slope.	Severe: seepage.	Poor: seepage.
PtD*:					
Plymouth	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, seepage, too sandy.
Montauk	Severe: percs slowly, slope, wetness.	Severe: slope.	Severe: slope.	Severe: slope, seepage.	Poor: seepage, slope.
PwD*:					
Plymouth	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, seepage, too sandy.
Nantucket	Severe: slope, percs slowly.	Severe: slope, seepage.	Severe: slope.	Severe: slope.	Poor: slope.
PyA	Severe: wetness, poor filter.	Severe: seepage, flooding.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
Pompton					
RgA, RsA	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Ridgebury Variant					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RvA, RvB---------- Riverhead	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
RvC---------- Riverhead	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
TaA---------- Tisbury	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy.
UaC. Udipsamments					
Ur*. Urban land					
WhA, WmA---------- Whitman Variant	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: ponding, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ba*. Beaches				
BeA---------- Berryland	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: wetness, too sandy.
CaC*: Canton----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
Montauk----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Plymouth----------	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
CcC*: Canton----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.
Montauk----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Plymouth----------	Good----------	Probable----------	Probable----------	Poor: too sandy, large stones, area reclaim.
CeA, CeB---------- Carver	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones, too sandy.
CeC---------- Carver	Good----------	Probable----------	Improbable: too sandy.	Fair: small stones, slope, too sandy.
CeD---------- Carver	Fair: slope.	Probable----------	Improbable: too sandy.	Poor: slope.
ChB---------- Chilmark	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
ChC, CsB, CsC--------- Chilmark	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: large stones.
CsD---------- Chilmark	Fair: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
EcA, EcB---------- Eastchop	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, small stones.
EcC---------- Eastchop	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
EcD---------- Eastchop	Fair: slope.	Probable----------	Improbable: too sandy.	Poor: slope.
EdB---------- Eastchop	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, large stones.
EdC---------- Eastchop	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, large stones, slope.
EdD---------- Eastchop	Fair: slope.	Probable----------	Improbable: too sandy.	Poor: slope.
EmC*: Eastchop----------	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, slope.
Montauk----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
EnC*: Eastchop----------	Good----------	Probable----------	Improbable: too sandy.	Fair: too sandy, large stones, slope.
Montauk----------	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
FsA*: Freetown----------	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Swansea----------	Poor: wetness.	Probable----------	Improbable: excess fines.	Poor: wetness, excess humus.
HaA, HaB---------- Haven	Good----------	Probable----------	Probable----------	Poor: too sandy, area reclaim.
KaA---------- Katama	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy, small stones.
KeA---------- Klej	Fair: wetness.	Probable----------	Improbable: too sandy.	Fair: too sandy, small stones.
MoA, MoB, MsB--------- Moshup	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
NaB---------- Nantucket	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
NaC---------- Nantucket	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
NnB---------- Nantucket	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: large stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NnC---------- Nantucket	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, large stones.
NpC*: Nantucket----------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
Plymouth----------	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
NsB*: Nantucket----------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: large stones.
Plymouth----------	Good----------	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
NsC*: Nantucket----------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, large stones.
Plymouth----------	Good----------	Probable----------	Probable----------	Poor: too sandy, small stones, area reclaim.
NsD*: Nantucket----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, area reclaim.
Plymouth----------	Poor: slope.	Probable----------	Probable----------	Poor: slope, too sandy, area reclaim.
PaA*: Pawcatuck----------	Poor: wetness.	Probable----------	Improbable: excess fines.	Poor: wetness, excess salt, excess humus.
Matunuck----------	Poor: wetness.	Probable----------	Improbable: excess fines.	Poor: excess humus, excess salt, wetness.
Pg*. Pits				
PnC*: Plymouth----------	Good----------	Probable----------	Probable----------	Poor: too sandy, large stones, area reclaim.
Canton----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, area reclaim.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PnC*: Nantucket	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, large stones.
PtC*: Plymouth	Good	Probable	Probable	Poor: too sandy, large stones, area reclaim.
Montauk	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PtD*: Plymouth	Poor: slope.	Probable	Probable	Poor: slope, too sandy, area reclaim.
Montauk	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
PwD*: Plymouth	Poor: slope.	Probable	Probable	Poor: slope, too sandy, area reclaim.
Nantucket	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, area reclaim.
PyA Pompton	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim.
RgA, RsA Ridgebury Variant	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too clayey.
RvA, RvB, RvC Riverhead	Good	Probable	Probable	Poor: small stones.
TaA Tisbury	Fair: wetness.	Probable	Probable	Poor: area reclaim.
UaC. Udipsamments				
Ur*. Urban land				
WhA, WmA Whitman Variant	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Ba*. Beaches						
BeA---------- Berryland	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave.	Wetness, too sandy.	Wetness.
CaC*: Canton----------	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
Montauk----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
Plymouth---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
CcC*: Canton----------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope.
Montauk----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope.	Slope, percs slowly.	Slope, rooting depth, percs slowly.
Plymouth---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, large stones.	Slope, droughty, large stones.
CeA, CeB---------- Carver	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
CeC, CeD---------- Carver	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
ChB---------- Chilmark	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly---	Percs slowly.
ChC---------- Chilmark	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
CsB---------- Chilmark	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Percs slowly---	Percs slowly.
CsC, CsD---------- Chilmark	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
EcA, EcB---------- Eastchop	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
EcC, EcD---------- Eastchop	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
EdB---------- Eastchop	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
EdC, EdD---------- Eastchop	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
EmC*: Eastchop---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Montauk----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
EnC*: Eastchop---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Montauk----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope.	Slope, percs slowly.	Slope, rooting depth, percs slowly.
FsA*: Freetown---------	Severe: seepage.	Severe: excess humus, wetness.	Slight---------	Frost action---	Wetness--------	Wetness.
