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Conservation
Service

In cooperation with
New Jersey Agricultural
Experiment Station;
Rutgers, The State
University of New Jersey;
New Jersey Department
of Agriculture, State Soil
Conservation Committee;
and Cumberland County
Soil Conservation District

Soil Survey of Cumberland County, New Jersey



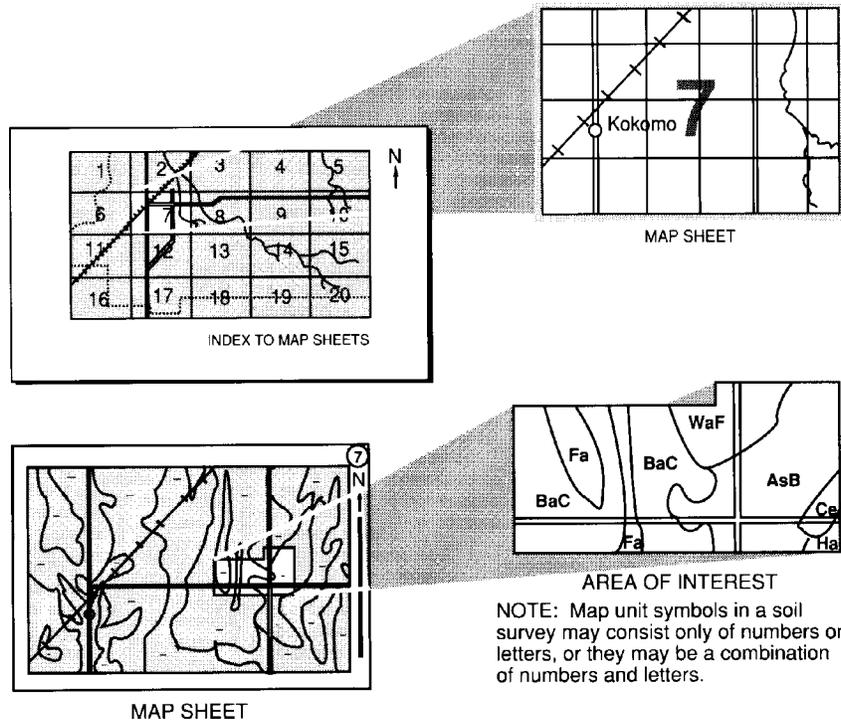
How To Use This Soil Survey

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

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

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

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



Soil Survey of Cumberland County, New Jersey

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

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 2004. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service; the New Jersey Agricultural Experiment Station; Rutgers, The State University of New Jersey; the New Jersey Department of Agriculture, State Soil Conservation Committee; and the Cumberland County Soil Conservation District.

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

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Cover: East Point Lighthouse, located on the Delaware Bay near Heislerville in Cumberland County. In the foreground is an area of Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded, in a tidal marsh.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.

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Foreword

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

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are 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. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Thomas Drewes
State Conservationist
Natural Resources Conservation Service

Soil Survey of Cumberland County, New Jersey

Project supervision by Lenore Matula Vasilas,
Natural Resources Conservation Service

Fieldwork by Seth A. Gladstone and Thornton J.F. Hole,
Natural Resources Conservation Service

Final manuscript by Edwin Muñiz, Natural Resources
Conservation Service

United States Department of Agriculture, Natural Resources
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District

CUMBERLAND COUNTY is in the southern part of New Jersey (fig. 1). It has an area of 323,400 acres, or approximately 505 square miles. The county is bordered by Salem County on the northwest, Gloucester County on the north, Atlantic County on the northeast, Cape May County on the southeast, and the State of Delaware and the Delaware River on the south. Cumberland County is divided into 14 municipalities (3 cities, 1 borough, and 10 townships).

This soil survey updates an earlier survey of Cumberland County (USDA SCS 1978). It provides a digital soil survey on orthophotography and contains additional interpretive information.

General Nature of the County

This section provides general information about the survey area. It describes the land use, geology, and climate of the survey area.

In 2000, Cumberland County had a population of 146,438 (U.S. Department of Commerce 2000). Approximately 22 percent of the county is used for agricultural enterprises, 29 percent is used as wetlands, 33 percent is forested, 10 percent is urbanized, and the remaining 6 percent is barren land or water areas (New Jersey Department of Environmental Protection 1986). The areas used for agricultural purposes are distributed throughout the



Figure 1.—Location of Cumberland County in New Jersey.

county. In 2002, the primary agricultural products were livestock and poultry, vegetables, orchard crops, silage, and grain (USDA NASS 2004).

Geology

Max Olynyk, state geologist, Natural Resources Conservation Service, helped to prepare this section.

Cumberland County is located within the Atlantic Coastal Plain Physiographic Province. It is underlain by unconsolidated coastal plain deposits of Quaternary, Tertiary, and Cretaceous age. These deposits are composed of alternating clay, silt, sand, and gravel and are underlain by crystalline rocks of Early Paleozoic or Late Precambrian age. They range in thickness from about 2,500 feet in the northwestern part of the county to about 4,500 feet in the extreme southeastern part of the county.

The Late Precambrian Wissahickon Formation is composed of schist and gneiss. These metamorphic rocks are generally characterized by having significant amounts of mica, quartz, feldspar, garnet, and chlorite.

Overlaying the Wissahickon Formation are, from bottom to top, the Potomac Group and Magothy and Raritan Formations, the Woodbury and Merchantville Formations, the Englishtown Formation, the Marshalltown Formation, the Mount Laurel and Wenonah Formations, the Navesink Formation, the Hornerstone Sand, the Vincentown Formation, the Piney Point Formation, the Kirkwood Formation, the Cohansey Sand, the Bridgeton Formation, and the Cape May Formation.

The Potomac Group consists of interbedded sand, gravelly sand, and clay. The Raritan Formation is composed of sand, gravel, and some clay, while the Magothy Formation consists of alternating beds of pyritic and lignitic dark clay and white, micaceous quartz sand and fine gravel. The combined thickness of these formations reaches 1,000 feet in the southeastern part of the county.

The Wenonah Formation and overlying Mount Laurel Sand are of Cretaceous age. While the Wenonah Formation is characterized by micaceous sand that is occasionally lignitic and glauconitic, the medium to coarse grained glauconitic sands of the Mount Laurel Sand are much less micaceous and lignitic. The combined thickness of these formations is approximately 80 to 100 feet.

The Vincentown Formation of the Paleocene Epoch consists of slightly clayey, medium grained sand. Quartz and feldspar are major constituents, and glauconite, mica, and pyrite are minor constituents. The Vincentown Formation is well known for being highly fossiliferous. The maximum thickness of this formation is approximately 150 feet.

The Piney Point Formation consists of mostly fine to medium grained clayey sand with layers of silty clay. This formation is about 50 feet thick.

The Kirkwood Formation of the Miocene Epoch consists of micaceous clays, fine to coarse grained sands, and some gravel.

The Cohansey Sand of the Miocene and Pliocene Epochs consists of medium to coarse grained sand with occasional lenses of gravel and clay. The thickness of this formation may reach 200 feet. The Cohansey Sand is the uppermost Tertiary age formation in the New Jersey Coastal Plain and is underlain unconformably by Pleistocene deposits (Rooney 1971).

During the Pleistocene Epoch, fluctuations of sea level resulted in alternating periods of erosion and deposition of sediments. During an early stage of the Pleistocene, the Bridgeton Formation was deposited as terrace alluvium that now caps most of the upland and interbasin divides of Cumberland County. As the sea level lowered, streams eroded the Bridgeton Formation, cutting channels into the underlying Cohansey Sand and, in some areas, possibly into the Kirkwood Formation. Prior to the advance of the last glacier, during the later stages of the Pleistocene, the sea level rose and the Cape May Formation was deposited, filling the

eroded stream channels and covering much of the valley lowland. Much of the Cape May Formation was then eroded as the sea level again fell to about its present level.

Cumberland County lies almost entirely in the Delaware River basin. With the exception of the Tuckahoe River, which flows south and then east toward the Atlantic Ocean, all of the streams draining the county flow south or southwest toward the Delaware Bay.

The land surface of Cumberland County slopes gently to the southwest toward Delaware Bay. In the northern part of the county, elevations reach about 130 feet, while in the southern part, tidal marshes are at or near sea level.

Climate

Prepared by the Water and Climate Center, Natural Resources Conservation Service, in Portland, Oregon.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Millville, New Jersey, in the period 1961-90. 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 33.6 degrees F and the average daily minimum temperature is 24.9 degrees. The lowest temperature on record, which occurred on January 28, 1987, is -10 degrees. In summer, the average temperature is 73.7 degrees and the average daily maximum temperature is 83.4 degrees. The highest recorded temperature, which occurred on July 3, 1966, is 102 degrees.

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

The total annual precipitation is about 42.29 inches. Of this, 21.5 inches, or 51 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 10.61 inches. The heaviest 1-day rainfall during the period of record was 9.06 inches on August 20, 1997. Thunderstorms occur on about 30 days each year, and most occur in June, July, or August.

The average seasonal snowfall is about 16 inches. The greatest snow depth at any one time during the period of record was 20 inches. On the average, 16 days of the year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 14.8 inches recorded on January 7, 1996.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 78 percent. The sun shines 62 percent of the time possible in summer and 51 percent in winter. The prevailing wind is from the northwest from October to April and from the south the remainder of the year. Average windspeed is highest, 11 miles per hour, in March and April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; and the kinds of crops and native plants. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into

the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

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

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

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

Survey Procedures

The general procedures followed in making this survey are described in the "National Soil Survey Handbook" of the Natural Resources Conservation Service and in the "Soil Survey Manual" (Soil Survey Division Staff 1993; USDA NRCS 1996a).

Before fieldwork began, preliminary boundaries of slopes and landforms were plotted stereoscopically on aerial photographs taken at a scale of 1:24,000. U.S. Geological Survey geologic and topographic maps, at a scale of 1:24,000, were also used. Map units were then designed according to the pattern of soils interpreted from aerial photographs, maps, and field observations.

Two levels of mapping intensity were used in this survey. More closely spaced observations were made on the landforms where the soils are used for agriculture, timber production, or urban development. Less closely spaced observations were made in forested wetlands and tidal flats where access was difficult. For either level of mapping intensity, the information about the soils can be used to determine soil management and to predict the suitability of the soils for various uses.

Traverses were made on foot. The soils were examined at intervals ranging from a few hundred feet to about $\frac{1}{4}$ mile, depending on the landform and soil pattern. Observations of special features, such as landforms, vegetation, and evidence of flooding, were made continuously without regard to spacing. Soil boundaries were determined on the basis of soil examinations, observations, and aerial photo interpretation. In many areas, such as those where flood plains intersect with knolls, these boundaries are precise because of an abrupt change in the landform. The soils were examined with the aid of a hand probe, a bucket auger, or a spade to a depth of about 3 to 5 feet. The typical pedons were observed in pits dug by hand.

Soil boundaries were plotted stereoscopically on the basis of parent material, landform, and relief. Many of these boundaries cannot be exact because they fall within a zone of gradual change between landforms, such as an area where the lowest part of a flat begins to become a slight depression. Much intermingling of the soils occurs in these zones.

Soil samples for many of the major soils in Cumberland County were not collected from sites in the county but from sites outside of the county. Chemical and physical data for these samples are available from the National Soil Survey Center Soil Survey Laboratory Research Database (<http://ssldata.nrcs.usda.gov/>). These data were completed by the Soil Survey Laboratory in Lincoln, Nebraska. Commonly used laboratory procedures were followed (USDA NRCS 1996b).

After completion of the soil mapping on aerial photographs, map unit delineations were transferred by hand to orthophotography at a scale of 1:24,000.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

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

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

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

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

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. The soils of a given series can differ in texture of the surface layer, slope, flooding frequency, 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, Chicone silt loam, 0 to 1 percent slopes, frequently flooded, is a phase of the Chicone series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas 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 or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, sand and gravel, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other 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 or miscellaneous areas.

AptAv—Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Tidal flats

Composition

Appoquinimink and similar soils: 40 percent

Transquaking and similar soils: 30 percent

Mispillion and similar soils: 25 percent

Minor components: 5 percent

Description of the Appoquinimink Soil

Typical profile

Surface layer:

Ag—0 to 12 inches; mucky silt loam

Substratum:

Cg—12 to 30 inches; silt loam

Oe—30 to 80 inches; mucky peat

Properties and qualities

Drainage class: Very poorly drained

Parent material: Loamy fluviomarine deposits over herbaceous organic material

Permeability: Moderate

Available water capacity: Very high

Reaction: Moderately acid to neutral (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Description of the Transquaking Soil

Typical profile

Oe—0 to 14 inches; mucky peat

Oa—14 to 60 inches; muck

Cg—60 to 90 inches; silty clay

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy sediments

Permeability: Slow

Available water capacity: Very high

Reaction: Slightly acid and neutral (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Description of the Mispillion Soil

Typical profile

Oe—0 to 10 inches; mucky peat

Oa—10 to 26 inches; muck

Cg—26 to 90 inches; silt loam

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy marine deposits or herbaceous organic material over loamy fluviomarine deposits, or both

Permeability: Moderately slow

Available water capacity: Very high

Reaction: Strongly acid to slightly alkaline (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Minor Components

- The moderately well drained Hammonton soils; on low hills and flats and in depressions

AtsAr—Atsion sand, 0 to 2 percent slopes, rarely flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Drainageways and flats

Composition

Atsion and similar soils: 85 percent

Minor components: 15 percent

Description of the Atsion Soil

Typical profile

Surface layer:

Oi—0 to 2 inches; peat

A—2 to 4 inches; sand

Subsurface layer:

E—4 to 26 inches; sand

Subsoil:

Bh—26 to 34 inches; sand

Substratum:

Cg1—34 to 46 inches; sand

Cg2—46 to 51 inches; sand

Cg3—51 to 80 inches; sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Sandy fluviomarine deposits

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Ponding depth: 2 to 6 inches above the surface

Seasonal high water table: Within a depth of 12 inches

Flooding: Rare

Interpretive groups

Land capability classification (nonirrigated): 5w

Hydrologic group: A/D

Minor Components

- The very poorly drained Berryland soils; in small depressions or drainageways
- The very poorly drained Manahawkin soils that have thick organic layers; in small swamps
- The moderately well drained Lakehurst soils; on small knolls

AucB—Aura loamy sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Aura and similar soils: 90 percent

Minor components: 10 percent

Description of the Aura Soil

Typical profile

Surface layer:

Ap—0 to 7 inches; loamy sand

Subsoil:

Bt—7 to 22 inches; coarse sandy loam

2Btx1—22 to 28 inches; gravelly coarse sandy loam
2Btx2—28 to 59 inches; gravelly sandy clay loam

Substratum:

2C—59 to 80 inches; gravelly loamy coarse sand

Properties and qualities

Drainage class: Well drained

Parent material: Old loamy alluvium or old gravelly alluvium, or both

Permeability: Moderately slow to rapid

Available water capacity: Moderate

Reaction: Extremely acid to slightly acid

Depth to a fragipan: 15 to 40 inches

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2s

Hydrologic group: B

Minor Components

- Sassafras soils that do not have a fragipan and have a fine-loamy particle-size control section; on the slightly lower parts of similar landforms
- The moderately well drained Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and do not have a fragipan; on lower landforms

AugA—Aura sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Low hills

Composition

Aura and similar soils: 80 percent

Minor components: 20 percent

Description of the Aura Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 13 inches; coarse sandy loam

Bt2—13 to 22 inches; coarse sandy loam

2Btx1—22 to 28 inches; gravelly coarse sandy loam

2Btx2—28 to 44 inches; gravelly sandy clay loam

2Btx3—44 to 59 inches; gravelly sandy clay loam

Substratum:

2C—59 to 80 inches; gravelly loamy coarse sand

Properties and qualities

Drainage class: Well drained (fig. 2)

Parent material: Old loamy alluvium or old gravelly alluvium, or both

Permeability: Moderately slow to moderately rapid

Available water capacity: Moderate



Figure 2.—A tomato crop in an area of Aura sandy loam, 0 to 2 percent slopes. This well drained soil has a dense, firm, root-restricting layer in the lower part of the subsoil. The layer does not significantly affect most vegetable crops that have a relatively shallow root system.

Reaction: Extremely acid and very strongly acid

Depth to a fragipan: 15 to 40 inches

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 1

Hydrologic group: B

Minor Components

- Sassafras soils that do not have a fragipan and have a fine-loamy particle-size control section; on the slightly lower parts of similar landforms
- Downer soils that do not have a fragipan; on lower landforms
- The moderately well drained Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and do not have a fragipan; on lower landforms

AugB—Aura sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Aura and similar soils: 85 percent

Minor components: 15 percent

Description of the Aura Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 13 inches; coarse sandy loam

Bt2—13 to 22 inches; coarse sandy loam

2Btx1—22 to 28 inches; gravelly coarse sandy loam

2Btx2—28 to 44 inches; gravelly sandy clay loam

2Btx3—44 to 59 inches; gravelly sandy clay loam

Substratum:

2C—59 to 80 inches; gravelly loamy coarse sand

Properties and qualities

Drainage class: Well drained

Parent material: Old loamy alluvium or old gravelly alluvium, or both

Permeability: Moderately slow to moderately rapid

Available water capacity: Moderate

Reaction: Extremely acid and very strongly acid

Depth to a fragipan: 15 to 40 inches

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Sassafras soils that do not have a fragipan and have a fine-loamy particle-size control section; on the slightly lower parts of similar landforms
- Downer soils that do not have a fragipan; on lower landforms
- The moderately well drained Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and do not have a fragipan; on lower landforms

AuhB—Aura gravelly sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Aura and similar soils: 90 percent

Minor components: 10 percent

Description of the Aura Soil

Typical profile

Surface layer:

A—0 to 8 inches; gravelly sandy loam

Subsoil:

BA—8 to 12 inches; gravelly sandy loam

Bt—12 to 20 inches; gravelly sandy clay loam
2Btx—20 to 36 inches; gravelly sandy clay loam

Substratum:

2C1—36 to 40 inches; gravelly sand
2C2—40 to 72 inches; gravelly sand

Properties and qualities

Drainage class: Well drained
Parent material: Old loamy alluvium or old gravelly alluvium, or both
Permeability: Moderately slow to rapid
Available water capacity: Moderate
Reaction: Extremely acid and very strongly acid
Depth to a fragipan: 15 to 40 inches
Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e
Hydrologic group: B

Minor Components

- Sassafras soils that do not have a fragipan and have a fine-loamy particle-size control section; on the slightly lower parts of similar landforms
- Downer soils that do not have a fragipan; on lower landforms

AvuB—Aura-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain
Landform: Knolls and low hills

Composition

Aura and similar soils: 60 percent
Urban land and similar components: 30 percent
Minor components: 10 percent

Description of the Aura Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 13 inches; coarse sandy loam
Bt2—13 to 22 inches; coarse sandy loam
2Btx1—22 to 28 inches; gravelly coarse sandy loam
2Btx2—28 to 44 inches; gravelly sandy clay loam
2Btx3—44 to 59 inches; gravelly sandy clay loam

Substratum:

2C—59 to 80 inches; gravelly loamy coarse sand

Properties and qualities

Drainage class: Well drained
Parent material: Old loamy alluvium or old gravelly alluvium, or both
Permeability: Moderately slow to moderately rapid
Available water capacity: Moderate
Reaction: Extremely acid and very strongly acid

Depth to a fragipan: 15 to 40 inches

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Description of the Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Sassafras soils that do not have a fragipan and have a fine-loamy particle-size control section; on the slightly lower parts of similar landforms
- Downer soils that do not have a fragipan; on lower landforms

BEXAS—Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions, drainageways, and flats

Composition

Berryland and similar soils: 50 percent

Mullica and similar soils: 40 percent

Minor components: 10 percent

Description of the Berryland Soil

Typical profile

Surface layer:

Ag—0 to 11 inches; sand

Subsoil:

Bh—11 to 19 inches; sand

Bg—19 to 32 inches; sand

B'h—32 to 40 inches; sand

Substratum:

Cg1—40 to 44 inches; sand

Cg2—44 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Very poorly drained

Parent material: Sandy fluviomarine deposits

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid to strongly acid

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: Within a depth of 6 inches

Flooding: Occasional

Interpretive groups

Land capability classification (nonirrigated): 5w

Hydrologic group: B/D

Description of the Mullica Soil

Typical profile

Surface layer:

Oe—0 to 2 inches; mucky peat

Ag—2 to 9 inches; sandy loam

Subsoil:

Bg1—9 to 14 inches; sandy loam

Bg2—14 to 28 inches; sandy loam

Substratum:

Cg1—28 to 31 inches; loamy sand

Cg2—31 to 40 inches; sand

Cg3—40 to 80 inches; gravelly loamy sand

Properties and qualities

Drainage class: Very poorly drained

Parent material: Sandy fluviomarine deposits or loamy fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid and very strongly acid

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: Within a depth of 6 inches

Flooding: Occasional

Interpretive groups

Land capability classification (nonirrigated): 4w

Hydrologic group: D

Minor Components

- The very poorly drained, organic Manahawkin soils; on lower landforms
- The poorly drained Atsion soils that do not have an umbric epipedon; on slightly higher landforms

BrvAv—Broadkill silt loam, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Tidal marsh

Composition

Broadkill and similar soils: 100 percent

Description of the Broadkill Soil

Typical profile

Surface layer:

Oe—0 to 6 inches; mucky peat

Ag—6 to 13 inches; silt loam

Substratum:

Cg1—13 to 38 inches; silt loam

Cg2—38 to 72 inches; stratified sand to silty clay loam

Properties and qualities

Drainage class: Very poorly drained

Parent material: Loamy marine deposits

Permeability: Moderate to rapid

Available water capacity: Very high

Reaction: Moderately acid to neutral (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Minor Components

- There are no minor components that have significant differences from the major components in this map unit.

**ChsAt—Chicone silt loam, 0 to 1 percent slopes,
frequently flooded**

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flood plains

Composition

Chicone and similar soils: 95 percent

Minor components: 5 percent

Description of the Chicone Soil

Typical profile

Surface layer:

A—0 to 5 inches; silt loam

Substratum:

Cg1—5 to 20 inches; silt loam

Cg2—20 to 28 inches; silt loam

Oe—28 to 65 inches; mucky peat

C'g—65 to 80 inches; sand

Properties and qualities

Drainage class: Very poorly drained

Parent material: Silty alluvium over organic woody materials

Permeability: Moderate to rapid

Available water capacity: Very high

Reaction: Extremely acid to strongly acid

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: Within a depth of 6 inches

Flooding: Frequent

Interpretive groups

Land capability classification (nonirrigated): 5w

Hydrologic group: D

Minor Components

- The very poorly drained, organic Manahawkin soils; on lower landforms

ChtA—Chillum silt loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Ridges and terraces

Composition

Chillum and similar soils: 85 percent

Minor components: 15 percent

Description of the Chillum Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; silt loam

Subsoil:

Bt1—10 to 15 inches; silt loam

Bt2—15 to 28 inches; silt loam

Bt3—28 to 34 inches; silt loam

BC—34 to 38 inches; loam

Substratum:

2C1—38 to 61 inches; sandy loam

2C2—61 to 66 inches; sandy loam

3C3—66 to 72 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Silty eolian deposits over loamy marine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 1

Hydrologic group: B

Minor Components

- Matapeake soils that do not have a dense, compact 2C horizon that is firm or very firm; on similar landforms
- The moderately well drained Mattapex soils that do not have a dense, compact 2C horizon that is firm or very firm and have a seasonal high water table at a depth of 18 to 36 inches; on slightly lower landforms

ChtB—Chillum silt loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Ridges and terraces

Composition

Chillum and similar soils: 85 percent

Minor components: 15 percent

Description of the Chillum Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; silt loam

Subsoil:

Bt1—10 to 15 inches; silt loam

Bt2—15 to 28 inches; silt loam

Bt3—28 to 34 inches; silt loam

BC—34 to 38 inches; loam

Substratum:

2C1—38 to 61 inches; sandy loam

2C2—61 to 66 inches; sandy loam

3C3—66 to 72 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Silty eolian deposits over loamy marine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Matapeake soils that do not have a dense, compact 2C horizon that is firm or very firm; on similar landforms
- The moderately well drained Mattapex soils that do not have a dense, compact 2C horizon that is firm or very firm and have a seasonal high water table at a depth of 18 to 36 inches; on slightly lower landforms

DocB—Downer loamy sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Downer and similar soils: 80 percent

Minor components: 20 percent

Description of the Downer Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; loamy sand

Subsoil:

BA—10 to 16 inches; loamy sand

Bt—16 to 36 inches; sandy loam

Substratum:

C1—36 to 48 inches; loamy sand

C2—48 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine deposits or gravelly fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2s

Hydrologic group: B

Minor Components

- Sassafras soils that have a fine-loamy particle-size control section; on similar landforms
- Evesboro soils that have a sandy particle-size control section and do not have an argillic horizon; on slightly higher landforms
- Hammonton soils that have low-chroma depletions and a seasonal high water table at a depth of 18 to 42 inches; in the lower landscape positions

DocC—Downer loamy sand, 5 to 10 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Downer and similar soils: 90 percent

Minor components: 10 percent

Description of the Downer Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; loamy sand

Subsoil:

BA—10 to 16 inches; loamy sand

Bt—16 to 36 inches; sandy loam

Substratum:

C1—36 to 48 inches; loamy sand

C2—48 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 3e

Hydrologic group: B

Minor Components

- Sassafras soils that have a fine-loamy particle-size control section; on similar landforms
- Evesboro soils that have a sandy particle-size control section and do not have an argillic horizon; on slightly higher landforms

DoeA—Downer sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Downer and similar soils: 85 percent

Minor components: 15 percent

Description of the Downer Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; sandy loam

Subsoil:

Bt1—10 to 16 inches; sandy loam

Bt2—16 to 36 inches; sandy loam

Substratum:

C1—36 to 48 inches; loamy sand

C2—48 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: High

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 1

Hydrologic group: B

Minor Components

- Sassafras soils that have a fine-loamy particle-size control section; on similar landforms
- Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and have a fine-loamy particle-size control section; on similar landforms

DoeB—Downer sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Downer and similar soils: 90 percent

Minor components: 10 percent

Description of the Downer Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; sandy loam

Subsoil:

Bt1—10 to 16 inches; sandy loam

Bt2—16 to 36 inches; sandy loam

Substratum:

C1—36 to 48 inches; loamy sand

C2—48 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: High

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Sassafras soils that have a fine-loamy particle-size control section; on similar landforms
- Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and have a fine-loamy particle-size control section; on similar landforms

DouB—Downer-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Downer and similar soils: 60 percent

Urban land and similar components: 30 percent

Minor components: 10 percent

Description of the Downer Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; sandy loam

Subsoil:

Bt1—10 to 16 inches; sandy loam

Bt2—16 to 36 inches; sandy loam

Substratum:

C1—36 to 48 inches; loamy sand

C2—48 to 80 inches; stratified sand to sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: High

Reaction: Extremely acid to slightly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Sassafras soils that have a fine-loamy particle-size control section; on similar landforms
- Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches and have a fine-loamy particle-size control section; on similar landforms

EveB—Evesboro sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Evesboro and similar soils: 80 percent

Minor components: 20 percent

Description of the Evesboro Soil

Typical profile

Surface layer:

A—0 to 4 inches; sand

Subsurface layer:

AB—4 to 17 inches; sand

Subsoil:

Bw—17 to 31 inches; sand

Substratum:

C—31 to 80 inches; stratified loamy sand and sand

Properties and qualities

Drainage class: Excessively drained

Parent material: Sandy eolian or sandy fluviomarine deposits, or both

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s

Hydrologic group: A

Minor Components

- Downer soils that have a coarse-loamy particle-size control section and an argillic horizon; on similar landforms
- Lakewood soils that have a well developed albic horizon; on similar landforms
- The moderately well drained Lakehurst soils that have a seasonal high water table at a depth of 18 to 42 inches and have a thin spodic horizon; on lower landforms
- Galloway soils in small depressions and narrow drainageways

EveC—Evesboro sand, 5 to 10 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Evesboro and similar soils: 95 percent

Minor components: 5 percent

Description of the Evesboro Soil

Typical profile

Surface layer:

A—0 to 4 inches; sand

Subsurface layer:

AB—4 to 17 inches; sand

Subsoil:

Bw—17 to 31 inches; sand

Substratum:

C—31 to 80 inches; stratified loamy sand and sand

Properties and qualities

Drainage class: Excessively drained

Parent material: Sandy eolian or sandy fluviomarine deposits, or both

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s

Hydrologic group: A

Minor Components

- Downer soils that have an argillic horizon and a coarse-loamy particle-size control section; on similar landforms

EveD—Evesboro sand, 10 to 15 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Evesboro and similar soils: 95 percent

Minor components: 5 percent

Description of the Evesboro Soil

Typical profile

Surface layer:

A—0 to 5 inches; sand

Subsoil:

Bw—5 to 28 inches; loamy sand

Substratum:

C—28 to 60 inches; stratified loamy sand and sand

Properties and qualities

Drainage class: Excessively drained

Parent material: Sandy eolian or sandy fluviomarine deposits, or both

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s

Hydrologic group: A

Minor Components

- Downer soils that have an argillic horizon and a coarse-loamy particle-size control section; on similar landforms

EvuB—Evesboro-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Evesboro and similar soils: 60 percent

Urban land and similar components: 30 percent

Minor components: 10 percent

Description of the Evesboro Soil

Typical profile

Surface layer:

A—0 to 4 inches; sand

Subsurface layer:

AB—4 to 17 inches; sand

Subsoil:

Bw—17 to 31 inches; sand

Substratum:

C—31 to 80 inches; stratified loamy sand and sand

Properties and qualities

Drainage class: Excessively drained

Parent material: Sandy eolian or sandy fluviomarine deposits, or both

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s

Hydrologic group: A

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Downer soils that have an argillic horizon and a coarse-loamy particle-size control section; on similar landforms
- The moderately well drained Lakehurst soils that have a seasonal high water table at a depth of 18 to 42 inches and a thin spodic horizon; on lower landforms

FamA—Fallsington sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Fallsington and similar soils: 85 percent

Minor components: 15 percent

Description of the Fallsington Soil

Typical profile

Surface layer:

Oe—0 to 2 inches; mucky peat

A—2 to 5 inches; sandy loam

Subsurface layer:

E—5 to 8 inches; sandy loam

Subsoil:

Btg1—8 to 14 inches; sandy loam

Btg2—14 to 31 inches; sandy clay loam

Substratum:

Cg1—31 to 62 inches; sand

Cg2—62 to 80 inches; gravelly sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Loamy fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: B/D

Minor Components

- The very poorly drained Mullica soils that are coarse-loamy and have a seasonal high water table at or near the surface; in the lower landscape positions
- Woodstown soils that have a seasonal high water table at a depth of 18 to 42 inches; on slightly higher landforms
- The very poorly drained, organic Manahawkin soils that have a seasonal high water table at or near the surface; in the lower landscape positions

FodB—Fort Mott loamy sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Ridges and terraces

Composition

Fort Mott and similar soils: 85 percent

Minor components: 15 percent

Description of the Fort Mott Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; loamy sand

Subsurface layer:

E—8 to 30 inches; loamy sand

Subsoil:

BE—30 to 33 inches; sandy loam

Bt—33 to 49 inches; sandy loam

Substratum:

C—49 to 72 inches; loamy sand

Properties and qualities

Drainage class: Well drained

Parent material: Sandy eolian deposits or fluviomarine deposits, or both

Permeability: Moderately rapid and rapid

Available water capacity: Low

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 3s

Hydrologic group: A

Minor Components

- Downer soils that do not have a 20- to 40-inch thick sandy surface layer and have a coarse-loamy particle-size control section; on similar landforms
- Galestown soils that have a sandy particle-size control section; on slightly higher landforms

GamB—Galloway loamy sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions, flats, and terraces

Composition

Galloway and similar soils: 85 percent

Minor components: 15 percent

Description of the Galloway Soil

Typical profile

Surface layer:

A—0 to 2 inches; loamy sand

Subsurface layer:

E—2 to 10 inches; loamy sand

Subsoil:

Bw1—10 to 24 inches; loamy sand

Bw2—24 to 36 inches; loamy sand

Substratum:

Cg1—36 to 52 inches; sand

Cg2—52 to 60 inches; sand

Properties and qualities

Drainage class: Somewhat poorly drained

Parent material: Unconsolidated sandy marine deposits

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: 12 to 18 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: A/D

Minor Components

- The poorly drained Atsion soils that are Spodosols with thicker A, E, and Bh horizons; on similar landforms
- The well drained Downer soils that have a coarse-loamy particle-size control section; on higher landforms
- The very poorly drained Mullica soils that have a coarse-loamy particle-size control section; on lower landforms

HbmB—Hammonton loamy sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Hammonton and similar soils: 80 percent

Minor components: 20 percent

Description of the Hammonton Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; loamy sand

Subsurface layer:

E—8 to 18 inches; loamy sand

Subsoil:

Bt—18 to 36 inches; sandy loam

Substratum:

C—36 to 80 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Coarse-loamy fluviomarine deposits

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to moderately acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: B

Minor Components

- Downer soils that have a seasonal high water table at a depth of more than 72 inches; on slightly higher landforms
- Glassboro soils that have a seasonal high water table between depths of 12 and 18 inches; on slightly higher landforms

HboA—Hammonton sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Hammonton and similar soils: 85 percent
Minor components: 15 percent

Description of the Hammonton Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsurface layer:

E—8 to 18 inches; sandy loam

Subsoil:

Bt—18 to 36 inches; sandy loam

Substratum:

C—36 to 60 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Coarse-loamy fluviomarine deposits

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: B

Minor Components

- Mullica soils that have a seasonal high water table within a depth of 12 inches; on lower landforms
- Atsion soils that have a seasonal high water table between depths of 6 and 12 inches and have a sandy particle-size control section; on lower landforms

HboB—Hammonton sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Hammonton and similar soils: 85 percent
Minor components: 15 percent

Description of the Hammonton Soil

Typical profile

Surface layer:

A—0 to 10 inches; sandy loam

Subsoil:

Bt—10 to 48 inches; sandy loam

Substratum:

C—48 to 72 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Coarse-loamy fluviomarine deposits