Swansea----------	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave, frost action.	Wetness, too sandy.	Wetness.
HaA, HaB---------- Haven	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy.	Erodes easily.
KaA---------- Katama	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Favorable.
KeA---------- Klej	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Droughty.
MoA---------- Moshup	Slight---------	Moderate: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Percs slowly, erodes easily.
MoB, MsB---------- Moshup	Moderate: slope.	Moderate: wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly, erodes easily.	Percs slowly, erodes easily.
NaB---------- Nantucket	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly.	Rooting depth, percs slowly.
NaC---------- Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.
NnB---------- Nantucket	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly.	Rooting depth, percs slowly.
NnC---------- Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
NpC*:						
Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.
Plymouth	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
NsB*:						
Nantucket	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly.	Rooting depth, percs slowly.
Plymouth	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, large stones.	Droughty, large stones.
NsC*, NsD*:						
Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.
Plymouth	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, large stones.	Slope, droughty, large stones.
PaA*:						
Pawcatuck	Severe: seepage.	Severe: excess humus, ponding, excess salt.	Severe: salty water, cutbanks cave.	Flooding, ponding, excess salt.	Ponding	Wetness, excess salt.
Matunuck	Severe: seepage.	Severe: seepage, ponding, excess salt.	Severe: salty water, cutbanks cave.	Flooding, ponding, cutbanks cave.	Ponding, too sandy.	Wetness, excess salt.
Pg*.						
Pits						
PnC*:						
Plymouth	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, large stones.	Slope, droughty, large stones.
Canton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope.
Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.
PtC*, PtD*:						
Plymouth	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, large stones.	Slope, droughty, large stones.
Montauk	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Percs slowly, slope.	Slope, percs slowly.	Slope, rooting depth, percs slowly.
PwD*:						
Plymouth	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, large stones.	Slope, droughty, large stones.
Nantucket	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Slope, rooting depth, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
PyA---------- Pompton	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Wetness.
RgA, RsA---------- Ridgebury Variant	Slight---------	Severe: wetness.	Severe: slow refill.	Frost action, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
RvA, RvB---------- Riverhead	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Favorable.
RvC---------- Riverhead	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
TaA---------- Tisbury	Severe: seepage.	Severe: seepage, piping, wetness.	Moderate: cutbanks cave, deep to water.	Frost action, cutbanks cave.	Erodes easily, wetness, too sandy.	Erodes easily.
UaC. Udipsamments						
Ur*. Urban land						
WhA, WmA---------- Whitman Variant	Slight---------	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly.	Wetness, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Ba*. Beaches											
BeA---------- Berryland	0-5	Loamy sand-------	SP, SP-SM	A-3	0	95-100	90-100	55-90	2-10	---	NP
	5-32	Sand-------------	SP, SP-SM	A-3	0	95-100	90-100	55-90	2-10	---	NP
	32-60	Sand, loamy sand	SP, SM, SM-SC, SP-SM	A-1, A-2, A-3	0	95-100	80-100	40-90	2-35	<25	NP-8
CaC*:											
Canton----------	0-7	Sandy loam	SM, ML	A-2, A-4	0-5	85-95	75-90	55-85	30-60	<18	NP-8
	7-42	Sandy loam, very fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP-8
	42-60	Gravelly loamy sand, loamy fine sand, gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2	10-25	65-85	50-80	20-60	10-30	---	NP
Montauk---------	0-7	Sandy loam-------	ML, SM, SM-SC, CL-ML	A-4, A-2, A-1	0-5	80-100	75-95	45-95	20-85	<20	NP-4
	7-24	Fine sandy loam, gravelly sandy loam, silt loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1	0-15	60-100	55-95	35-90	15-80	<20	NP-4