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: B

Minor Components

- Downer soils that have a seasonal high water table at a depth of more than 72 inches; on slightly higher landforms
- Glassboro soils that have a seasonal high water table between depths of 12 and 18 inches; on slightly higher landforms

HbrB—Hammonton-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Hammonton and similar soils: 70 percent

Urban land and similar components: 20 percent

Minor components: 10 percent

Description of the Hammonton Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; loamy sand

Subsurface layer:

E—8 to 18 inches; loamy sand

Subsoil:

Bt—18 to 36 inches; sandy loam

Substratum:

C—36 to 80 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Coarse-loamy fluviomarine deposits

Permeability: Moderately rapid and rapid

Available water capacity: Moderate

Reaction: Extremely acid to moderately acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: B

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Downer soils that have a seasonal high water table at a depth of more than 72 inches; on slightly higher landforms
- Glassboro soils that have a seasonal high water table between depths of 12 and 18 inches; on slightly higher landforms

LakB—Lakehurst sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Lakehurst and similar soils: 85 percent

Minor components: 15 percent

Description of the Lakehurst Soil

Typical profile

Surface layer:

Oi—0 to 2 inches; slightly decomposed plant material

A—2 to 4 inches; sand

Subsurface layer:

E—4 to 18 inches; sand

Subsoil:

Bh—18 to 32 inches; sand

BC—32 to 45 inches; sand

Substratum:

C—45 to 54 inches; sand

Cg—54 to 80 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Sandy fluviomarine deposits

Permeability: Rapid

Available water capacity: Low

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 4w

Hydrologic group: A

Minor Components

- The poorly drained Atsion soils that have a seasonal high water table within a depth of 12 inches; in the slightly lower lying positions
- The somewhat excessively drained Quakerbridge soils; on low hills, flats, and fluviomarine terraces

LasB—Lakewood sand, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats and knolls

Composition

Lakewood and similar soils: 85 percent

Minor components: 15 percent

Description of the Lakewood Soil

Typical profile

Surface layer:

A—0 to 3 inches; sand

Subsurface layer:

E—3 to 11 inches; sand

Subsoil:

Bh—11 to 13 inches; loamy sand

BC—13 to 30 inches; sand

Substratum:

C1—30 to 46 inches; sand

C2—46 to 80 inches; sand

Properties and qualities

Drainage class: Excessively drained

Parent material: Sandy fluviomarine deposits

Permeability: Rapid

Available water capacity: Very low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s

Hydrologic group: A

Minor Components

- The moderately well drained Lakehurst soils that have a seasonal high water table at a depth of 18 to 42 inches; in the lower landscape positions
- The somewhat excessively drained Quakerbridge soils; on low hills, flats, and fluviomarine terraces

MakAt—Manahawkin muck, 0 to 2 percent slopes, frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flood plains and swamps (fig. 3)

Composition

Manahawkin and similar soils: 85 percent
Minor components: 15 percent

Description of the Manahawkin Soil

Typical profile

Oa1—0 to 13 inches; muck
Oa2—13 to 26 inches; muck
Oa3—26 to 47 inches; muck
Cg—47 to 80 inches; sand

Properties and qualities

Drainage class: Very poorly drained

Parent material: Organic, woody material over sandy alluvium

Permeability: Rapid

Available water capacity: Very high

Reaction: Very strongly acid to moderately acid

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: Within a depth of 6 inches

Flooding: Frequent

Interpretive groups

Land capability classification (nonirrigated): 7w

Hydrologic group: D



Figure 3.—Atlantic white cedar in an area of Manahawkin muck, 0 to 2 percent slopes, frequently flooded. These trees are adapted to prolonged wet soil conditions that occur in the Manahawkin soil.

Minor Components

- Atsion soils that are poorly drained mineral soils having a spodic horizon and a sandy particle-size control section; on higher landforms
- Berryland soils that are very poorly drained mineral soils having a spodic horizon and a sandy particle-size control section; on slightly higher landforms
- Mullica soils that are very poorly drained mineral soils having a coarse-loamy particle-size control section; on slightly higher landforms

MbrA—Matapeake silt loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats, ridges, and terraces

Composition

Matapeake and similar soils: 90 percent
Minor components: 10 percent

Description of the Matapeake Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; silt loam

Subsoil:

Bt1—10 to 25 inches; silt loam

Bt2—25 to 33 inches; silt loam

Substratum:

2C1—33 to 50 inches; stratified sandy loam and loamy sand

2C2—50 to 72 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Silty eolian deposits over marine deposits or silty eolian deposits
over coarse fluviomarine deposits, or both

Permeability: Moderate and moderately rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 1

Hydrologic group: B

Minor Components

- Chillum soils with a dense, compact 2C horizon that is firm or very firm; on similar landforms
- The moderately well drained Mattapex soils that have a seasonal high water table at a depth of 18 to 36 inches; on slightly lower landforms

MbrB—Matapeake silt loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats, ridges, and terraces

Composition

Matapeake and similar soils: 90 percent
Minor components: 10 percent

Description of the Matapeake Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; silt loam

Subsoil:

Bt1—10 to 25 inches; silt loam

Bt2—25 to 33 inches; silt loam

Substratum:

2C1—33 to 50 inches; stratified sandy loam and loamy sand

2C2—50 to 72 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Silty eolian deposits over marine deposits or silty eolian deposits over coarse fluviomarine deposits, or both

Permeability: Moderate and moderately rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Chillum soils with a dense, compact 2C horizon that is firm or very firm; on similar landforms
- Aura soils that have a fine-loamy particle-size control section and a fragipan; on similar landforms

MbrC—Matapeake silt loam, 5 to 10 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats, ridges, and terraces

Composition

Matapeake and similar soils: 90 percent

Minor components: 10 percent

Description of the Matapeake Soil

Typical profile

Surface layer:

Ap—0 to 10 inches; silt loam

Subsoil:

Bt1—10 to 25 inches; silt loam

Bt2—25 to 33 inches; silt loam

Substratum:

2C1—33 to 50 inches; stratified sandy loam and loamy sand

2C2—50 to 72 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Silty eolian deposits over marine deposits or silty eolian deposits over coarse fluviomarine deposits, or both

Permeability: Moderate and moderately rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 3e

Hydrologic group: B

Minor Components

- Chillum soils with a dense, compact 2C horizon that is firm or very firm; on similar landforms
- Aura soils that have a fine-loamy particle-size control section and a fragipan; on similar landforms

MbuA—Mattapex silt loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats, ridges, and terraces

Composition

Mattapex and similar soils: 95 percent

Minor components: 5 percent

Description of the Mattapex Soil

Typical profile

Surface layer:

A—0 to 7 inches; silt loam

Subsoil:

Bt1—7 to 18 inches; silt loam

Bt2—18 to 33 inches; silty clay loam

Bt3—33 to 40 inches; silty clay loam

Substratum:

2C—40 to 72 inches; loamy sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Silty eolian deposits over coarser fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: C

Minor Components

- The poorly drained Othello soils that have a seasonal high water table within a depth of 12 inches; in the lower landscape positions

MbuB—Mattapex silt loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Flats, ridges, and terraces

Composition

Mattapex and similar soils: 95 percent

Minor components: 5 percent

Description of the Mattapex Soil

Typical profile

Surface layer:

Ap—0 to 9 inches; silt loam

Subsoil:

BA—9 to 12 inches; silt loam

Bt—12 to 52 inches; silt loam

Substratum:

2C1—52 to 56 inches; stratified loamy sand and fine sandy loam

2C2—56 to 72 inches; stratified sand and loamy sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Silty eolian deposits over coarser fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: C

Minor Components

- The poorly drained Othello soils that have a seasonal high water table within a depth of 12 inches; in the lower landscape positions

MmtAv—Mispillion-Transquaking-Appoquinimink complex, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Tidal flats

Composition

Mispillion and similar soils: 50 percent

Transquaking and similar soils: 25 percent

Appoquinimink and similar soils: 20 percent

Minor components: 5 percent

Description of the Mispillion Soil

Typical profile

Surface layer:

Oe—0 to 10 inches; mucky peat

Oa—10 to 26 inches; muck

Substratum:

Cg—26 to 90 inches; silt loam

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy marine deposits or herbaceous organic material over loamy fluviomarine deposits, or both

Permeability: Moderately slow
Available water capacity: Very high
Reaction: Strongly acid to slightly alkaline (unincubated)
Ponding depth: 0 to 12 inches above the surface
Seasonal high water table: At the surface
Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w
Hydrologic group: D

Description of the Transquaking Soil

Typical profile

Oi—0 to 14 inches; peat
Oe1—14 to 22 inches; mucky peat
Oe2—22 to 46 inches; mucky peat
Oa—46 to 65 inches; muck
Cg—65 to 80 inches; silty clay

Properties and qualities

Drainage class: Very poorly drained
Parent material: Herbaceous organic material over loamy sediments
Permeability: Slow
Available water capacity: Very high
Reaction: Slightly acid and neutral (unincubated)
Ponding depth: 0 to 12 inches above the surface
Seasonal high water table: At the surface
Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w
Hydrologic group: D

Description of the Appoquinimink Soil

Typical profile

Surface layer:
Ag—0 to 12 inches; mucky silt loam
Substratum:
Cg—12 to 30 inches; silt loam
Oe—30 to 80 inches; mucky peat

Properties and qualities

Drainage class: Very poorly drained
Parent material: Loamy fluviomarine deposits over herbaceous organic material
Permeability: Moderate
Available water capacity: Very high
Reaction: Moderately acid to neutral (unincubated)
Ponding depth: 0 to 12 inches above the surface
Seasonal high water table: At the surface
Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w
Hydrologic group: D

Minor Components

- The very poorly drained Berryland soils; in the slightly lower landscape positions

- Hammonton soils that have low-chroma depletions and a seasonal high water table at a depth of 18 to 42 inches; in the lower landscape positions
- The very poorly drained Mullica soils; on broad flats along streams in low headwater areas or in small, scattered low areas

OthA—Othello silt loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions

Composition

Othello and similar soils: 85 percent

Minor components: 15 percent

Description of the Othello Soil

Typical profile

Surface layer:

A—0 to 5 inches; silt loam

Subsoil:

BA—5 to 9 inches; silty clay loam

Btg—9 to 28 inches; silty clay loam

BC—28 to 38 inches; silt loam

Substratum:

2C1—38 to 46 inches; loamy sand

2C2—46 to 60 inches; sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Silty eolian deposits over fluviomarine deposits

Permeability: Moderately slow to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: C/D

Minor Components

- The very poorly drained Berryland soils; in the slightly lower landscape positions
- The very poorly drained Mullica soils; on broad flats along streams in low headwater areas or in small, scattered low areas
- The very poorly drained, organic Manahawkin soils that have a seasonal high water table at or near the surface; in the lower landscape positions

OTKA—Othello and Fallsington soils, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions and flats

Composition

Othello and similar soils: 55 percent
Fallsington and similar soils: 45 percent

Description of the Othello Soil

Typical profile

Surface layer:

Oe—0 to 1 inch; mucky peat
A—1 to 13 inches; silt loam

Subsoil:

Btg1—13 to 32 inches; silt loam
Btg2—32 to 40 inches; silty clay loam

Substratum:

2C1—40 to 60 inches; loamy sand
2C2—60 to 80 inches; sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Silty eolian deposits over fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: C/D

Description of the Fallsington Soil

Typical profile

Surface layer:

Oe—0 to 2 inches; mucky peat
A—2 to 5 inches; loam

Subsurface layer:

E—5 to 8 inches; sandy loam

Subsoil:

Btg1—8 to 14 inches; sandy loam
Btg2—14 to 31 inches; sandy clay loam

Substratum:

Cg1—31 to 62 inches; sand
Cg2—62 to 80 inches; gravelly sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Loamy fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: B/D

Minor Components

- There are no minor components that have significant differences from the major components in this map unit.

OTMA—Othello, Fallsington, and Trussum soils, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Depressions

Composition

Othello and similar soils: 45 percent

Fallsington and similar soils: 35 percent

Trussum and similar soils: 20 percent

Description of the Othello Soil

Typical profile

Surface layer:

Oe—0 to 1 inch; mucky peat

A—1 to 13 inches; silt loam

Subsoil:

Btg1—13 to 32 inches; silt loam

Btg2—32 to 40 inches; silty clay loam

Substratum:

2C1—40 to 60 inches; loamy sand

2C2—60 to 80 inches; sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Silty eolian deposits over fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: High

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: C/D

Description of the Fallsington Soil

Typical profile

Surface layer:

Oe—0 to 2 inches; mucky peat

A—2 to 5 inches; loam

Subsurface layer:

E—5 to 8 inches; sandy loam

Subsoil:

Btg1—8 to 14 inches; sandy loam

Btg2—14 to 31 inches; sandy clay loam

Substratum:

Cg1—31 to 62 inches; sand

Cg2—62 to 80 inches; gravelly sand

Properties and qualities

Drainage class: Poorly drained

Parent material: Loamy fluviomarine deposits

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 3w

Hydrologic group: B/D

Description of the Trussum Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; loam

Subsoil:

Bt1—12 to 25 inches; loam

Bt2—25 to 35 inches; clay

Bt3—35 to 60 inches; clay

Bt4—60 to 66 inches; sandy clay loam

Bt5—66 to 72 inches; sandy clay loam

Properties and qualities

Drainage class: Poorly drained

Parent material: Clayey marine deposits

Permeability: Slow to moderate

Available water capacity: High

Reaction: Extremely acid to strongly acid

Seasonal high water table: Within a depth of 12 inches

Interpretive groups

Land capability classification (nonirrigated): 4w

Hydrologic group: C/D

Minor Components

- There are no minor components that have significant differences from the major components in this map unit.

PdwAv—Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Tidal flats

Composition

Pawcatuck and similar soils: 60 percent

Transquaking and similar soils: 25 percent

Minor components: 15 percent

Description of the Pawcatuck Soil

Typical profile

Oe1—0 to 14 inches; mucky peat

Oe2—14 to 45 inches; mucky peat

Cg1—45 to 50 inches; loamy sand

Cg2—50 to 90 inches; sand

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over sandy marine deposits

Permeability: Rapid

Available water capacity: Very high

Reaction: Strongly acid to slightly alkaline (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Description of the Transquaking Soil

Typical profile

Oi—0 to 14 inches; peat

Oe—14 to 48 inches; mucky peat

Oa—48 to 57 inches; muck

Cg—57 to 72 inches; silty clay

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy sediments

Permeability: Slow

Available water capacity: Very high

Reaction: Slightly acid and neutral (unincubated)

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: D

Minor Components

- The very poorly drained Berryland soils; in the slightly lower landscape positions
- The very poorly drained Mullica soils; on broad flats along streams in low headwater areas or in small, scattered low areas
- Appoquinimink soils that have a buried organic surface layer more than 8 inches thick within a depth of 40 inches; on similar landforms

PHG—Pits, sand and gravel

Setting

Slope: Nearly level

Landscape: North Atlantic Coastal Plain

Anthropogenic feature: Gravel pit

Composition

Pits, sand and gravel, and similar components: 100 percent

Description of Pits, Sand and Gravel

This map unit consists of open excavations, or Pits, from which soil material has been removed for use as construction material or road aggregate. The Pits commonly have steep, unstable slope faces. Some are filled with water. Most are mined for sand or gravel, or both. A few have been mined for materials high in glauconite. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place, and the major properties and qualities are not given because the soil properties vary too much.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- There are no minor components that have significant differences from the major components in this map unit.

PstAt—Psammaquents, sulfidic substratum, 0 to 3 percent slopes, frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Anthropogenic feature: Filled marshland

Composition

Psammaquents and similar soils: 85 percent

Minor components: 15 percent

Description of the Psammaquents

Typical profile

Surface layer:

A—0 to 12 inches; coarse sand

Substratum:

C—12 to 36 inches; gravelly sand

Bottom layer:

2Oe1—36 to 43 inches; mucky peat

2Oe2—43 to 80 inches; mucky peat

Properties and qualities

Drainage class: Very poorly drained

Parent material: Dredged fill or excavated borrow material derived from river channels, pits, or previously unaltered soils over organic material

Permeability: Rapid

Available water capacity: Very low

Reaction: Extremely acid and very strongly acid

Ponding depth: 0 to 12 inches above the surface

Seasonal high water table: At the surface

Flooding: Frequent

Interpretive groups

Land capability classification (nonirrigated): 8w

Hydrologic group: A

Minor Components

- The organic Pawcatuck soils that have a 16- to 51-inch-thick organic layer underlain by sandy mineral layers; on similar landforms
- The organic Transquaking soils that have more than 51 inches of organic material underlain by loamy mineral layers; on similar landforms
- Appoquinimink soils that have a buried organic layer more than 8 inches thick within a depth of 40 inches; on similar landforms

PsvAr—Psamments, wet substratum, 0 to 3 percent slopes, rarely flooded

Setting

Landscape: North Atlantic Coastal Plain

Anthropogenic feature: Fill

Composition

Psamments, wet substratum, and similar soils: 85 percent

Minor components: 15 percent

Description of the Psamments

Typical profile

Surface layer:

A—0 to 12 inches; coarse sand

Substratum:

C1—12 to 36 inches; gravelly coarse sand

C2—36 to 80 inches; sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Dredged fill or excavated borrow materials derived from river channels, pits, or previously unaltered soils

Permeability: Rapid

Available water capacity: Very low

Reaction: Extremely acid and very strongly acid

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 7w

Hydrologic group: A

Minor Components

- The very poorly drained, mineral Berryland soils that have a spodic horizon and a sandy particle-size control section; on slightly higher landforms
- The very poorly drained, organic Manahawkin soils that have a seasonal high water table at or near the surface; in the lower landscape positions
- The very poorly drained Mullica soils that have a seasonal high water table at or near the surface; on broad flats along streams in low headwater areas or in small, scattered low areas

SacA—Sassafras sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 80 percent

Minor components: 20 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; sandy loam

Subsoil:

Bt1—12 to 18 inches; sandy loam

Bt2—18 to 28 inches; sandy clay loam

BC—28 to 40 inches; loamy sand

Substratum:

C1—40 to 58 inches; sand

C2—58 to 80 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 1

Hydrologic group: B

Minor Components

- Downer soils that have a coarse-loamy particle-size control section; on similar landforms
- The moderately well drained Woodstown soils; on the slightly lower landforms
- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms

SacB—Sassafras sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 80 percent

Minor components: 20 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; sandy loam

Subsoil:

Bt1—12 to 18 inches; sandy loam

Bt2—18 to 28 inches; sandy clay loam

BC—28 to 40 inches; loamy sand

Substratum:

C1—40 to 58 inches; sand

C2—58 to 80 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Downer soils that have a coarse-loamy particle-size control section; on similar landforms
- The moderately well drained Woodstown soils; on slightly lower landforms
- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms

SacC—Sassafras sandy loam, 5 to 10 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 90 percent

Minor components: 10 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; sandy loam

Subsoil:

Bt1—12 to 18 inches; sandy loam

Bt2—18 to 28 inches; sandy clay loam

BC—28 to 40 inches; loamy sand

Substratum:

C1—40 to 58 inches; sand

C2—58 to 80 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine deposits or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 3e

Hydrologic group: B

Minor Components

- Downer soils that have a coarse-loamy particle-size control section; on similar landforms
- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms

SadA—Sassafras gravelly sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 85 percent

Minor components: 15 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; gravelly sandy loam

Subsoil:

BA—12 to 14 inches; sandy loam

Bt—14 to 30 inches; sandy clay loam

BC—30 to 34 inches; sandy loam

Substratum:

C—34 to 72 inches; loamy sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine deposits or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms
- The moderately well drained Woodstown soils; on slightly lower landforms
- Hammonton soils that have low-chroma depletions and have a seasonal high water table at a depth of 18 to 42 inches; in the lower landscape positions

SadB—Sassafras gravelly sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 90 percent

Minor components: 10 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; gravelly sandy loam

Subsoil:

BA—12 to 14 inches; sandy loam

Bt—14 to 30 inches; sandy clay loam

BC—30 to 34 inches; sandy loam

Substratum:

C—34 to 72 inches; loamy sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Minor Components

- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms

SadC—Sassafras gravelly sandy loam, 5 to 10 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 95 percent
Minor components: 5 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

A—0 to 17 inches; gravelly sandy loam

Subsoil:

Bt—17 to 37 inches; sandy clay loam

Substratum:

C—37 to 60 inches; gravelly sandy loam

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to strongly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 3e

Hydrologic group: B

Minor Components

- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms

SapB—Sassafras-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Knolls and low hills

Composition

Sassafras and similar soils: 60 percent
Urban land and similar components: 30 percent
Minor components: 10 percent

Description of the Sassafras Soil

Typical profile

Surface layer:

Ap—0 to 12 inches; sandy loam

Subsoil:

Bt1—12 to 18 inches; sandy loam

Bt2—18 to 28 inches; sandy clay loam

BC—28 to 40 inches; loamy sand

Substratum:

C1—40 to 58 inches; sand

C2—58 to 80 inches; sand

Properties and qualities

Drainage class: Well drained

Parent material: Loamy fluviomarine or gravelly fluviomarine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to slightly acid

Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 2e

Hydrologic group: B

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Aura soils that have a fine-loamy particle-size control section and have a fragipan; on similar landforms
- Downer soils that have a coarse-loamy particle-size control section; on similar landforms

TrkAv—Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded

Setting

Landscape: North Atlantic Coastal Plain

Landform: Tidal flats

Composition

Transquaking and similar soils: 90 percent

Minor components: 10 percent

Description of the Transquaking Soil

Typical profile

Oe1—0 to 14 inches; mucky peat

Oe2—14 to 30 inches; mucky peat

Oe3—30 to 45 inches; mucky peat

Oe4—45 to 70 inches; mucky peat

Oa—70 to 90 inches; muck

Properties and qualities

Drainage class: Very poorly drained

Parent material: Herbaceous organic material over loamy sediments

Permeability: Not specified

Available water capacity: Very high

Reaction: Slightly acid and neutral (unincubated)
Ponding depth: 0 to 12 inches above the surface
Seasonal high water table: At the surface
Flooding: Very frequent

Interpretive groups

Land capability classification (nonirrigated): 8w
Hydrologic group: D

Minor Components

- Broadkill soils that do not have organic layers more than 8 inches thick within a depth of 72 inches; on similar landforms
- Appoquinimink soils formed in loamy fluvial sediments that are high in silt and in the underlying organic materials that are dominantly derived from decomposed herbaceous plants

UdrB—Udorthents, refuse substratum, 0 to 8 percent slopes

Setting

Landscape: Upland
Anthropogenic feature: Fill

Composition

Udorthents and similar soils: 100 percent

Description of the Udorthents

Typical profile

C—0 to 60 inches; silt loam

Properties and qualities

Drainage class: Well drained
Parent material: Dredged fill or excavated borrow materials derived from river channels, pits, or previously unaltered soils
Permeability: Moderate
Available water capacity: High
Reaction: Moderately acid to neutral
Depth to the seasonal high water table: More than 6 feet

Interpretive groups

Land capability classification (nonirrigated): 7s
Hydrologic group: D

Minor Components

- There are no minor components that have significant differences from the major component in this map unit.

UR—Urban land

Setting

Slope: Nearly level
Landscape: North Atlantic Coastal Plain
Anthropogenic feature: Urban land

Composition

Urban land and similar components: 95 percent

Minor components: 5 percent

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- Udothents that generally consist of loamy material in the upper part of the profile and sandy to loamy material mixed with household and industrial refuse in the lower part

WATER—Water

This map unit consists of areas inundated with water for most of the year. It generally includes rivers, ponds, or lakes.

WoeA—Woodstown sandy loam, 0 to 2 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Drainageways and flats

Composition

Woodstown and similar soils: 80 percent

Minor components: 20 percent

Description of the Woodstown Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 26 inches; sandy loam

Bt2—26 to 30 inches; sandy clay loam

Bt3—30 to 36 inches; sandy loam

Substratum:

C—36 to 80 inches; loamy sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Old alluvium or sandy marine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: C

Minor Components

- The well drained Downer soils that have a coarse-loamy particle-size control section; on slightly higher landforms
- The poorly drained Fallsington soils; on lower landforms
- The well drained Sassafras soils that have a fine-loamy particle-size control section; on slightly higher landforms

WoeB—Woodstown sandy loam, 2 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Drainageways and flats

Composition

Woodstown and similar soils: 80 percent

Minor components: 20 percent

Description of the Woodstown Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 26 inches; sandy loam

Bt2—26 to 30 inches; sandy clay loam

Bt3—30 to 36 inches; sandy loam

Substratum:

C—36 to 80 inches; loamy sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Old alluvium or sandy marine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: C

Minor Components

- The well drained Downer soils that have a coarse-loamy particle-size control section; on slightly higher landforms
- The well drained Sassafras soils that have a fine-loamy particle-size control section; on slightly higher landforms
- The somewhat poorly drained Glassboro soils that have a seasonal high water table at a depth of 12 to 18 inches and do not have a fragipan; on lower landforms

WooB—Woodstown-Urban land complex, 0 to 5 percent slopes

Setting

Landscape: North Atlantic Coastal Plain

Landform: Drainageways and flats

Composition

Woodstown and similar soils: 65 percent

Urban land and similar components: 20 percent

Minor components: 15 percent

Description of the Woodstown Soil

Typical profile

Surface layer:

Ap—0 to 8 inches; sandy loam

Subsoil:

Bt1—8 to 26 inches; sandy loam

Bt2—26 to 30 inches; sandy clay loam

Bt3—30 to 36 inches; sandy loam

Substratum:

C—36 to 80 inches; loamy sand

Properties and qualities

Drainage class: Moderately well drained

Parent material: Old alluvium or sandy marine deposits, or both

Permeability: Moderate to rapid

Available water capacity: Moderate

Reaction: Extremely acid to neutral

Depth to the seasonal high water table: 18 to 42 inches

Interpretive groups

Land capability classification (nonirrigated): 2w

Hydrologic group: C

Description of Urban Land

Urban land consists of areas where much of the soil surface is covered with asphalt, concrete, buildings, or other impervious cover. A description of the typical sequence, depth, and composition of the soil material is not provided because the soil material varies greatly from place to place.

Interpretive groups

Land capability classification (nonirrigated): 8s

Hydrologic group: Not specified

Minor Components

- The well drained Downer soils that have a coarse-loamy particle-size control section; on slightly higher landforms
- The well drained Sassafras soils that have a fine-loamy particle-size control section; on slightly higher landforms
- The somewhat poorly drained Glassboro soils that have a seasonal high water table at a depth of 12 to 18 inches and do not have a fragipan; on lower landforms

Use and Management of the Soils

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

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

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

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

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

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited*, *somewhat limited*, and *very limited*. The suitability ratings are expressed as *well suited*, *moderately suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Mary Beth Sorrentino, district conservationist, Natural Resources Conservation Service, and Garry E. Timberman, district manager, Cumberland County Soil Conservation District, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland and other important farmland are described.

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

Federal and state regulations require that any area designated as a wetland cannot be altered without prior approval from the Division of Land Use Regulation, New Jersey Department of Environmental Protection. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

Conditions are favorable for crops and pasture in Cumberland County. Soil suitability and a favorable climate increase the potential for the production of many field crops that are not commonly grown in the county.

Corn and soybeans are the row crops dominantly grown in the county. Grain sorghum and similar crops can also be grown profitably if economic conditions are favorable. Wheat is the most commonly grown close-growing crop, and barley and oats are also suitable for planting. Specialty crops include vegetables, small fruits, tree fruits, and many nursery plants (fig. 4). Some areas are used for melons, strawberries, sweet corn, tomatoes, peppers, or other vegetables or small fruits. Apples and peaches are the most common tree fruits.

Soils that have good natural drainage and warm up early in spring are especially well suited to many vegetables and small fruits. They include the Downer and Sassafras soils in areas that have slopes of less than 5 percent. Most of the well drained soils in the survey area are suited to orchard crops and nursery plants. Soils in low areas, such as depressions, lower flats, and drainageways where frost is frequent and air drainage is poor, generally are poorly suited to early vegetables, small fruits, and orchard crops.

The latest information about specialty crops can be obtained at the local office of the Cooperative Extension Service or the Natural Resources Conservation Service.

The nearly level and gently sloping soils in Cumberland County generally are well suited to row crops and vegetables. Most of the row crops and vegetables are grown in areas of soils in the higher landscape positions because wetness typically is a limitation of the soils in the lower landscape positions.

Some areas that are idle, wooded, or pastured have good potential for use as cropland. Crop production could be increased considerably by applying the latest technology and management practices to all of the cropland in the survey area. The information in this soil survey can facilitate the application of such technology and management practices.



Figure 4.—An area of Sassafras sandy loam, 0 to 2 percent slopes, used to grow green peppers. This soil is considered prime farmland in Cumberland County.

Cropland

Management considerations in areas of cropland in Cumberland County include controlling erosion, installing drainage systems, improving soil fertility, applying a system of weed control, and improving tillage.

Erosion control.—Water erosion is a major concern in areas of most of the soils used for cropland in Cumberland County. It is a hazard on soils that have a slope of more than 2 percent. If erosion-reducing management practices are not employed, significant loss of the surface horizon may occur over time. As the slope increases, the hazard of erosion and the difficulty in controlling erosion also increase.

Loss of the surface layer through erosion is damaging for two reasons. First, soil productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a gravelly subsoil, such as those in the Galloway series, and on soils having a layer in or below the subsoil that limits the depth of the root zone, such as those in the Aura series. In many sloping areas of clayey soils, preparing a good seedbed is difficult because much of the original friable surface layer has been lost through erosion. Secondly, erosion on farmland results in the sedimentation of streams. Controlling erosion minimizes the pollution of water by runoff carrying plant nutrients, soil particles, and plant residue. It also helps to maintain the quality of water for municipal use, recreational activities, and fish and wildlife.

Soil Survey of Cumberland County, New Jersey

Erosion-control practices help to provide a protective surface cover, reduce the rate of runoff, and increase the rate of water infiltration (fig. 5). A cropping system that keeps a vegetative cover on the soil for extended periods helps to minimize soil loss and maintain the productive capacity of the soil. Including forage crops of grasses and legumes in the cropping system helps to control erosion in sloping areas. The legumes also add nitrogen to the soil and improve tilth.

Minimizing tillage and leaving crop residue on the surface help to increase the rate of water infiltration, reduce the runoff rate, and control erosion. These practices can be effective on most of the soils in the survey area. In the more sloping areas that are used for corn or are double cropped with soybeans, no-till farming helps to control erosion.

Terraces and diversions shorten the length of slopes and thus minimize erosion caused by runoff. They are most effective on well drained soils and less effective on wetter soils that may become excessively wet in terrace channels. Grassed waterways reduce the runoff rate and help to prevent the formation of gullies and to increase the rate of water infiltration.

Contour farming and contour stripcropping help to control erosion on many of the soils in the survey area. They are best suited to soils that have smooth, uniform slopes.

Information about erosion-control measures for each kind of soil is available at the local office of the Natural Resources Conservation Service.

Water management.—Water management involves improving soil drainage and retaining soil moisture.

Excessive wetness is a management concern on cropland in Cumberland County. Wet soils limit equipment use and crop selection. They are poorly aerated and slower to warm in the spring than better drained soils, and the crops grown on these soils are often susceptible to disease and pest management problems. Somewhat poorly



Figure 5.—A grassed waterway in an area of Woodstown sandy loam, 2 to 5 percent slopes. Grassed waterways help to control erosion and increase the retention of nutrients and pesticide residue associated with eroded soil particles.

drained and poorly drained soils are so wet that many crops are damaged during most years unless a drainage system is installed.

The design of both surface and subsurface drainage systems varies according to the kind of soil. A combination of surface drains and tile drains is generally needed in more intensively row cropped areas of the somewhat poorly drained soils. Drains should be installed at closer intervals in the more slowly permeable soils than in the more rapidly permeable soils.

Managing drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Tidal areas are subject to daily tidal flooding. Flash flooding as a result of intensive rainfall can occur on flood plains at any time of the year.

Soil fertility.—The soils in Cumberland County generally are low in natural fertility and are naturally acid. Additions of lime and fertilizer are needed for the production of most crops.

The liming requirement is a major concern in areas of cropland. The acidity level in a soil affects the availability of many nutrients to plants and the activity of beneficial bacteria. Lime neutralizes exchangeable aluminum in the soil and thus counteracts the adverse effects of high levels of aluminum on many crops. Liming adds calcium (from calcitic lime) or calcium and magnesium (from dolomitic lime) to the soil. A soil test is a guide to what amount and kind of lime should be used. The desired pH levels may differ, depending on the soil properties and the crop to be grown.

Nitrogen fertilizer is required for most crops. It is generally not required, however, for clover, in some rotations of soybeans, and for alfalfa that is established. Soil tests can indicate the need for phosphorus and potassium fertilizer. Phosphorus and potassium can build up in the soil if applications of these nutrients exceed crop demands.

Weed control.—Applying herbicides for weed control is a common practice on cropland in Cumberland County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as organic matter content and texture of the surface layer, affect the rate of herbicide application. Estimates of both of these properties were determined for the soils in this survey area and are provided in tables 18 and 19.

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

Tilth.—Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils that have good tilth are granular and porous. Some of the soils in the survey area that are used for crops have a light colored surface layer of sandy loam and a low content of organic matter. Generally, the structure of these soils is weak. Regular additions of crop residue, manure, and other organic material can improve soil structure.

Severely eroded, clayey soils become cloddy if they are plowed outside a narrow range of moisture content. Fall plowing of these soils generally results in better tilth in spring. Other soils in the county have poor tilth because of the gravel in the surface layer. The content and size of the pebbles affect the use of tillage implements.

Pasture and Hayland

Most of the pasture and hayland in the county supports a mixture of grasses and legumes. Most of the hay is grown in rotation with pasture. The harvested hay commonly is rolled into large, round bales or is used as grass silage.

A successful livestock enterprise depends on a forage program that provides large quantities of good-quality feed. In most areas of hayland and pasture in Cumberland County, renovation, brush control, and measures that help to prevent overgrazing are needed.

The soils in the survey area vary widely in their ability to produce grasses and legumes because of differences in such properties as depth to a limiting layer, drainage, and available water capacity. The forage species selected for planting should be appropriate for the soil.