	24-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-4	0-15	60-100	55-95	20-80	10-50	<15	NP-2
Plymouth--------	0-4	Sandy loam-------	SM	A-2, A-1	0-5	80-100	75-95	45-65	20-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP	A-1, A-2, A-3	0-5	65-100	60-95	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand, sand.	SW, GW, SP, GP	A-1	0-5	40-80	35-75	20-50	2-10	---	NP
CcC*:											
Canton----------	0-7	Fine sandy loam	SM, ML	A-2, A-4	5-10	75-95	65-90	45-85	30-60	<20	NP-4
	7-42	Fine sandy loam, very fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-30	70-95	65-90	55-85	30-60	<20	NP-4
	42-60	Gravelly loamy sand, loamy fine sand, gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2	5-30	65-85	50-80	20-60	10-30	---	NP
Montauk---------	0-7	Sandy loam-------	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	5-15	65-80	60-75	30-75	15-70	<20	NP-4
	7-24	Fine sandy loam, silt loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	0-5	60-100	55-95	35-90	15-80	<20	NP-4
	24-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-4	0-5	60-100	55-95	20-80	10-50	<15	NP-2

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CcC*:											
Plymouth	0-4	Sandy loam	SM, SP-SM	A-1, A-2	5-15	80-90	65-85	35-65	3-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP-SM	A-1, A-2	0-15	75-95	65-90	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand.	SW, GW, SP, GP	A-1	0-15	45-80	35-75	20-50	2-10	---	NP
CeA, CeB, CeC, CeD	0-4	Loamy coarse sand	SM	A-2	0-5	85-100	75-100	50-65	10-30	---	NP
Carver	4-30	Coarse sand, loamy sand, loamy coarse sand.	SM, SP-SM	A-2, A-1, A-3	0-5	80-100	75-100	35-60	5-25	---	NP
	30-60	Coarse sand	SP, SP-SM	A-2, A-1	0-5	80-100	75-100	35-50	0-10	---	NP
ChB, ChC	0-8	Sandy loam	SM, ML	A-2, A-4, A-1	0-3	95-100	90-100	45-85	15-55	---	NP
Chilmark	8-35	Sandy loam, loamy sand.	SM	A-2, A-4, A-1	0-3	95-100	90-100	45-75	15-40	---	NP
	35-60	Stratified sandy clay loam to clay.	ML, CL, CL-ML	A-4	0-3	95-100	95-100	90-100	80-95	12-26	2-10
CsB, CsC, CsD	0-8	Sandy loam	SM	A-1, A-2, A-4	3-10	95-100	85-95	40-80	12-50	---	NP
Chilmark	8-35	Sandy loam, loamy sand.	SM	A-2, A-4, A-1	0-3	95-100	90-100	45-75	15-40	---	NP
	35-60	Stratified sandy clay loam to clay.	ML, CL, CL-ML	A-4	0-3	95-100	95-100	90-100	80-95	12-26	2-10
EcA, EcB, EcC, EcD	0-7	Loamy sand	SM, SP-SM	A-1-B, A-2-4, A-3	0-5	90-100	80-100	40-80	10-35	0	NP
Eastchop	7-34	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-1-B, A-2-4, A3	0-10	85-100	75-100	35-80	10-35	0	NP
	34-60	Loamy fine sand, fine sand, sand.	SM, SP, SP-SM	A-1-B, A-2-4, A3	0-10	90-100	80-100	40-80	4-35	0	NP
EdB, EdC, EdD	0-7	Loamy sand	SM, SP-SM	A-1-B, A-2-4, A-3	5-10	85-100	75-95	35-75	10-35	---	NP
Eastchop	7-34	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-1-B, A-2-4, A3	0-10	85-100	75-100	35-80	10-35	---	NP
	34-60	Loamy fine sand, fine sand, sand.	SM, SP, SP-SM	A-1-B, A-2-4, A3	0-10	90-100	80-100	40-80	4-35	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
EmC*:											
Eastchop--------	0-7	Loamy sand-------	SM, SP-SM	A-1-B, A-2-4, A-3	0-5	90-100	80-100	40-80	10-35	---	NP
	7-34	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-1-B, A-2-4, A3	0-10	85-100	75-100	35-80	10-35	---	NP
	34-60	Loamy fine sand, fine sand, sand.	SM, SP, SP-SM	A-1-B, A-2-4, A3	0-10	90-100	80-100	40-80	4-35	---	NP
Montauk---------	0-7	Sandy loam-------	ML, SM, SM-SC, CL-ML	A-4, A-2, A-1	0-5	80-100	75-95	45-95	20-85	< 20	NP-4
	7-24	Fine sandy loam, gravelly sandy loam, silt loam.	SM, ML, SM-SC, CL-ML	A-2, A-4, A-1	0-15	60-100	55-95	35-90	15-80	< 20	NP-4
	24-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-2, A-1, A-4	0-15	60-100	55-95	20-80	10-50	< 15	NP-2
EnC*:											
Eastchop--------	0-7	Loamy sand-------	SM, SP-SM	A-1-B, A-2-4, A-3	5-10	85-100	75-95	35-75	10-35	---	NP
	7-34	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-1-B, A-2-4, A3	0-10	85-100	75-100	35-80	10-35	---	NP
	34-60	Loamy fine sand, fine sand, sand.	SM, SP, SP-SM	A-1-B, A-2-4, A3	0-10	90-100	80-100	40-80	4-35	---	NP
EnC*:											
Montauk---------	0-7	Bouldery sandy loam.	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	5-15	65-80	60-75	30-75	15-70	< 20	NP-4
	7-24	Fine sandy loam, silt loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	0-5	60-100	55-95	35-90	15-80	< 20	NP-4