The nearly level and gently sloping, well drained soils are well suited to the highest producing crops, such as corn, alfalfa, or a mixture of alfalfa and orchardgrass or orchardgrass and timothy. Sod-forming grasses, such as tall fescue and orchardgrass, help to minimize erosion in the steeper areas. Alfalfa should be seeded with cool-season grasses in areas where a root-limiting layer is at a depth of at least 2 feet and the soil is well drained. The wetter soils are better suited to clover-grass mixtures or to pure stands of clover or grasses. Legumes can be established through renovation in areas that support sod-forming grasses.

The intended use should be considered when forage species are selected. Selected species should provide maximum quality and versatility in the forage program. Legumes generally produce higher quality feed than grasses. They should be grown to the maximum extent possible. The taller legumes, such as alfalfa and red clover, are more versatile than legumes that are used primarily for grazing, such as white clover. Orchardgrass, timothy, and tall fescue are best suited to use as hay and silage.

Tall fescue is an important cool-season grass. It is suited to a wide range of soil conditions and is grown for both pasture and hay. The growth that occurs from August through November commonly accumulates in the field and is used for grazing in late fall and in winter. For maximum production, nitrogen fertilizer should be applied during the period when the grass is accumulating. The rate of application should be based on the desired level of production.

Warm-season grasses that are planted from early April through late May help to supplement cool-season grasses. They grow well during warm periods, especially from mid-June through September, when the growth of cool-season grasses is low. Examples of warm-season grasses are switchgrass, big bluestem, indiagrass, and Caucasian bluestem.

Renovation can increase forage yields in areas that have a good stand of grass. This process involves partially destroying the sod, usually by application of herbicides, and then applying lime and fertilizer and seeding desirable forage species. Adding legumes to the stand of grass provides high-quality feed. Legumes increase summer production and transfer, or "fix," nitrogen from the air into the soil. Under growing conditions, alfalfa can fix 200 to 300 pounds of nitrogen per acre per year, red clover can fix 100 to 200 pounds, and ladino clover can fix 100 to 150 pounds. An acre of annual forage legumes, such as vetch, can fix 75 to 100 pounds of nitrogen per year.

Additional information about managing pasture and hayland can be obtained at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Ornamental Crops

The ornamental crops grown in Cumberland County include mountain laurel, rhododendron, hemlock, boxwood, Christmas trees, and other species of native trees,

shrubs, and herbaceous plants used in landscaping (fig. 6). Important Christmas tree species are Scotch pine, white spruce, blue spruce, and Norway spruce. Also grown are hybrid trees and shrubs, including holly, juniper, and yew.

Ornamental crops grow well on the well drained, loamy soils in the county. They should be protected from northwestern winds in winter, especially when the crops are on the higher landforms. The content of clay in the soil should be 15 to 30 percent for optimum ball and burlap harvesting.

Sandy soils that have a clay content of less than 15 percent are more difficult to use for ornamental species that are ball and burlap harvested. These soils do not cling together and thus ball poorly. Soils that have a clay content of more than 30 percent can only be dug when their water content is within a narrow range. Soils that are wet, in natural drainageways, or have a clay content of more than 30 percent also are difficult to use for ornamental species. They hold excess moisture around roots which results in poor growth and encourages phytophthora root disease. Sites should be selected in areas that have an adequate supply of water that can be used to spray or irrigate plants. Disturbing as little of the planting area as possible helps to prevent excessive erosion. Leaving areas between plants and between rows in permanent sod helps to control erosion and to provide a path for equipment. Planting in a grid arrangement allows easy access by equipment used for mowing and spraying.

Access roads should be carefully planned and constructed. If possible, they should not be constructed in natural drainageways, in wet areas, or where, because of the slope, the roadbed grade would be more than 10 percent. They should be surfaced or seeded with perennial vegetation as soon as possible after construction. Lime and



Figure 6.—An area of Hammonton sandy loam, 0 to 2 percent slopes, used for growing ornamental plants. This soil has a seasonal high water table at a depth of about 1.5 to 3.5 feet during most winter and early spring months. The water table, however, is generally deeper during most of the growing season.

fertilizer should be applied regularly to maintain the sod. Cut and fill slopes should be stabilized with vegetation as soon as possible.

Because of insufficient natural fertility, the soils in Cumberland County cannot quickly produce ornamentals. They are typically low in nitrogen and phosphorus and, where fertilizers have been previously applied, are often high in potassium. Some soils are too acid for ornamental crops, especially for hybrid ornamentals and some tree species. Application rates for lime and fertilizer should be determined by soil tests and by tissue analysis of the crop.

Herbicides should only be applied by banding or spot treatment. The content of organic matter, the texture of the surface layer, and the depth to a seasonal high water table affect the amount of herbicide used and the frequency of application. The effectiveness of herbicides is reduced in eroded soils that have a higher content of clay in the surface layer. Soil wetness associated with seeps and springs can also reduce the effectiveness of herbicides. These soil limitations are described under the heading "Detailed Soil Map Units."

Orchards

Orchards in Cumberland County produce several varieties of apples and peaches. The fruit is grown primarily for the fresh market and the juice market. All varieties require intensive management and high maintenance.

A uniform, sloping topography allows for good drainage. Sites that are gullied or have ravines or abrupt changes in slope should not be selected. Trees planted in soils that are wet, subject to flooding, affected by seeps, or in natural drainageways produce low yields and are more susceptible to disease. Orchards should be established near an adequate supply of water that can be used to spray or irrigate crops. The best sites are in areas of deep, well drained soils.

The layout of an orchard should include outlets for water flowing into the orchard from higher areas and for water flowing out of the orchard. Field borders and diversions that empty into grassed waterways dispose of water without causing erosion. Sod should be used between rows of trees and on all roads and erosion-control structures. It should be established as soon as possible after construction. Rows of trees should be planted on the contour and as nearly parallel to each other as possible. This arrangement helps to control erosion and allows easy access. Access roads are very important. Short or dead-end roads make access with equipment difficult, and roads with sharp turns or grades of more than 10 percent should not be constructed. Wet areas and natural drainageways should be avoided as sites for roads. If these areas are unavoidable, earth-berm water bars and culverts should be installed.

The soils in Cumberland County have insufficient natural fertility to sustain high-producing orchards. They are too acid and are typically low in nitrogen and phosphorus. Application rates for lime and fertilizer should be determined by tissue analysis of the trees and by soil analysis. Lime and fertilizer should be applied to access roads and erosion-control structures to maintain the sod.

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 land capability classification of map units in the survey area also is shown in the table.

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

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

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum (fig. 7).

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 Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if



Figure 7.—A cabbage crop in an area of Downer sandy loam, 0 to 2 percent slopes. This well drained soil has a seasonal high water table at a depth of more than 6 feet. Irrigating during hot, dry summer months helps to increase crop yields.

they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

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, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forestland, wildlife habitat, or recreation.

The acreage of soils in each capability class or subclass is shown in table 6. The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and in the yields table.

Prime Farmland and Other Important Farmlands

Table 7 lists the map units in the survey area that are considered prime farmland, unique farmland, and farmland of statewide importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Soil Survey of Cumberland County, New Jersey

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

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

About 131,153 acres in the survey area, or nearly 41 percent of the total acreage, meets the soil requirements for prime farmland.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law. About 54,174 acres, or 17 percent of the total acreage in the county, meets the soil requirements for farmland of statewide importance.

On some soils included in table 7, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Tables 8a and 8b show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste and application of sewage sludge) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (rapid infiltration of wastewater and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to a fragipan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. A water table, ponding, and flooding can hinder the application of waste.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to a fragipan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. A water table, ponding, and flooding can hinder the application of sludge.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to a fragipan affect the risk of pollution and the design and construction of the system. Slope also affects design and construction. Permeability and reaction affect performance.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to a fragipan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. A water table, ponding, and flooding can hinder the application of waste.

Forest Productivity and Management

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

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

Soils influence the distribution and growth of tree species in Cumberland County. For example, Atlantic white cedar grows well in areas of very poorly drained organic soils. Sweetgum, yellow-poplar, and red maple are adapted to grow in areas of poorly drained or very poorly drained mineral soils, such as those in the Fallsington, Mullica, and Othello series. White oak, scarlet oak, and black oak grow in areas of well drained soils that have moderate moisture content, such as those in the Chillum, Sassafras, and Downer series. Post oak, pitch pine, and chestnut oak grow in areas of soils with low moisture content, such as those in the sandy Evesboro and Lakewood series. Pitch pine is also adapted to poorly drained and very poorly drained sandy soils, such as those in the Atsion and Berryland series, which can also become droughty in the summer as the seasonal high water table is lowered. Soil serves as a reservoir for moisture, provides an anchor for roots, and supplies most of the available nutrients. These three qualities are directly or indirectly affected by organic matter content, reaction, fertility, drainage, texture, structure, depth, and landscape position.

The ability of a soil to serve as a reservoir for moisture, as measured by the available water capacity, is primarily influenced by texture, organic matter content, rooting depth, and content of rock fragments. Because of the fairly evenly distributed and abundant summer rainfall in Cumberland County, the available water capacity is a limitation affecting tree growth mainly on sandy, excessively drained or somewhat excessively drained soils, such as those in the Evesboro and Lakewood series.

The available supply of nutrients for tree growth is affected by several soil properties. Mineral horizons in the soil are important. Mineralization of humus releases nitrogen and other nutrients to plants. Calcium, magnesium, and potassium are held within the humus. Very small amounts of these nutrients are made available by the weathering of clay and silt particles. Most of the upland soils have been leached and contain only small amounts of nutrients below the surface layer. Soils that have a thin surface layer must be carefully managed during site preparation so that the surface layer is not removed or degraded.

The living plant community is part of the nutrient reservoir. The decomposition of leaves, stems, and other organic material recycles the nutrients that have accumulated in the forest ecosystem. Fire, excessive trampling by livestock, and erosion can result in the loss of these nutrients. Woodland management should include prevention of wildfires and protection from overgrazing.

In table 9, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site 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 forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Recreation

The soils of the survey area are rated in tables 10a and 10b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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

The information in tables 10a and 10b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, disposal fields, and water management.

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 ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope and depth to a fragipan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially

in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, and permeability. The soil properties that affect the growth of plants are depth to a fragipan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope is the main concern affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, and permeability. The soil properties that affect the growth of plants are depth to a fragipan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope is the main concern affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, and permeability. The soil properties that affect the growth of plants are depth to a fragipan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction, depth to a water table, ponding, depth to a fragipan, the available water capacity in the upper 40 inches, the content of salts, and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

The soils of Cumberland County are capable of supporting diverse vegetative communities and wildlife habitat. The interspersing of cropland, idle fields, and borders of hardwood and pine forest provide diverse plant communities, or “edges,” utilized by many wildlife species. Other wildlife, including small, isolated reptile and amphibian populations, require more specialized wetland habitats. Hydric soils, such as those in the Mullica, Manahawkin, Chicone, and Berryland series, can support the unique vegetation and habitat needed for these wildlife species.

The wildlife populations in Cumberland County can be maintained or increased through careful land-use planning, improvement of existing habitat, habitat preservation, and continued public education. Most of the wildlife habitat in the county is privately owned; therefore, much of the initiative to maintain or improve the wildlife populations in the county ultimately depends on the cooperation and awareness of individual landowners. Public sponsored programs can provide incentives to private individuals for wildlife conservation, ensuring that adequate wildlife populations exist for the enjoyment of future generations.

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

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

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, brome grass, clover, and alfalfa.

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

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

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 pitch pine, Atlantic white cedar, red cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are blackberry, blueberry, laurel, and shadbush.

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

Shallow water areas have an average depth of less than 2 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are wetness, slope, and permeability. Examples of shallow water areas are marshes and waterfowl feeding areas.

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

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

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

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

Hydric Soils

In this section, hydric soils are defined and described. The hydric soils in the survey area are listed in table 12. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council 1995; Hurt, Whited, and Pringle 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others 1979; U.S. Army Corps of Engineers 1987; National Research Council 1995; Tiner 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species (fig. 8). Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric



Figure 8.—Hydrophytic vegetation in an area of Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded. This particular type of vegetation is specially adapted to prolonged or permanent wet soil conditions that occur in the Transquaking soil. This soil provides optimal conditions for wetland plants and has good potential for wetland wildlife habitat.

soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff 2003) and in the “Soil Survey Manual” (Soil Survey Division Staff 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” (Hurt, Whited, and Pringle 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

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 between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

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

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

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

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

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

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 13a and 13b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very

favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to a fragipan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to a fragipan, and the amount and size of rock fragments.

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 soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to a fragipan, depth to a water table, ponding, flooding, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to a fragipan and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction, depth to a water table, ponding, depth to a fragipan, the available water capacity in the upper 40 inches, the content of salts, and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 14 and 15 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and disposal field areas as they apply to New Jersey regulations. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to restrictive horizons, and flooding affect absorption of the effluent. Stones, ice, and restrictive horizons interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas. These ratings are based on soil parameters that are not specific to any particular state but were developed to provide general suitability throughout the United States.

Some soils are underlain by loose sand and gravel at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

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. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to restrictive horizons, flooding, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper

functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if the water table is high enough to raise the level of sewage in the lagoon or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope and restrictive horizons can cause construction problems. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over the restrictive horizon to make land smoothing practical.

Table 15 provides ratings for sewage disposal field areas based on New Jersey regulations regarding on-lot sewage disposal systems. *Disposal field* refers to areas where sewage effluent is discharged into the ground for additional treatment and disposal (New Jersey Department of Environmental Protection 1999). In this process, most of the suspended solids in the effluent are retained in the septic tank. The septic tank effluent, now much lower in suspended solids, is further treated in the soil, both by physical filtering and by biological treatment, mainly by bacteria. The treated effluent is disposed of through downward movement through the soil or through lateral (horizontal) movement in soil layers above hydraulically restrictive layers. The soil is evaluated from the surface to a depth of 300 centimeters, or about 10 feet. Soil data maintained by the Natural Resources Conservation Service, U.S. Department of Agriculture, is for soil material to a depth of only 203 cm, or 80 inches, and soil properties are evaluated to this depth. Ratings provided in table 15 are based on the soil properties that affect the absorption of the effluent, construction, and pollution of ground water and surface water. Zone of saturation (an apparent or a perched water table), permeability, a restrictive horizon and the substratum, and the percentage of coarse fragments affect the absorption and treatment of the effluent.

Because of public health concerns, depth to the zone of saturation is a major factor in determining soil suitability for disposal field areas. A limited depth to the zone of saturation limits the ability of the soil to remove pathogens, nutrients, and other waste components and increases the risk of ground-water contamination.

Massive bedrock and hydraulically restrictive or slowly permeable horizons or substrata can slow downward movement of sewage effluent. The effluent can build up, or "mound," causing prolonged saturated conditions. Lateral seepage of untreated or minimally treated effluent may result, creating a greater risk of surface-water contamination.

Very rapid permeability associated with fractured bedrock or excessively coarse horizons or substrata may not provide adequate filtering capability for effective treatment of effluent, resulting in ground-water contamination.

Following are brief descriptions of the primary disposal system types permitted in New Jersey.

Conventional installation type (C).—The disposal bed or individual disposal trench is installed in an excavated area of natural soil.

Soil replacement type.—The disposal bed or individual disposal trench is installed on top of or in suitable fill material that was added to an excavated area that is below the original soil surface. In a bottom-lined soil replacement installation, or SRB, the fill material underlies the disposal field only. In a fill-enclosed soil replacement installation, or SRE, it underlies the disposal field and is added along the sides of the disposal bed.

Mound installation type (M).—The disposal field is installed in suitable fill material that has been mounded above the original soil surface.

Interceptor drain (C drain).—Although not an actual type of disposal system, interceptor drains are installed in sloping areas to intercept laterally moving ground water that is perched above a hydraulically restrictive horizon. The drains are installed

in areas higher on the landscape and along the sides of disposal systems in order to reduce the amount of perched water entering the disposal system and thereby increase the functionality of the system.

Since these different types of disposal systems are used for various soil and site conditions, refer to NJAC 7: 9A, "Standards for Individual Subsurface Sewage Disposal Systems," for more detailed and specific explanations, definitions, and requirements for each of these systems and further explanation of the New Jersey suitability classes described in the following paragraphs (New Jersey Department of Environmental Protection 1999).

The Roman numerals I, II, and III in the codes are indicative of the severity of the limitation (I is least limiting, and III is most limiting). In general, the severity of a limitation increases as the depth to the limiting condition decreases.

Water table refers to a saturated zone in the soil. The code *Wr* refers to a regional water table, and the code *Wp* refers to a perched water table.

The term "horizon" refers to a layer of soil or rock material in a soil boring or pit that differs from the layers of soil above and below it in one or more soil morphological characteristics, including color, texture, content of rock fragments, structure, consistence, and redoximorphic features. The code *Hc* refers to an excessively coarse textured horizon, and the code *Hr* refers to a hydraulically restrictive horizon.

The term "substratum" refers to the part of the soil below the solum where soil formation processes are generally not significant. It is the deepest layer of soil or rock material observed in a soil boring or pit. The upper boundary of the layer is visible, but the lower boundary is undetermined. The layer is expected, however, to extend through the required depth of evaluation (10 feet). The code *Sc* refers to an excessively coarse textured layer, and the code *Sr* refers to a hydraulically restrictive layer.