	24-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-4	0-5	60-100	55-95	20-80	10-50	< 15	NP-2

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FsA*:											
Freetown	0-4	Sapric material	Pt	A-8	---	---	---	---	---	---	---
	4-60	Sapric material, hemic material.	Pt	A-8	---	---	---	---	---	---	---
Swansea	0-6	Sapric material	Pt	A-8	---	---	---	---	---	---	---
	6-19	Sapric material, hemic material.	Pt	A-8	---	---	---	---	---	---	---
	19-60	Sand, loamy coarse sand, gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	55-100	45-100	30-70	5-30	---	NP
HaA, HaB Haven	0-23	Very fine sandy loam.	ML, SM	A-4	0	80-100	75-100	65-100	40-90	< 25	NP-4
	23-60	Stratified loamy fine sand to gravel.	SP, SW, GP, SM	A-1, A-3, A-2	0-20	30-90	25-85	10-60	1-25	---	NP
KaA Katama	0-16	Sandy loam	SM, ML	A-2-4, A-4	0	95-100	85-100	50-85	25-55	---	NP
	16-60	Sand, loamy coarse sand, coarse sand.	SP-SM, SM	A-3, A-2-4, A-1-B	0	95-100	85-100	30-70	2-15	---	NP
KeA Klej	0-11	Loamy coarse sand	SM	A-2, A-4	0	100	95-100	50-95	15-45	< 20	NP
	11-60	Coarse sand, sand	SM, SP, SP-SM	A-1-B, A-2-4, A-3	0	98-100	95-100	35-70	0-15	---	NP
MoA, MoB Moshup	0-8	Loam	ML, SM	A-2-4, A-4	0	90-100	85-100	50-95	25-75	< 15	NP-4
	8-19	Fine sandy loam, loam, sandy loam.	ML, SM, CL-ML, SM-SC	A-2-4, A-4	0	90-100	85-100	50-95	25-75	< 15	NP-6
	19-60	Silty clay loam, sandy clay loam, clay loam.	CL, SC	A-2-4, A-6, A-7	0	90-100	85-100	70-100	30-95	25-50	10-25
MsB Moshup	0-8	Loam	ML, SM	A-2-4, A-4	3-10	90-100	85-100	50-95	25-75	< 15	NP-4
	8-19	Fine sandy loam, loam, sandy loam.	ML, SM, CL-ML, SM-SC	A-2-4, A-4	0	90-100	85-100	50-95	25-75	< 15	NP-6
	19-60	Silty clay loam, sandy clay loam, clay loam.	CL,SC	A-2-4, A-6, A-7	0	90-100	85-100	70-100	30-95	25-50	10-25
NaB, NaC Nantucket	0-4	Sandy loam	SM, ML	A-1, A-2-4, A-4	0	95-100	85-100	40-85	15-55	< 15	NP-3
	4-20	Sandy loam, fine sandy loam, loamy sand.	SM, ML	A-2-4, A-4, A-1	0-5	95-100	85-100	40-85	15-55	< 15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM, SC, CL, ML	A-2-4, A-4	0-5	95-100	85-100	50-95	25-75	< 21	NP-8

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
NnB, NnC--------- Nantucket	0-4	Sandy loam-------	SM, ML	A-2, A-4, A-2-4	3-10	90-100	85-95	40-85	15-55	<15	NP-3
	4-20	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	0-5	95-100	85-100	40-85	15-55	<15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM, SC, ML, CL	A-2, A-4	0-5	95-100	85-100	50-95	25-75	<21	NP-8
NpC*: Nantucket-------	0-4	Sandy loam-------	SM, ML	A-1, A-2-4, A-4	0	95-100	85-100	40-85	15-55	<15	NP-3
	4-20	Sandy loam, fine sandy loam, loamy sand.	SM, ML	A-2-4, A-4, A-1	0-5	95-100	85-100	40-85	15-55	<15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM, SC, CL, ML	A-2-4, A-4	0-5	95-100	85-100	50-95	25-75	<21	NP-8
Plymouth--------	0-4	Sandy loam-------	SM	A-2, A-1	0-5	80-100	75-95	45-65	20-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP	A-1, A-2, A-3	0-5	65-100	60-95	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand, sand.	SW, GW, SP, GP	A-1	0-5	40-80	35-75	20-50	2-10	---	NP
NsB*, NsC*, NsD*: Nantucket-------	0-4	Sandy loam-------	SM, ML	A-2, A-4, A-2-4	3-10	90-100	85-95	40-85	15-55	<15	NP-3
	4-20	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	0-5	95-100	85-100	40-85	15-55	<15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM, SC, ML, CL	A-2, A-4	0-5	95-100	85-100	50-95	25-75	<21	NP-8
Plymouth--------	0-4	Sandy loam-------	SM, SP	A-1, A-2, A-3	5-10	80-95	70-85	35-65	3-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP-SM	A-1, A-2	0-10	65-100	60-95	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand.	SW, GW, SP, GP	A-1	0-15	45-80	35-75	20-50	2-10	---	NP
PaA*: Pawcatuck-------	0-19	Hemic material---	Pt	A-8	0	---	---	---	---	---	NP
	19-60	Loamy sand, loamy fine sand, sand.	SM, SP	A-2, A-3, A-4	0	90-100	80-100	75-95	0-45	---	NP
Matunuck--------	10-0	Hemic material---	Pt	A-8	0	---	---	---	---	---	NP
	0-60	Sand, loamy sand, fine sandy loam.	SM, SW-SM, SP-SM	A-2, A-3, A-4	0	95-100	85-100	50-80	5-45	---	NP
Pg*. Pits											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PnC*:											
Plymouth--------	0-4	Sandy loam-------	SM, SP-SM	A-1, A-2	5-15	80-90	65-85	35-65	3-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP-SM	A-1, A-2	0-15	75-95	65-90	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand.	SW, GW, SP, GP	A-1	0-15	45-80	35-75	20-50	2-10	---	NP
Canton----------	0-7	Fine sandy loam--	SM, ML	A-2, A-4	5-10	75-95	65-90	45-85	30-60	<20	NP-4
	7-42	Fine sandy loam, very fine sandy loam, gravelly loam.	SM, ML	A-2, A-4	5-30	70-95	65-90	55-85	30-60	<20	NP-4
	42-60	Gravelly loamy sand, loamy fine sand, gravelly loamy coarse sand.	SM, SP-SM	A-1, A-2	5-30	65-85	50-80	20-60	10-30	---	NP
Nantucket-------	0-4	Coarse sandy loam	SM, ML	A-2, A-4, A-2-4	3-10	90-100	85-95	40-85	15-55	<15	NP-3
	4-20	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	0-5	95-100	85-100	40-85	15-55	<15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM, SC, ML, CL	A-2, A-4	0-5	95-100	85-100	50-95	25-75	<21	NP-8
PtC*, PtD*:											
Plymouth--------	0-4	Sandy loam-------	SM, SP-SM	A-1, A-2	5-15	80-90	65-85	35-65	3-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP-SM	A-1, A-2	0-15	75-95	65-90	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand.	SW, GW, SP, GP	A-1	0-15	45-80	35-75	20-50	2-10	---	NP
Montauk---------	0-7	Sandy loam-------	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	5-15	65-80	60-75	30-75	15-70	<20	NP-4
	7-24	Fine sandy loam, silt loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-1, A-2, A-4	0-5	60-100	55-95	35-90	15-80	<20	NP-4
	24-60	Sandy loam, loamy sand, gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-4	0-5	60-100	55-95	20-80	10-50	<15	NP-2
PwD*:											
Plymouth--------	0-4	Sandy loam-------	SM, SP-SM	A-1, A-2	5-15	80-90	65-85	35-65	3-35	---	NP
	4-23	Loamy sand, loamy fine sand, gravelly coarse sand.	SM, SP-SM	A-1, A-2	0-15	75-95	65-90	35-65	2-30	---	NP
	23-60	Gravelly coarse sand, very gravelly sand.	SW, GW, SP, GP	A-1	0-15	45-80	35-75	20-50	2-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PwD*:											
Nantucket-------	0-4	Sandy loam-------	SM, ML	A-1, A-2-4, A-4	10-25	85-90	80-95	40-85	15-55	<15	NP-3
	4-20	Sandy loam, fine sandy loam.	SM, ML	A-2, A-4	0-5	95-100	85-100	40-85	15-55	<15	NP-3
	20-60	Sandy clay loam, loam, sandy loam.	SM,SC, ML, CL	A-2,A-4	0-5	95-100	85-100	50-95	25-75	<21	NP-8
PyA--------------- Pompton	0-10	Sandy loam-------	SM, SC, SM-SC	A-4	0	85-95	85-95	65-75	35-50	20-30	3-10
	10-32	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, SC, SM-SC	A-2, A-4	0	80-95	50-90	45-75	30-50	20-30	3-10
	32-60	Stratified gravelly loamy sand.	SM, GP-GM, GM, SP-SM	A-1	0	35-80	20-80	20-40	5-15	---	NP
RgA--------------- Ridgebury Variant	0-7	Fine sandy loam	CL, SC	A-6	0	90-100	85-100	60-100	35-95	15-40	10-20
	7-12	Silty clay, sandy clay loam, silt loam.	SC, CL	A-6, A-7, A-2	0	80-100	70-100	55-100	30-95	20-50	10-25
	12-60	Clay loam, clay, silty clay loam.	CL	A-6, A-7	0	90-100	85-100	75-100	60-95	25-50	10-25
RsA--------------- Ridgebury Variant	0-7	Fine sandy loam.	CL, SC	A-6	5-10	85-100	80-95	60-95	35-90	15-40	10-20
	7-12	Silty clay, sandy clay loam, silt loam.	SC, CL	A-6, A-7, A-2	0	80-100	70-100	55-100	30-95	20-50	10-25
	12-60	Clay loam, clay, silty clay loam.	CL	A-6, A-7	0	90-100	85-100	75-100	60-95	25-50	10-25
RvA, RvB, RvC---- Riverhead	0-4	Sandy loam-------	SM, ML	A-2, A-4	0-5	95-100	90-100	55-95	30-75	14-18	1-3
	4-16	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4, A-1	0-5	65-100	60-95	40-80	20-45	14-18	1-3
	16-24	Loamy sand, gravelly loamy sand, fine sandy loam.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-4	0-5	60-90	55-85	30-70	10-45	---	NP
	24-60	Stratified sand and gravel.	SP, SW, SP-SM	A-1	0-5	60-95	55-90	25-50	0-10	---	NP
TaA--------------- Tisbury	0-5	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	70-95	<35	NP-7
	5-30	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	65-95	<25	NP-5
	30-60	Very gravelly sand, gravelly sand.	SP, GP, SP-SM	A-1	10-40	30-70	20-60	15-45	0-10	---	NP
UaC. Udipsamments											
Ur*. Urban land											
WhA--------------- Whitman Variant	0-5	Silt loam--------	ML, SM, CL-ML	A-2, A-4	0	90-100	85-100	50-100	25-90	<30	NP-8
	5-8	Sandy loam, loam, silt loam.	ML, SM, CL-ML	A-2, A-4	0	80-100	70-100	45-100	20-90	<30	NP-8
	8-60	Sandy clay loam, clay loam, silty clay.	CL	A-6, A-7	0	90-100	85-100	75-100	60-95	25-50	10-25

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WmA---------- Whitman Variant	0-5	Silt loam--------	ML, SM, CL-ML	A-2,A-4	5-10	85-100	80-95	50-90	25-85	<30	NP-8