Construction Materials

Tables 16a and 16b give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 16a, only the likelihood 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 Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good*, *fair*, or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good*, *fair*, or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of salts; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

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 whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by depth to a 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 AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

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. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to a fragipan, and toxic material.

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

Water Management

Table 17 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of organic matter or salts. 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 a restrictive layer affects the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained 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 particle-size distribution, plasticity, and compaction characteristics.

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

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 18 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

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

Classification of the soils is determined according to the Unified soil classification system (ASTM 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-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, CL-ML.

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 particle-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 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

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

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

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

Physical Properties

Table 19 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In table 19, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In table 19, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 19, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil

properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $1/3$ - or $1/10$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each 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. Depending on soil texture, a bulk density of more than 1.4 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 (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. 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.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 19, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) 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 and on soil structure

and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 20 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory

analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete. Salinity does not affect most of the soils in Cumberland County. Appoquinimink, Broadkill, Mispillion, Pawtuck, and Transquaking are the only soils in which estimated soluble salt levels can be provided. Seawater is the source of salinity in these soils.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure. Since nearly all of the soils in Cumberland County do not have significant free salts, the sodium adsorption ratio is generally insignificant.

Soil Features

Table 21 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are a fragipan and dense layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for 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 the 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 to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution,

acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete 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 also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 22 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, 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 high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 22 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area 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, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

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 little or no horizon development.

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.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff 1999, 2003). 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 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

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; type of saturation; 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 Fragiudults (*Fragi*, meaning presence of a fragipan with an upper boundary, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup 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 taxonomic class. 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 Fragiudults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, siliceous, semiactive, mesic Typic Fragiudults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example is the Aura soil series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff 2003). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

For soils listed as minor components in the "Detailed Soil Map Units" section but not included in this section, the soil series pedon description and range in characteristics are available on the Internet at <<http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi>>.

Appoquinimink Series

Drainage class: Very poorly drained

Permeability: Moderate

Landscape: Coastal plain

Landform: Tidal flats

Parent material: Loamy fluviomarine deposits over herbaceous organic material

Slope: 0 to 1 percent

Taxonomic class: Fine-silty, mixed, active, nonacid, mesic Thapto-Histic Sulfaquents

Typical Pedon

Appoquinimink mucky silt loam, in an area of Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded, in Cape May County, New Jersey; 1.8 miles west of South Dennis, 2,300 feet southwest of a boat ramp on Dennis Creek at the end of Jakes Landing Road, and 300 feet west and 400 feet north of Dennis Creek, at a sharp bend in the creek, in a tidal marsh; USGS Woodbine topographic quadrangle; lat. 39 degrees 10 minutes 32 seconds N. and long. 74 degrees 51 minutes 32 seconds W.

Ag—0 to 12 inches; very dark gray (5Y 3/1) mucky silt loam; massive; friable; slightly sticky, slightly plastic; many fine roots; neutral; clear smooth boundary.

Cg—12 to 30 inches; dark gray (5Y 4/1) silt loam; massive; friable; slightly sticky, slightly plastic; neutral; abrupt smooth boundary.

Oe—30 to 70 inches; dark olive gray (5Y 3/2) mucky peat; 40 percent fiber, rubbed; neutral; abrupt smooth boundary.

C'g—70 to 90 inches; dark gray (5Y 4/1) silt loam; massive; friable; slightly sticky, slightly plastic; neutral.

Range in Characteristics

Depth to bedrock: More than 90 inches

High water table: At the surface (January to December); flooded by tidal waters twice daily

Content of rock fragments: 0 to 10 percent, by volume, in mineral layers; mostly shells and shell fragments; no rock fragments in the organic horizon

Salinity class: Moderately saline or strongly saline

Electrical conductivity: More than 8 millimhos per centimeter throughout

Reaction: Slightly acid to slightly alkaline when wet or moist; ultra acid or extremely acid within a depth of 20 inches after moist incubation

Other features: n-value typically more than 1.0 but ranges from 0.7 to more than 1.0

Ag horizon:

Color—hue of 10YR to 5GY, value of 2 to 4, and chroma of 1 or 2 or is neutral with value of 2 to 4

Texture—mucky silt loam, silt loam, or silty clay loam

Content of organic matter—5 to 15 percent

Cg horizon:

Color—hue of 10YR to 5GY, value of 2 to 6, and chroma of 1 or 2 or is neutral with value of 2 to 6

Texture—silt loam, silty clay loam, or mucky silt loam

Content of organic matter—1 to 10 percent

O horizon:

Color—hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 1 to 4 or is neutral with value of 2 to 5

Type of organic material—muck or mucky peat (sapric or hemic soil materials); fiber content after rubbing ranges from 5 to 50 percent of the soil volume

Content of mineral material—10 to 70 percent, by weight; lenses of silt, silt loam, or very fine sand occasionally occur throughout the organic layers

C'g horizon:

Color—hue of 10YR to 5GY, value of 2 to 6, and chroma of 1 or 2 or is neutral with value of 2 to 6

Texture—silt loam, mucky silt loam, loam, very fine sandy loam, fine sandy loam, or sandy loam

Content of organic matter—1 to 10 percent; thin lenses of organic soil material less than 8 inches thick in some pedons

Atsion Series

Drainage class: Poorly drained (fig. 9)

Permeability: Rapid

Landscape: Coastal plain

Landform: Flats and drainageways

Parent material: Sandy fluviomarine deposits

Slope: 0 to 2 percent

Taxonomic class: Sandy, siliceous, mesic Aeric Alaquods

Typical Pedon

Atsion sand, in an area of Atsion sand, 0 to 2 percent slopes, rarely flooded, in Cumberland County, New Jersey; 0.3 mile west of the intersection of Sherman Avenue and Mays Landing Road to an electric transmission line, 1,200 feet south along the transmission line, and 50 feet east of a pole, in a wooded area; USGS Five Points topographic quadrangle; lat. 39 degrees 24 minutes 47 seconds N. and long. 74 degrees 58 minutes 35 seconds W.

Oi—0 to 2 inches; dark reddish brown (5YR 3/2) peat; moderate medium granular structure; very friable; many fine roots; extremely acid; abrupt smooth boundary.

A—2 to 4 inches; black (10YR 2/1) sand; weak medium granular structure; very friable; nonsticky, nonplastic; common fine and medium roots; extremely acid; clear wavy boundary.

- E—4 to 26 inches; gray (10YR 6/1) sand; single grain; loose; nonsticky, nonplastic; few medium roots; extremely acid; abrupt smooth boundary.
- Bh—26 to 34 inches; dark reddish brown (5YR 2.5/2) sand; massive; very firm; nonsticky, nonplastic; weakly cemented; coated sand grains; very strongly acid; gradual irregular boundary.
- Cg1—34 to 46 inches; light brownish gray (10YR 6/2) sand; single grain; loose; nonsticky, nonplastic; very strongly acid; gradual smooth boundary.
- Cg2—46 to 51 inches; pinkish gray (7.5YR 6/2) sand; single grain; loose; nonsticky, nonplastic; very strongly acid; gradual smooth boundary.
- Cg3—51 to 80 inches; light brownish gray (10YR 6/2) sand; single grain; loose; nonsticky, nonplastic; very strongly acid.

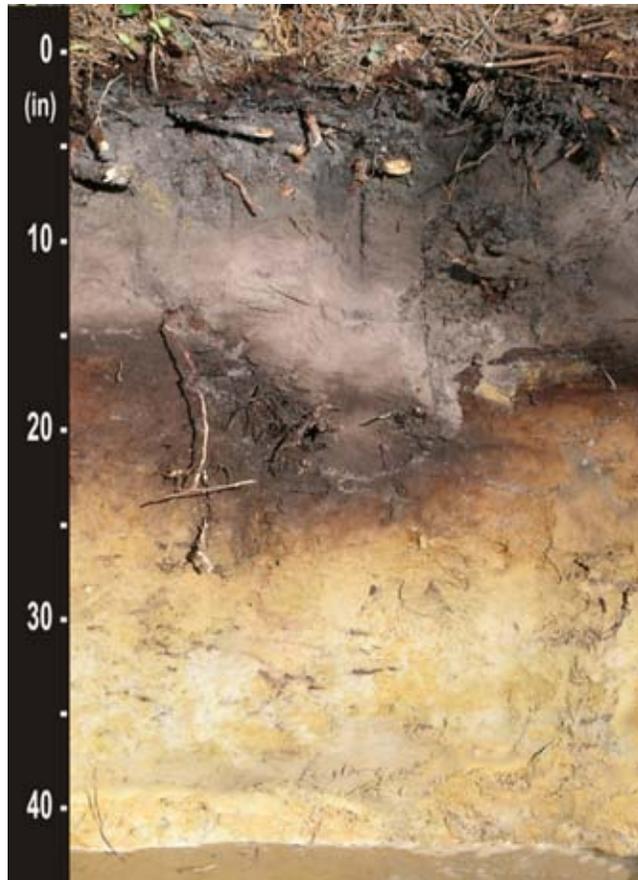


Figure 9.—A profile of an Atsion soil. These poorly drained soils formed in sandy fluviomarine sediments. They are on flats and in drainageways.

Range in Characteristics

Depth to bedrock: More than 80 inches

Seasonal high water table: Within a depth of 12 inches

Depth to spodic horizon: 16 to 40 inches

Content of rock fragments: 0 to 10 percent, by volume, in the A, E, and B horizons and 0 to 20 percent in the C horizon

Reaction: In unlimed areas, extremely acid or very strongly acid throughout the profile

O horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic soil material—peat

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2 or is neutral with value of 2 to 4

Texture—sand

E horizon:

Color—hue of 5YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture—sand

Bh horizon:

Color—hue of 5YR or 7.5YR, value of 2 or 3, and chroma of 2 to 4

Texture—sand or loamy sand

Cg horizon:

Color—hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 1 or 2 or is neutral with value of 3 to 6

Texture of the fine-earth fraction—sand or loamy sand

Redoximorphic features (if they occur)—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Aura Series

Drainage class: Well drained

Permeability: Moderately slow to rapid

Landscape: Coastal plain upland

Landform: Knolls and low hills

Parent material: Loamy alluvium or gravelly old alluvium, or both

Slope: 0 to 5 percent

Taxonomic class: Coarse-loamy, siliceous, semiactive, mesic Typic Fragiudults

Typical Pedon

Aura sandy loam, in an area of Aura sandy loam, 2 to 5 percent slopes, in Gloucester County, New Jersey; 0.5 mile northeast of Bluebell from the intersection of Victoria Avenue and Tuckahoe Road, in a cultivated field; USGS Buena topographic quadrangle; lat. 39 degrees 34 minutes 23 seconds N. and long. 74 degrees 58 minutes 10 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 3/4) sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many fine and medium roots; extremely acid; abrupt smooth boundary.

Bt1—8 to 13 inches; strong brown (7.5YR 5/6) coarse sandy loam; 1 percent fine faint strong brown (7.5YR 4/6) and 1 percent medium distinct very pale brown (10YR 7/4) mottles; weak medium subangular blocky structure; friable; many fine roots; 30 percent distinct clay bridging between sand grains; 5 percent rounded fine to coarse quartzite fragments; extremely acid; gradual wavy boundary.

Bt2—13 to 22 inches; strong brown (7.5YR 5/6) coarse sandy loam; 1 percent medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; many fine roots; 30 percent distinct clay bridging between sand grains; 10 percent rounded fine to coarse quartzite fragments; extremely acid; clear smooth boundary.

2Btx1—22 to 28 inches; yellowish red (5YR 4/6) gravelly coarse sandy loam; 1 percent fine faint strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; common fine roots in cracks; 10 percent distinct clay films on surfaces along pores and 70 percent distinct clay bridging between sand grains; 20 percent rounded fine to coarse quartzite fragments; very strongly acid; clear wavy boundary.

2Btx2—28 to 44 inches; yellowish red (5YR 4/6) and red (2.5YR 4/6) gravelly sandy clay loam; 5 percent medium distinct red (2.5YR 4/8) mottles; weak coarse subangular blocky structure; firm; common fine roots in cracks; 70 percent continuous distinct clay bridging between sand grains; 20 percent rounded fine to coarse quartzite fragments; very strongly acid; gradual wavy boundary.

2Btx3—44 to 59 inches; red (2.5YR 4/6) gravelly sandy clay loam; weak coarse subangular blocky structure; firm; 70 percent continuous distinct clay bridging

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between sand grains; 20 percent rounded fine to coarse quartzite fragments; very strongly acid; gradual wavy boundary.
2C—59 to 80 inches; yellowish red (5YR 4/8) gravelly loamy coarse sand; massive; very firm; 20 percent rounded fine to coarse quartzite fragments; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Depth to the fragipan: 15 to 40 inches

Depth to lithologic discontinuity (if it occurs): 15 to 40 inches to coarser textured materials

Silt content above the lithologic discontinuity: 20 to 45 percent

Silt content below the lithologic discontinuity: Less than 20 percent

Depth to the seasonal high water table: More than 72 inches

Content of rock fragments: 0 to 20 percent, by volume, in the A, E, and Bt horizons; 10 to 50 percent in the Btx horizon; and 0 to 50 percent in the C horizon; mostly rounded quartzite gravel and none to few rounded igneous and metamorphic pebbles and cobbles

Reaction: In unlimed areas, extremely acid or very strongly acid throughout

Other features: Thin microsequence of A, E, and Bh horizons (micropodzol) typical in pedons in wooded areas; total thickness of the A, E, and Bh microsequence less than 6 inches and that of the individual horizons less than 2 inches

O horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic material—slightly decomposed to highly decomposed plant material

A horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 1 to 4

Texture of the fine-earth fraction—loamy sand, coarse sandy loam, sandy loam, or loam

Ap horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4

Texture of the fine-earth fraction—loamy sand, coarse sandy loam, sandy loam, or loam

BE or E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 to 6

Texture of the fine-earth fraction—loamy sand, coarse sandy loam, sandy loam, or loam

Bh horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 6

Texture of the fine-earth fraction—loamy sand, coarse sandy loam, sandy loam, or loam

BA horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8

Texture of the fine-earth fraction—coarse sandy loam, sandy loam, or loam

Mottles—discontinuous bands, patches, or variegations in shades of brown or red

Bt horizon:

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—coarse sandy loam, sandy loam, loam, or sandy clay loam

Mottles—none to few discontinuous bands, patches, or variegations in shades of brown or red

2Btx or Btx horizon:

Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—coarse sandy loam, sandy loam, or sandy clay loam

Mottles—few to common discontinuous bands, patches, or variegations in shades of brown or red

2BC or BC horizon (if it occurs):

Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—coarse sandy loam, sandy loam, loam, or sandy clay loam; commonly stratified

Mottles—few to common discontinuous bands, patches, or variegations in shades of brown or red

2C or C horizon:

Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—sand, loamy sand, loamy coarse sand, coarse sandy loam, sandy loam, or sandy clay loam; commonly stratified

Mottles—few to common discontinuous bands, patches, or variegations in shades of brown or red

Berryland Series

Drainage class: Very poorly drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Flats, depressions, and drainageways

Parent material: Sandy fluviomarine deposits

Slope: 0 to 2 percent

Taxonomic class: Sandy, siliceous, mesic Typic Alaquods

Typical Pedon

Berryland sand, in an area of Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded, in Cape May County, New Jersey; 0.6 mile east of Cedar Swamp Creek on Tuckahoe Road, 0.3 mile southeast on Butter Road to a power line, and 1,200 feet south along the power line, in a wooded area; USGS Marmora topographic quadrangle; lat. 39 degrees 15 minutes 10 seconds N. and long. 74 degrees 41 minutes 31 seconds W.

Ag—0 to 11 inches; very dark gray (10YR 3/1) sand; weak fine granular structure; very friable; nonsticky, nonplastic; many fine roots; 5 percent rounded fine to coarse quartzite fragments; extremely acid; clear wavy boundary.

Bh—11 to 19 inches; dark reddish brown (5YR 3/2) sand; massive; firm; nonsticky, nonplastic; common fine roots; organic stains on sand and gravel; extremely acid; clear irregular boundary.

Bg—19 to 32 inches; gray (5Y 6/1) sand; single grain; loose; nonsticky, nonplastic; few fine roots; 15 percent medium distinct irregular pale yellow (5Y 8/3) masses that have accumulations of iron and manganese oxide with diffuse boundaries throughout; 5 percent rounded fine to coarse quartzite fragments; very strongly acid; clear wavy boundary.

B'h—32 to 40 inches; dark reddish brown (5YR 2/2) sand; single grain; firm; nonsticky, nonplastic; few fine and medium roots; 12 percent rounded fine to coarse quartzite fragments; extremely acid; abrupt wavy boundary.

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Cg1—40 to 44 inches; gray (10YR 6/1) sand; single grain; loose; nonsticky, nonplastic; very strongly acid; abrupt wavy boundary.

Cg2—44 to 80 inches; gray (10YR 6/1) stratified sand to sandy loam; single grain; loose; nonsticky, nonplastic; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Seasonal high water table: Within a depth of 6 inches

Depth to spodic horizon: 10 to 16 inches

Content of rock fragments: 0 to 14 percent, by volume, throughout the profile; mostly rounded quartzite gravel; Bh horizon may contain firm nodules ranging from noncemented to strongly cemented and from hard to very hard when dry

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

O horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 to 3

Type of organic material—mucky peat or muck; a thin surface layer of peat in some pedons

A, Ag, or Ap horizon:

Color—hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 1 or 2 or is neutral with value of 2 or 3

Texture—coarse sand, sand, fine sand, or loamy sand; thin surface layer with mucky or peaty texture modifiers in some pedons

Eg horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2 or is neutral with value of 5 or 6

Texture—coarse sand, sand, fine sand, or loamy sand

Bh horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 to 4

Texture—loamy sand or sand

Bg horizon:

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3 or is neutral with value of 4 to 6

Texture—loamy sand or sand

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Note—in some pedons the Bg horizon underlain by one or more Bh horizons that have the same range in color, structure, and rupture resistance as previously described; these Bh horizons outside the range for the series

Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3

Texture—generally sand or loamy sand and below a depth of 40 inches commonly stratified with finer textured material

Broadkill Series

Drainage class: Very poorly drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Tidal flats

Soil Survey of Cumberland County, New Jersey

Parent material: Loamy marine deposits

Slope: 0 to 1 percent

Taxonomic class: Fine-silty, mixed, active, nonacid, mesic Typic Sulfaquents

Typical Pedon

Broadkill silt loam, in an area of Broadkill silt loam, 0 to 1 percent slopes, very frequently flooded, in Cumberland County, New Jersey; about 1,300 feet north of the bridge over the Maurice River at Mauricetown, 200 feet northwest of the river, in a tidal marsh; USGS Port Elizabeth topographic quadrangle; lat. 39 degrees 17 minutes 23 seconds N. and long. 74 degrees 59 minutes 18 seconds W.

Oe—0 to 6 inches; weak red (2.5YR 4/2) mucky peat; 25 percent fiber, rubbed; neutral; abrupt smooth boundary.

Ag—6 to 10 inches; very dark gray (10YR 3/1) silt loam; massive; very friable; slightly sticky, slightly plastic; many fine roots; neutral; gradual smooth boundary.

Cg1—10 to 30 inches; dark gray (5YR 4/1) silt loam; massive; friable; slightly sticky, slightly plastic; neutral; clear smooth boundary.

Cg2—30 to 45 inches; very dark gray (5YR 3/1) silty clay loam; massive; friable; moderately sticky, moderately plastic; neutral; clear smooth boundary.

2Cg—45 to 72 inches; dark gray (5Y 4/1) sandy loam; massive; friable; slightly sticky, slightly plastic; neutral.

Range in Characteristics

Depth to bedrock: More than 72 inches

High water table: At the surface (January to December); flooded by tidal waters twice daily

Depth to underlying organic layers: More than 40 inches

Content of rock fragments: None within a depth of 40 inches; 0 to 5 percent, by volume, below a depth of 40 inches

Electrical conductivity: More than 16 millimhos per centimeter throughout

Reaction: Slightly acid to slightly alkaline when wet or moist; ultra acid or extremely acid within a depth of 20 inches after moist incubation

Other features: In many pedons jarosite mottles form when soil material exposed; n-value 0.7 or more to a depth of 40 inches; n-value varies below a depth of 40 inches

O horizon:

Color—hue of 7.5YR to 5Y, value of 2 to 4, and chroma of 1 or 2

Type of organic material—mucky peat or peat (commonly, more than 60 percent of the soil volume consists of live roots and stems)

Ag horizon:

Color—hue of 5YR to 5BG, value of 2 to 4, and chroma of 1 or 2 or is neutral with value of 2 to 4

Texture—silt loam, silty clay loam, silty clay, or the mucky analogs of those textures

Content of organic matter—2 to 12 percent

Cg horizon:

Color—hue of 5YR to 5BG, value of 2 to 7, and chroma of 1 or 2 or is neutral with value of 2 to 7

Texture within a depth of 40 inches—dominantly silt loam or silty clay loam; thin lenses of organic or coarse textured soil materials in some pedons

Texture below a depth of 40 inches—silty clay loam, silt loam, loam, sandy loam, loamy sand, or sand

Chicone Series

Drainage class: Very poorly drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Flood plains

Parent material: Silty alluvium over organic woody material (fig. 10)

Slope: 0 to 1 percent

Taxonomic class: Coarse-silty, mixed, active, acid, mesic Thapto-Histic Fluvaquents

Typical Pedon

Chicone silt loam, in an area of Chicone silt loam, 0 to 1 percent slopes, frequently flooded, in Salem County, New Jersey; near Cohansey, 400 feet north of the intersection of Cobbs Mill Road and Cool Run Road and 300 feet east of Cobbs Mill Road, in a wooded area; USGS Alloway topographic quadrangle; lat. 39 degrees 33 minutes 00 seconds N. and long. 75 degrees 18 minutes 37 seconds W.

A—0 to 5 inches; brown (7.5YR 4/3) silt loam; moderate fine granular structure; friable; slightly sticky, slightly plastic; many fine and medium roots; 1 percent fine prominent irregular yellowish red (5YR 4/6) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; 1 percent fine faint irregular brown (7.5YR 4/2) iron depletions with clear boundaries throughout; moderately acid; abrupt smooth boundary.

Cg1—5 to 20 inches; dark brown (7.5YR 3/2) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common fine roots; 1 percent fine distinct irregular brown (7.5YR 4/4) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; moderately acid; abrupt smooth boundary.

Cg2—20 to 28 inches; dark brown (7.5YR 3/2) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; few fine roots; moderately acid; abrupt smooth boundary.

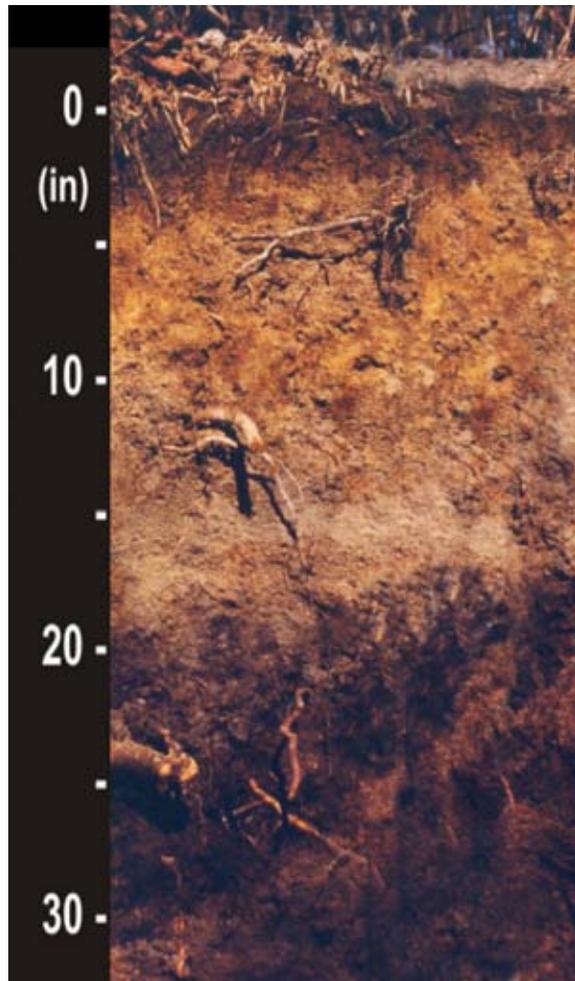


Figure 10.—A profile of a Chicone soil. These very poorly drained soils are on flood plains.

Soil Survey of Cumberland County, New Jersey

Oe—28 to 65 inches; black (10YR 2/1) mucky peat; massive; 20 percent fiber, rubbed; moderately acid; gradual smooth boundary.

C'g—65 to 80 inches; gray (10YR 6/1) sand; single grain; loose; strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Seasonal high water table: Within a depth of 6 inches

Content of rock fragments: 0 to 1 percent, by volume, in the O horizon; 0 to 2 percent in the A and Cg horizons; and 0 to 20 percent in the C'g horizon; mostly rounded quartzite gravel

Depth to buried organic soil material: 16 to 40 inches

Reaction: Extremely acid to strongly acid

A horizon:

Color—hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 to 3

Texture—mucky silt loam, mucky loam, or silt loam

Cg horizon:

Color—hue of 10YR or 7.5YR, value of 2 to 5, and chroma of 1 or 2 or is neutral with value of 2 to 5

Texture—loam, silt loam, or mucky silt loam; thin layers of sandy loam or loam in some pedons

Oa or Oe horizon:

Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or is neutral with value of 2 to 4

Type of organic material—muck or mucky peat; mineral material content, by weight, ranges from 20 to 40 percent

C'g horizon:

Color—hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture of the fine-earth fraction—sand or loamy sand; thin layers of silt loam or loam in some pedons

Chillum Series

Drainage class: Well drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Upland terraces and broad ridges

Parent material: Silty eolian deposits over loamy marine deposits

Slope: 0 to 5 percent

Taxonomic class: Fine-silty, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Chillum silt loam, in an area of Chillum silt loam, 2 to 5 percent slopes, in Salem County, New Jersey; 0.63 mile southeast of the intersection of Aldine-Pole Tavern Road and Doretown Shirley Road and 0.43 mile northwest of the intersection of Bridgeston Pole Tavern Road and Newkirk Station Road, in a cultivated field; USGS Elmer topographic quadrangle; lat. 39 degrees 36 minutes 19 seconds N. and long. 75 degrees 14 minutes 37 seconds W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; strong medium and coarse subangular blocky structure; friable; slightly sticky, slightly plastic; common fine and medium roots; slightly acid; abrupt smooth boundary.

Soil Survey of Cumberland County, New Jersey

- Bt1—10 to 15 inches; strong brown (7.5YR 5/6) silt loam; moderate medium and coarse subangular blocky structure; friable; slightly sticky, slightly plastic; common fine roots; 10 percent faint clay films; slightly acid; clear smooth boundary.
- Bt2—15 to 28 inches; strong brown (7.5YR 4/6) silt loam; moderate medium and coarse subangular blocky structure; friable; moderately sticky, moderately plastic; common fine roots; 10 percent faint clay films; very strongly acid; clear smooth boundary.
- Bt3—28 to 34 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common fine roots; 30 percent faint clay films; very strongly acid; clear smooth boundary.
- Bt4—34 to 38 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; very friable; slightly sticky, slightly plastic; common fine roots; 10 percent faint clay films; very strongly acid; clear smooth boundary.
- 2C1—38 to 61 inches; strong brown (7.5YR 5/6) sandy loam; massive; firm; nonsticky, nonplastic; 10 percent rounded fine to coarse quartzite fragments; very strongly acid; clear smooth boundary.
- 2C2—61 to 66 inches; yellowish brown (10YR 5/6) sandy loam; massive; firm; nonsticky, nonplastic; 1 percent medium prominent irregular light gray (10YR 7/2) iron depletions with diffuse boundaries throughout; 10 percent rounded fine to coarse quartzite fragments; strongly acid; clear smooth boundary.
- 3C3—66 to 72 inches; yellowish red (5YR 5/8) sand; single grain; loose; nonsticky, nonplastic; 5 percent rounded fine to coarse quartzite fragments; strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Thickness of the solum: 20 to 40 inches

Depth to the seasonal high water table: More than 72 inches

Depth to lithologic discontinuity (if it occurs): 15 to 40 inches to coarser textured materials

Content of rock fragments: 0 to 60 percent, by volume, in the A and E horizons; 0 to 1 percent in the B horizons; and 10 to 80 percent in the 2C horizons; mostly quartz pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

A horizon or Ap horizon (if it occurs):

Color—hue of 10YR, value of 3 or 4, and chroma of 1 to 3

Texture of the fine-earth fraction—silt loam or loam

E horizon (if it occurs):

Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 5

Texture of the fine-earth fraction—silt loam or loam

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6

Texture—silt loam or silty clay loam

C horizon:

Color—hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 6

Texture of the fine-earth fraction—sand, sandy loam, or loam

Downer Series

Drainage class: Well drained

Permeability: Moderately rapid and rapid

Landscape: Coastal plain

Soil Survey of Cumberland County, New Jersey

Landform: Knolls and low hills

Parent material: Loamy or gravelly fluviomarine deposits, or both

Slope: 0 to 10 percent

Taxonomic class: Coarse-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Downer loamy sand, in an area of Downer loamy sand, 0 to 5 percent slopes, in Cumberland County, New Jersey; 1,650 feet west of the intersection of Trench Road (County Road 699) and Cubby Hollow Road and 660 feet north of Trench Road, in a cultivated field; USGS Port Elizabeth topographic quadrangle; lat. 39 degrees 22 minutes 30 seconds N. and long. 74 degrees 58 minutes 35 seconds W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; nonsticky, nonplastic; many fine roots; slightly acid; abrupt smooth boundary.

BA—10 to 16 inches; yellowish brown (10YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; nonsticky, nonplastic; common fine roots; slightly acid; clear wavy boundary.

Bt—16 to 36 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; nonsticky, nonplastic; common fine roots; clay bridging between sand grains; 5 percent rounded fine to coarse quartzite fragments; moderately acid; clear wavy boundary.

C1—36 to 48 inches; yellowish brown (10YR 5/6) loamy sand; single grain; loose; nonsticky, nonplastic; common fine roots; 10 percent rounded fine to coarse quartzite fragments; very strongly acid; clear smooth boundary.

C2—48 to 72 inches; 90 percent light yellowish brown (10YR 6/4) sand and 10 percent strong brown (7.5YR 5/6) sandy loam lenses; single grain; loose; nonsticky, nonplastic; 10 percent rounded fine to coarse quartzite fragments; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Depth to the seasonal high water table: More than 72 inches

Content of rock fragments: 0 to 25 percent, by volume, throughout; mostly fine and medium quartzite pebbles, ironstone, or, less commonly, chert pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Other features: Microsequence of A, E, and Bh horizons (micropodzol) typical in undisturbed pedons; total thickness of the A, E, and Bh microsequence less than 6 inches and that of the individual horizons less than 2 inches

O horizon (if it occurs):

Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 1 or 2

Type of organic material—moderately decomposed or highly decomposed plant material

Ap or A horizon:

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4

Texture—loamy sand or sandy loam

E horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 to 6

Texture—sand, loamy sand, or sandy loam

Thickness of horizon—less than 6 inches

Bh horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 6

Texture of the fine-earth fraction—sandy loam or loamy sand

Soil Survey of Cumberland County, New Jersey

BA or BE horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture of the fine-earth fraction—sand, loamy sand, loamy coarse sand, or sandy loam

Bt horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture of the fine-earth fraction—sandy loam; thin subhorizons of sandy clay loam, loam, or loamy sand in some pedons

BC horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture of the fine-earth fraction—sand, loamy sand, or sandy loam; thin subhorizons of coarser texture material in some pedons

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 4 to 8; thin bands or variegations in shades of these colors in some pedons
Texture of the fine-earth fraction within a depth of 40 inches—sand or loamy sand; thin sandy loam strata or nodules in some pedons
Texture of the fine-earth fraction below a depth of 40 inches—sand, loamy sand, sandy loam, loam, or sandy clay loam

Evesboro Series

Drainage class: Excessively drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Knolls and low hills

Parent material: Sandy eolian deposits or sandy fluviomarine deposits, or both

Slope: 0 to 15 percent

Taxonomic class: Mesic, coated Typic Quartzipsamments

Typical Pedon

Evesboro sand, in an area of Evesboro sand, 0 to 5 percent slopes, in Cumberland County, New Jersey; 1.1 miles west of State Route 55 on Sherman Avenue to mile marker post 8 and about 100 feet south of Sherman Avenue, in Union Lake Wildlife Management Area, in a cultivated field; USGS Millville topographic quadrangle; lat. 39 degrees 26 minutes 45 seconds N. and long. 75 degrees 05 minutes 04 seconds W.

A—0 to 4 inches; grayish brown (10YR 5/2) sand; single grain; loose; nonsticky, nonplastic; common fine roots; extremely acid; clear smooth boundary.

AB—4 to 17 inches; brown (10YR 5/3) sand; single grain; loose; nonsticky, nonplastic; common fine roots; very strongly acid; gradual smooth boundary.

Bw—17 to 31 inches; yellowish brown (10YR 5/4) sand; massive; very friable; nonsticky, nonplastic; common fine and medium roots; strongly acid; gradual smooth boundary.