	5-8	Sandy loam, loam silt loam	ML, SM,	A-2,A-4,	0	80-100	70-100	45-100	20-90	<30	NP-8
	8-60	Sandy clay loam, clay loam, silty clay.	CL	A-6, A-7	0	90-100	85-100	75-100	60-95	25-50	10-25

*See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm³	In/hr	In/in	pH			Pct
Ba*. Beaches									
BeA---------- Berryland	0-9	1-5	1.30-1.45	6.0-20	0.06-0.08	3.6-4.4	0.17	2	4-8
	9-32	3-10	1.50-1.60	2.0-6.0	0.04-0.08	4.5-5.0	0.17		
	32-60	3-10	1.50-1.60	2.0-20	0.04-0.14	4.5-5.0	0.17		
CaC*:									
Canton----------	0-7	1-8	0.90-1.20	2.0-6.0	0.11-0.19	3.6-6.0	0.24	3	1-6
	7-42	1-8	1.20-1.50	2.0-6.0	0.09-0.17	3.6-6.0	0.28		
	42-60	0-5	1.30-1.50	6.0-20	0.04-0.08	3.6-6.0	0.17		
Montauk---------	0-7	6-18	1.00-1.25	0.6-6.0	0.16-0.20	3.6-6.0	0.32	3	2-6
	7-24	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	0.24		
	24-60	1-18	1.70-1.90	0.06-0.6	0.02-0.08	3.6-6.0	0.24		
Plymouth--------	0-4	1-5	1.10-1.40	6.0-20	0.11-0.13	4.5-5.5	0.17	2	2-4
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.07	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.03	4.5-5.5	0.17		
CcC*:									
Canton----------	0-7	1-8	0.90-1.20	2.0-6.0	0.12-0.20	3.6-6.0	0.20	3	---
	7-42	1-8	1.20-1.50	2.0-6.0	0.09-0.17	3.6-6.0	0.28		
	42-60	0-5	1.30-1.60	6.0-20	0.04-0.08	3.6-6.0	0.17		
Montauk---------	0-7	6-18	1.00-1.25	0.6-6.0	0.10-0.14	3.6-6.0	0.24	3	---
	7-24	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	0.24		
	24-60	1-18	1.70-1.90	0.06-0.6	0.02-0.16	3.6-6.0	0.24		
Plymouth--------	0-4	1-5	1.00-1.30	6.0-20	0.04-0.10	4.5-5.5	0.17	2	---
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.08	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.05	4.5-5.5	0.17		
CeA, CeB, CeC, CeD---------- Carver	0-4	1-5	1.00-1.30	>20	0.05-0.12	3.6-6.0	0.10	5	1-3
	4-30	1-5	1.30-1.50	>20	0.03-0.10	3.6-5.5	0.10		
	30-60	0-2	1.45-1.55	>20	0.03-0.04	3.6-5.5	0.10		
ChB, ChC--------- Chilmark	0-8	2-6	1.10-1.20	2.0-6.0	0.10-0.23	4.5-6.0	0.20	3	2-5
	8-35	2-6	1.20-1.40	2.0-6.0	0.09-0.15	4.5-6.0	0.24		
	35-60	25-35	1.40-1.50	0.06-0.2	0.14-0.15	4.5-6.0	0.28		
CsB, CsC, CsD---- Chilmark	0-8	2-6	1.00-1.20	2.0-6.0	0.10-0.25	4.5-6.0	0.20	3	---
	8-35	2-6	1.20-1.40	2.0-6.0	0.09-0.15	4.5-6.0	0.24		
	35-60	25-35	1.40-1.50	0.06-0.2	0.14-0.15	4.5-6.0	0.28		
EcA, EcB, EcC, EcD---------- Eastchop	0-7	1-4	1.10-1.50	>6.0	0.07-0.12	3.6-5.0	0.17	5	1-2
	7-34	3-6	1.20-1.40	>6.0	0.05-0.10	3.6-5.5	0.17		
	34-60	3-6	1.30-1.50	>6.0	0.05-0.10	3.6-5.5	0.17		
EdB, EdC, EdD---- Eastchop	0-7	1-4	1.00-1.30	>6.0	0.05-0.11	3.6-5.0	0.15	5	---
	7-34	3-6	1.20-1.40	>6.0	0.05-0.10	3.6-5.5	0.17		
	34-60	3-6	1.30-1.50	>6.0	0.05-0.10	3.6-5.5	0.17		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm³	In/hr	In/in	pH			Pct
EmC*:									
Eastchop--------	0-7	1-4	1.10-1.50	>6.0	0.07-0.12	3.6-5.0	0.17	5	1-2
	7-34	3-6	1.20-1.40	>6.0	0.05-0.10	3.6-5.5	0.17		
	34-60	3-6	1.30-1.50	>6.0	0.05-0.10	3.6-5.5	0.17		
Montauk---------	0-7	6-18	1.00-1.25	0.6-6.0	0.16-0.20	3.6-6.0	0.32	3	2-6
	7-24	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	0.24		
	24-60	1-18	1.70-1.90	0.06-0.6	0.02-0.08	3.6-6.0	0.24		
EnC*:									
Eastchop--------	0-7	1-4	1.00-1.30	>6.0	0.05-0.10	3.6-5.0	0.17	---	---
	7-34	3-6	1.20-1.40	>6.0	0.05-0.10	3.6-5.5	0.17		
	34-60	3-6	1.30-1.50	>6.0	0.05-0.10	3.6-5.5	0.17		
Montauk---------	0-7	6-18	1.00-1.25	0.6-6.0	0.10-0.14	3.6-6.0	0.24	3	---
	7-24	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	0.24		
	24-60	1-18	1.70-1.90	0.06-0.6	0.02-0.16	3.6-6.0	0.24		
FsA*:									
Freetown--------	0-4	---	0.10-0.30	0.6-6.0	0.35-0.45	3.6-4.4	----	---	>50
	4-60	---	0.15-0.30	0.6-6.0	0.35-0.45	3.6-4.4	----		
Swansea---------	0-6	---	0.10-0.30	0.6-6.0	0.35-0.45	3.6-4.4	----	---	>50
	6-19	---	0.15-0.30	0.6-6.0	0.35-0.45	3.6-4.4	----		
	19-60	1-5	1.15-1.40	>20	0.01-0.08	3.6-5.5	0.10		
HaA, HaB---------	0-23	5-18	1.10-1.40	0.6-2.0	0.15-0.25	4.5-6.0	0.32	3	2-6
Haven	23-60	0-3	1.45-1.65	>20	0.01-0.03	4.5-6.0	0.17		
KaA---------------	0-16	4-10	1.00-1.20	2.0-6.0	0.13-0.25	3.6-5.5	0.24	2	1-10
Katama	16-60	1-5	1.30-1.50	2.0-20	0.03-0.05	3.6-5.5	0.17		
KeA---------------	0-11	2-12	1.00-1.40	>6.0	0.06-0.11	3.6-5.5	0.17	5	1-3
Klej	11-60	0-5	1.40-1.60	>6.0	0.04-0.05	3.6-5.5	0.10		
MoA, MoB---------	0-8	10-20	1.10-1.20	0.6-2.0	0.13-0.21	3.6-5.5	0.28	3	2-5
Moshup	8-19	10-20	1.20-1.30	0.6-2.0	0.11-0.19	4.5-5.5	0.24		
	19-60	20-40	1.40-1.60	<.2	0.13-0.17	4.5-5.5	0.49		
MsB---------------	0-8	10-20	1.00-1.10	0.6-2.0	0.13-0.21	3.6-5.5	0.20	3	---
Moshup	8-19	10-20	1.20-1.30	0.6-2.0	0.11-0.19	4.5-5.5	0.24		
	19-60	20-40	1.40-1.60	<.2	0.13-0.17	4.5-5.5	0.49		
NaB, NaC---------	0-4	2-7	1.10-1.20	0.6-6.0	0.10-0.23	4.5-5.5	0.24	3	2-5
Nantucket	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.5	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.5	0.28		
NnB, NnC---------	0-4	2-7	1.00-1.20	0.6-6.0	0.10-0.17	4.5-5.5	0.20	3	---
Nantucket	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.5	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.5	0.28		
NpC*:									
Nantucket-------	0-4	2-7	1.10-1.20	0.6-6.0	0.10-0.23	4.5-5.5	0.24	3	2-5
	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.5	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.5	0.28		
Plymouth--------	0-4	1-5	1.10-1.40	6.0-20	0.11-0.13	4.5-5.5	0.17	2	2-4
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.07	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.03	4.5-5.5	0.17		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm³	In/hr	In/in	pH			Pct
NsB*, NsC*, NsD*:									
Nantucket-------	0-4	2-7	1.00-1.20	0.6-6.0	0.10-0.17	4.5-5.5	0.20	3	---
	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.5	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.5	0.28		
Plymouth--------	0-4	1-5	1.10-1.40	6.0-20	0.04-0.10	4.5-5.5	0.17	2	2-4
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.08	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.05	4.5-5.5	0.17		
PaA*:									
Pawcatuck-------	0-19	---	0.30-0.80	0.6-20	0.18-0.35	5.1-7.3	----	---	20-70
	19-60	0-2	1.45-1.70	>20	0.02-0.13	5.1-7.3	0.10		
Matunuck--------	10-0	---	0.30-0.80	6.0-20	0.18-0.35	5.1-7.3	----	---	20-75
	0-60	1-10	1.40-1.65	>6.0	0.02-0.18	5.1-7.3	0.17		
Pg*. Pits									
PnC*:									
Plymouth--------	0-4	1-5	1.00-1.30	6.0-20	0.04-0.10	4.5-5.5	0.17	2	---
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.08	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.05	4.5-5.5	0.17		
Canton----------	0-7	1-8	0.90-1.20	2.0-6.0	0.12-0.20	3.6-6.0	0.20	3	---
	7-42	1-8	1.20-1.50	2.0-6.0	0.09-0.17	3.6-6.0	0.28		
	42-60	0-5	1.30-1.60	6.0-20	0.04-0.08	3.6-6.0	0.17		
Nantucket-------	0-4	2-7	1.00-1.20	0.6-6.0	0.10-0.17	4.5-5.0	0.20	3	---
	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.0	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.0	0.28		
PtC*, PtD*:									
Plymouth--------	0-4	1-5	1.00-1.30	6.0-20	0.04-0.10	4.5-5.5	0.17	2	---
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.08	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.05	4.5-5.5	0.17		
Montauk---------	0-7	6-18	1.00-1.25	0.6-6.0	0.10-0.14	3.6-6.0	0.24	3	---
	7-24	6-18	1.30-1.60	0.6-6.0	0.10-0.16	3.6-6.0	0.24		
	24-60	1-18	1.70-1.90	0.06-0.6	0.02-0.16	3.6-6.0	0.24		
PwD*:									
Plymouth--------	0-4	1-5	1.00-1.30	6.0-20	0.04-0.10	4.5-5.5	0.17	2	---
	4-23	1-5	1.25-1.55	6.0-20	0.03-0.08	4.5-5.5	0.17		
	23-60	1-5	1.45-1.65	>20	0.02-0.05	4.5-5.5	0.17		
Nantucket-------	0-4	2-7	1.00-1.20	0.6-6.0	0.10-0.17	4.5-5.0	0.20	3	---
	4-20	2-7	1.20-1.40	0.6-6.0	0.08-0.18	4.5-5.0	0.24		
	20-60	10-25	1.60-1.80	0.06-0.6	0.03-0.05	4.5-5.0	0.28		
PyA---------------	0-10	8-18	1.15-1.45	0.6-6.0	0.14-0.18	4.5-6.0	0.24	3	2-4
Pompton	10-32	10-18	1.50-1.65	0.6-6.0	0.12-0.16	4.5-5.5	0.24		
	32-60	2-12	1.45-1.70	>6.0	0.05-0.10	4.5-5.5	0.17		
RgA---------------	0-7	15-30	1.10-1.25	0.2-6.0	0.14-0.24	3.6-5.5	0.28	3	1-3
Ridgebury Variant	7-12	15-45	1.25-1.30	0.06-2.0	0.11-0.21	3.6-5.5	0.49		
	12-60	20-45	1.30-1.60	<0.2	0.09-0.15	3.6-5.5	0.49		
RsA---------------	0-7	15-30	1.10-1.25	0.2-6.0	0.13-0.23	3.6-5.5	0.28	3	---
Ridgebury Variant	7-12	15-45	1.25-1.30	0.06-2.0	0.11-0.21	3.6-5.5	0.49		
	12-60	20-45	1.30-1.60	<0.2	0.09-0.15	3.6-5.5	0.49		
RvA, RvB, RvC-----	0-4	3-10	1.10-1.40	2.0-6.0	0.14-0.20	4.5-5.5	0.28	3	2-4
Riverhead	4-16	1-8	1.25-1.55	2.0-6.0	0.09-0.13	4.5-5.5	0.28		
	16-24	1-8	1.25-1.55	2.0-6.0	0.04-0.13	4.5-5.5	0.17		
	24-60	1-8	1.45-1.65	>20	0.02-0.04	4.5-5.5	0.17		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH			Pct
TaA----------	0-5	3-18	1.00-1.30	0.6-2.0	0.15-0.24	4.5-6.0	0.49	3	2-6
Tisbury	5-30	3-18	1.30-1.55	0.6-2.0	0.13-0.24	4.5-6.0	0.64		
	30-60	0-3	1.40-1.65	>6.0	0.01-0.06	4.5-6.0	0.10		
UaC.									
Udipsamments									
Ur*.									
Urban land									
WhA----------	0-5	3-10	1.00-1.10	0.6-6.0	0.13-0.24	3.6-5.5	0.28	3	1-3
Whitman Variant	5-8	3-10	1.10-1.20	0.6-6.0	0.09-0.22	3.6-5.5	0.20		
	8-60	25-45	1.30-1.50	<0.2	0.09-0.14	5.1-6.5	0.32		
WmA----------	0-5	3-10	0.90-1.10	0.6-6.0	0.12-0.23	3.6-5.5	0.20	3	---
Whitman Variant	5-8	3-10	1.10-1.20	0.6-6.0	0.09-0.22	3.6-5.5	0.20		
	8-60	25-45	1.30-1.50	<0.2	0.09-0.14	5.1-6.5	0.32		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months		Uncoated steel	Concrete
					Ft					
Ba*. Beaches										
BeA---------- Berryland	B/D	Rare--------	---	---	0-0.5	Apparent	Oct-Jun	Low------	High-----	High.
CaC*, CcC*: Canton----------	B	None--------	---	---	>6.0	---	---	Low------	Low------	High.
Montauk----------	C	None--------	---	---	2.0-2.5	Perched	Feb-May	Moderate	Low------	High.
Plymouth---------	A	None--------	---	---	>6.0	---	---	Low------	Low------	High.
CeA, CeB, CeC, CeD---------- Carver	A	None--------	---	---	>6.0	---	---	Low------	Low------	High.
ChB, ChC, CsB, CsC, CsD--------- Chilmark	C	None--------	---	---	>6.0	---	---	Low------	Low------	Moderate.
EcA, EcB, EcC, EcD, EdB, EdC, EdD---------- Eastchop	A	None--------	---	---	>6.0	---	---	Low------	Low------	High.
EmC*, EnC*: Eastchop---------	A	None--------	---	---	>6.0	---	---	Low------	Low------	High.
Montauk----------	C	None--------	---	---	2.0-2.5	Perched	Feb-May	Moderate	Low------	High.
FsA*: Freetown---------	D	None--------	---	---	0-1.0	Apparent	Jan-Dec	High-----	High-----	High.
Swansea----------	D	None--------	---	---	0-1.0	Apparent	Jan-Dec	High-----	High-----	High.
HaA, HaB---------- Haven	B	None--------	---	---	>6.0	---	---	Moderate	Low------	High.
KaA---------- Katama	B	None--------	---	---	>6.0	---	---	Low------	Low------	High.
KeA---------- Klej	B	None--------	---	---	1.5-3.5	Apparent	Dec-May	Moderate	Low------	High.
MoA, MoB, MsB----- Moshup	C	None--------	---	---	1.5-2.5	Apparent	Jan-May	High-----	High-----	High.
NaB, NaC, NnB, NnC---------- Nantucket	C	None--------	---	---	2.0-2.5	Perched	Mar-May	Low------	Low------	High.
NpC*, NsB*, NsC*, NsD*: Nantucket-------	C	None--------	---	---	2.0-2.5	Perched	Mar-May	Low------	Low------	High.
Plymouth--------	A	None--------	---	---	>6.0	---	---	Low------	Low------	High.
PaA*: Pawcatuck--------	D	Frequent----	Very brief	Jan-Dec	+1-0	Apparent	Jan-Dec	Low------	High-----	High.
Matunuck---------	D	Frequent----	Very brief	Jan-Dec	+1-0	Apparent	Jan-Dec	Low------	High-----	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months		Uncoated steel	Concrete
					Ft					
Pg*. Pits										
PnC*:										
Plymouth	A	None	---	---	>6.0	---	---	Low	Low	High.
Canton	B	None	---	---	>6.0	---	---	Low	Low	High.
Nantucket	C	None	---	---	2.0-2.5	Perched	Mar-May	Low	Low	High.
PtC*, PtD*:										
Plymouth	A	None	---	---	>6.0	---	---	Low	Low	High.
Montauk	C	None	---	---	2.0-2.5	Perched	Feb-May	Moderate	Low	High.
PwD*:										
Plymouth	A	None	---	---	>6.0	---	---	Low	Low	High.
Nantucket	C	None	---	---	2.0-2.5	Perched	Mar-May	Low	Low	High.
PyA---- Pompton	B	Rare	---	---	1.0-2.0	Apparent	Oct-May	High	Moderate	High.
RgA, RsA---- Ridgebury Variant	C	None	---	---	0-1.5	Perched	Nov-Jun	High	High	High.
RvA, RvB, RvC---- Riverhead	B	None	---	---	>6.0	---	---	Moderate	Low	High.
TaA---- Tisbury	B	None	---	---	1.5-3.0	Apparent	Nov-May	High	Low	Moderate.
UaC. Udipsamments										
Ur*. Urban land										
WhA, WmA---- Whitman Variant	D	None	---	---	+1-0.5	Perched	Sep-Jun	High	High	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--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
Berryland	Sandy, siliceous, mesic Typic Haplaquods
Canton	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Carver	Siliceous, mesic Typic Udipsamments
Chilmark	Fine-loamy, mixed, mesic Typic Hapludults
Eastchop	Siliceous, mesic Typic Udipsamments
Freetown	Dysic, mesic Typic Medisaprists
Haven	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Katama	Sandy, mixed, mesic Typic Haplumbrepts
*Klej	Mesic, coated Aquic Quartzipsamments
Matunuck	Sandy, mixed, mesic Typic Sulfaquents
Montauk	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Moshup	Fine-loamy, mixed, mesic Aquic Dystrochrepts
Nantucket	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Pawcatuck	Euic, mesic Typic Sulfihemists
Plymouth	Siliceous, mesic Typic Udipsamments
Pompton	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Ridgebury Variant	Fine, mixed, acid, mesic Typic Haplaquepts
Riverhead	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Swansea	Sandy or sandy-skeletal, mixed, dysic, mesic Terric Medisaprists
Tisbury	Coarse-silty over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Udipsamments	Udipsamments
Whitman Variant	Fine, mixed, nonacid, mesic Typic Haplaquents

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