C—31 to 80 inches; stratified loamy sand and sand, 50 percent light yellowish brown (10YR 6/4) and 50 percent yellowish brown (10YR 5/4); single grain; loose; nonsticky, nonplastic; common very fine roots; 3 percent rounded fine to coarse quartzite fragments; strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Thickness of the solum: 10 to 48 inches

Soil Survey of Cumberland County, New Jersey

Depth to the seasonal high water table: More than 72 inches

Content of rock fragments: 0 to 25 percent, by volume, throughout the profile; mostly rounded quartzose pebbles; layers with more than 15 percent gravel generally less than 1 foot thick

Reaction: In unlimed areas, extremely acid or very strongly acid throughout the profile

Other features: Microsequence of A, E, and Bh horizons (micropodzol) typical in pedons in wooded areas; total thickness of the A, E, and Bh microsequence less than 6 inches and that of the individual horizons less than 2 inches

Note: Some pedons do not include the color of a Bw horizon but instead are AC soils; other pedons include several 1- or 2-inch loamy sand lenses that are strong brown (7.5YR 5/6), which indicate a B horizon

O horizon (if it occurs):

Type of organic soil material—slightly decomposed or moderately decomposed plant material

A or Ap horizon:

Color—hue of 10YR, value of 3 to 6, and chroma of 1 to 4

Texture—sand

AB, BA, or E horizon:

Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 6

Texture—sand

Bw horizon:

Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture—sand or loamy sand

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 to 6

Texture of the fine-earth fraction—sand, loamy sand, or stratified loamy sand and sand; includes sandy loam below a depth of 40 inches in some pedons

Fallsington Series

Drainage class: Poorly drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Flats and depressions

Parent material: Loamy fluviomarine deposits

Slope: 0 to 2 percent

Taxonomic class: Fine-loamy, mixed, active, mesic Typic Endoaquults

Typical Pedon

Fallsington mucky peat, in an area of Othello and Fallsington soils, 0 to 2 percent slopes, in Cumberland County, New Jersey; 0.4 mile southwest of Center Grove on Cedarville Road, 30 feet north of the road, in a wooded area; USGS Cedarville topographic quadrangle; lat. 39 degrees 16 minutes 40 seconds N. and long. 75 degrees 10 minutes 56 seconds W.

Oe—0 to 2 inches; dark reddish brown (5YR 2.5/2) mucky peat; moderate medium granular structure; very friable; many fine roots; extremely acid; abrupt smooth boundary.

A—2 to 5 inches; very dark brown (10YR 2/2) loam; moderate fine and medium granular structure; friable; nonsticky, nonplastic; many fine roots; 3 percent rounded fine to coarse quartzite fragments; extremely acid; clear smooth boundary.

Soil Survey of Cumberland County, New Jersey

- E—5 to 8 inches; brown (10YR 5/3) sandy loam; moderate fine and medium subangular blocky structure; friable; nonsticky, nonplastic; many fine and medium roots; 5 percent rounded fine to coarse quartzite fragments; extremely acid; clear smooth boundary.
- Btg1—8 to 14 inches; grayish brown (2.5Y 5/2) sandy loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common fine roots; 5 percent rounded fine to coarse quartzite fragments; very strongly acid; clear wavy boundary.
- Btg2—14 to 31 inches; light brownish gray (2.5Y 6/2) sandy clay loam; moderate medium subangular blocky structure; firm; moderately sticky, moderately plastic; 15 percent medium prominent irregular yellowish brown (10YR 5/8) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; 10 percent rounded fine to coarse quartzite fragments; very strongly acid; abrupt smooth boundary.
- Cg1—31 to 62 inches; light brownish gray (10YR 6/2) sand; single grain; loose; nonsticky, nonplastic; 5 percent rounded fine to coarse quartzite fragments; very strongly acid; abrupt smooth boundary.
- Cg2—62 to 80 inches; light brownish gray (10YR 6/2) gravelly sand; single grain; loose; nonsticky, nonplastic; 20 percent rounded fine to coarse quartzite fragments; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Seasonal high water table: Within a depth of 12 inches (December to May)

Content of rock fragments: 0 to 10 percent, by volume, throughout the profile; mostly rounded to subrounded gravel

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

O horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic material—peat ranging to muck

A or Ap horizon:

Color—hue of 10YR to 5Y, value of 2 to 6, and chroma of 1 to 3

Texture—sandy loam, fine sandy loam, very fine sandy loam, or loam

Eg or E horizon:

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—sandy loam, fine sandy loam, very fine sandy loam, or loam

Btg or BCtg horizon:

Color—hue of 10YR to 5Y, value of 3 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8; value of 3 or 4 limited to a depth of more than 30 inches

Texture—sandy clay loam, loam, or sandy loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

BCg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—loamy sand, sandy loam, or sandy clay loam; stratified with layers of very fine sandy loam or fine sandy loam in some pedons; buried horizons in the lower part of the substratum in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

C horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 3 or 4

Texture—sand, loamy sand, sandy loam, or sandy clay loam; stratified with layers of very fine sandy loam or fine sandy loam in some pedons; buried horizons in the lower part of the substratum in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—sand, loamy sand, sandy loam, or sandy clay loam; stratified with layers of very fine sandy loam or fine sandy loam in some pedons; buried horizons in the lower part of the substratum in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Fort Mott Series

Drainage class: Well drained

Permeability: Moderately rapid and rapid

Landscape: Coastal plain

Landform: Terraces and ridges

Parent material: Sandy eolian or fluvio-marine deposits, or both

Slope: 0 to 5 percent

Taxonomic class: Loamy, siliceous, semiactive, mesic Arenic Hapludults

Typical Pedon

Fort Mott loamy sand, in an area of Fort Mott loamy sand, 0 to 5 percent slopes, in Salem County, New Jersey; 1 mile north of the intersection of Lehigh Road and Fort Mott Road, in a cultivated field; USGS Wilmington South topographic quadrangle; lat. 39 degrees 37 minutes 34 seconds N. and long. 75 degrees 31 minutes 56 seconds W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loamy sand; single grain; loose; nonsticky, nonplastic; common fine roots; strongly acid; abrupt smooth boundary.

E—8 to 30 inches; pale brown (10YR 6/3) loamy sand; single grain; loose; nonsticky, nonplastic; common fine roots; strongly acid; clear wavy boundary.

BE—30 to 33 inches; yellowish brown (10YR 5/6) sandy loam; weak medium granular structure; very friable; nonsticky, nonplastic; very strongly acid; clear wavy boundary.

Bt—33 to 49 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; nonsticky, nonplastic; 15 percent clay bridging between sand grains and 15 percent faint clay films on faces of peds; very strongly acid; clear wavy boundary.

C—49 to 72 inches; strong brown (7.5YR 5/6) loamy sand; massive; loose; nonsticky, nonplastic; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Depth to the seasonal high water table: More than 72 inches

Content of rock fragments: 0 to 10 percent, by volume, in the A, E, and B horizons and 0 to 30 percent in the C horizon; mostly fine quartzite gravel; layers with 15 percent or more gravel generally less than 12 inches thick

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Thickness of sandy surface layer: 20 to 40 inches

Other features: Microsequence of A, E, and Bh horizons (micropodzol) typical in pedons in wooded areas; total thickness of the A, E, and Bh microsequence less than 6 inches and that of the individual horizons less than 2 inches

Note: Weighted average of clay in the particle-size control section typically 15 to 20 percent but ranges from 12 to 25 percent

O horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic material—highly decomposed to slightly decomposed plant material

A horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 1 to 3

Texture—fine sand, sand, or loamy sand

Ap horizon:

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4

Texture—fine sand, sand, or loamy sand

E or E' horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 1 to 6

Texture—loamy fine sand, sand, or loamy sand

BE horizon:

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8

Texture—loamy sand, sandy loam, or fine sandy loam

Bh horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6

Texture—loamy sand or sandy loam

Bt horizon:

Color—hue of 5YR to 10YR, value of 4 to 7, and chroma of 3 to 8

Texture—fine sandy loam, sandy loam, loam, coarse sandy loam, or sandy clay loam

BC horizon (if it occurs):

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8

Texture—loamy sand or sandy loam; thin subhorizons of sand in some pedons

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 3 to 8

Texture of the fine-earth fraction—stratified sand, fine sand, loamy coarse sand, or loamy sand; includes thin layers of sandy loam or fine sandy loam

Galloway Series

Drainage class: Somewhat poorly drained

Permeability: Rapid

Landscape: Coastal plain

Soil Survey of Cumberland County, New Jersey

Landform: Flats, terraces, and depressions

Parent material: Unconsolidated sandy marine deposits

Slope: 0 to 5 percent

Taxonomic class: Mesic, coated Aquic Quartzipsamments

Typical Pedon

Galloway loamy sand, in an area of Galloway loamy sand, 0 to 5 percent slopes, in Cumberland County, New Jersey; 0.1 mile south of the intersection of Ackley Road and Buckshutem Road on Buckshutem Road and 50 feet east of Buckshutem Road, in Edward G. Bevan Wildlife Management Area, in a cultivated field; USGS Dividing Creek topographic quadrangle; lat. 39 degrees 18 minutes 48 seconds N. and long. 75 degrees 00 minutes 34 seconds W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy sand; single grain; loose; nonsticky, nonplastic; many fine roots; slightly acid; abrupt smooth boundary.

Bw—9 to 28 inches; light yellowish brown (10YR 6/4) loamy sand; single grain; loose; nonsticky, nonplastic; 70 percent coatings of silt on sand and gravel; 1 percent fine distinct irregular brownish yellow (10YR 6/6) masses that have accumulations of iron and manganese oxide with diffuse boundaries throughout; moderately acid; clear smooth boundary.

Cg1—28 to 58 inches; pale yellow (2.5Y 8/2) gravelly sand; single grain; loose; nonsticky, nonplastic; 15 percent medium prominent irregular light yellowish brown (10YR 6/4) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; 20 percent rounded fine to medium quartzite fragments; very strongly acid; abrupt smooth boundary.

Cg2—58 to 72 inches; white (2.5Y 8/1) sand; single grain; loose; nonsticky, nonplastic; 5 percent rounded fine to coarse quartzite fragments; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Thickness of the solum: 35 to 44 inches

Depth to the seasonal high water table: 24 to 48 inches (December to April)

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Content of rock fragments: 0 to 5 percent, by volume, in the O, A, E, and B horizons and 0 to 35 percent in the C horizon; mostly fine rounded quartzite gravel

Other features: Thin microsequence of A, E, and Bh horizons in some pedons; total thickness of the microsequence less than 5 inches and that of the individual horizons less than 2 inches

O horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic material—highly decomposed to slightly decomposed plant material

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4

Texture—loamy sand or sand

E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3

Texture—loamy sand or sand

Bh horizon (if it occurs):

Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 6

Texture—loamy sand

Bw horizon:

Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 3 to 6

Redoximorphic features—iron depletions in shades of gray between depths of 24 and 40 inches and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Texture of the fine-earth fraction—loamy sand in the upper part of the profile and loamy sand or sand in the lower part

Cg horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2 or is neutral in hue and has value of 5 to 7

Redoximorphic features—iron depletions in shades of gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Texture of the fine-earth fraction—loamy sand or sand

Hammonton Series

Drainage class: Moderately well drained

Permeability: Moderately rapid and rapid

Landscape: Coastal plain

Landform: Depressions and flats

Parent material: Coarse-loamy fluviomarine deposits

Slope: 0 to 5 percent

Taxonomic class: Coarse-loamy, siliceous, semiactive, mesic Aquic Hapludults

Typical Pedon

Hammonton sandy loam, in an area of Hammonton sandy loam, 0 to 2 percent slopes, in Salem County, New Jersey; 0.8 mile southeast of the intersection of Route 130 and Perkintown Road and 200 feet southwest of Perkintown Road, in a cultivated field; USGS Marcus Hook topographic quadrangle; lat. 39 degrees 45 minutes 28 seconds N. and long. 75 degrees 26 minutes 10 seconds W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) sandy loam; moderate medium granular structure; friable; nonsticky, nonplastic; many fine roots; moderately acid; abrupt smooth boundary.

Bt1—10 to 16 inches; brownish yellow (10YR 6/6) sandy loam; moderate medium and coarse subangular blocky structure; friable; nonsticky, nonplastic; common fine roots; patchy faint clay films and patchy faint clay bridging between sand grains; moderately acid; clear smooth boundary.

Bt2—16 to 25 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; common fine roots; patchy faint clay films and patchy faint clay bridging between sand grains; very strongly acid; clear smooth boundary.

Bt3—25 to 34 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; nonsticky, nonplastic; clay bridging between sand grains; 10 percent medium prominent irregular light brownish gray (10YR 6/2) iron depletions with clear boundaries throughout; very strongly acid; clear wavy boundary.

C—34 to 58 inches; yellowish brown (10YR 5/4) sand; single grain; loose; nonsticky, nonplastic; 15 percent medium distinct irregular light brownish gray (10YR 6/2) iron depletions with clear boundaries throughout; very strongly acid; clear smooth boundary.

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Cg—58 to 72 inches; light brownish gray (10YR 6/2) sand; loose; nonsticky, nonplastic; 1 percent medium faint irregular white (10YR 8/1) iron depletions with clear boundaries throughout; 1 percent medium prominent irregular yellowish brown (10YR 5/6) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Depth to the seasonal high water table: 18 to 42 inches (December to May)

Content of rock fragments: 0 to 20 percent, by volume, in the A and B horizons and 0 to 40 percent in the C horizon; mostly quartzite pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Other features: Microsequence of A, E, and Bh horizons (micropodzol) typical in pedons in wooded areas; total thickness of the A, E, and Bh microsequence less than 6 inches and that of the individual horizons less than 2 inches

O horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 4

Type of organic material—highly decomposed to slightly decomposed plant material

A horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 3 or 4, and chroma of 1 to 4 or is neutral with value of 3 to 6

Texture—loamy sand or sandy loam

Thickness—2 to 6 inches

Ap horizon:

Color—hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 to 4 or is neutral with value of 3 to 6

Texture—loamy sand or sandy loam

BE or E horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 2 to 8

Texture—loamy sand or sandy loam

Bh horizon (if it occurs):

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 6

Texture—loamy sand or sandy loam

Bt horizon:

Color—hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 3 to 8

Texture—dominantly sandy loam; thin subhorizons of sandy clay loam or loamy sand in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Btg horizon (if it occurs):

Color—hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 7

Texture—dominantly sandy loam; thin subhorizons of sandy clay loam or loamy sand in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

BC horizon (if it occurs):

Color—hue of 7.5YR to 5Y, value of 4 to 8, and chroma of 3 to 8

Texture—loamy sand or sandy loam; thin subhorizons of sandy clay loam in some pedons

BCg horizon (if it occurs):

Color—hue of 7.5YR to 5Y, value of 4 to 8, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—loamy sand or sandy loam; thin subhorizons of sandy clay loam in some pedons

C horizon:

Color—hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 3 to 8

Texture within a depth of 40 inches—loamy sand or sand; thin strata of sandy clay loam in some pedons

Texture below a depth of 40 inches—sand, coarse sand, loamy coarse sand, loamy sand, sandy loam, loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Cg horizon:

Color—hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture within a depth of 40 inches—loamy sand or sand; thin strata of sandy clay loam in some pedons

Texture below a depth of 40 inches—sand, loamy sand, sandy loam, loam, or sandy clay loam; thin strata of sandy clay in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Lakehurst Series

Drainage class: Moderately well drained (fig. 11)

Permeability: Rapid

Landscape: Coastal plain

Landform: Flats and depressions

Parent material: Sandy fluviomarine deposits

Slope: 0 to 5 percent

Taxonomic class: Mesic, coated Aquodic Quartzipsamments

Typical Pedon

Lakehurst sand, in an area of Lakehurst sand, 0 to 5 percent slopes, in Cumberland County, New Jersey; 0.25 mile east of Willow Grove Lake to Roberts Drive, 50 feet south of Weymouth Road at the junction with Roberts Drive, in a wooded area; USGS Newfield topographic quadrangle; lat. 39 degrees 32 minutes 29 seconds N. and long. 75 degrees 03 minutes 57 seconds W.

O_i—0 to 2 inches; reddish brown (5YR 4/3) slightly decomposed plant material; many fine roots; extremely acid; abrupt smooth boundary.

A—2 to 4 inches; dark grayish brown (10YR 4/2) sand; single grain; loose; nonsticky, nonplastic; many fine roots; extremely acid; abrupt smooth boundary.

E—4 to 18 inches; gray (10YR 6/1) sand; single grain; loose; nonsticky, nonplastic; common fine and medium roots; extremely acid; clear wavy boundary.

- Bh—18 to 32 inches; strong brown (7.5YR 5/6) sand; single grain; loose; nonsticky, nonplastic; common fine and medium roots; 45 percent coatings of sand; extremely acid; clear wavy boundary.
- BC—32 to 45 inches; yellow (10YR 7/8) sand; single grain; loose; nonsticky, nonplastic; common fine roots; 45 percent coatings of sand; 1 percent medium distinct irregular grayish brown (10YR 5/2) iron depletions with clear boundaries; very strongly acid; gradual wavy boundary.
- C—45 to 54 inches; yellowish brown (10YR 5/4) sand; single grain; loose; nonsticky, nonplastic; common fine roots; 1 percent coarse distinct irregular grayish brown (10YR 5/2) iron depletions with clear boundaries throughout; very strongly acid; gradual smooth boundary.
- Cg—54 to 80 inches; gray (10YR 6/1) sand; single grain; loose; nonsticky, nonplastic; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Thickness of the solum: 30 to 50 inches

Depth to the seasonal high water table: 18 to 42 inches (January to April)

Depth to the Bh horizon: 10 to 30 inches

Content of rock fragments: 0 to 20 percent, by volume; mostly rounded quartzose pebbles; individual gravelly layers generally less than 1 foot thick

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

O horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 4

Type of organic material—highly decomposed to slightly decomposed plant material

A horizon:

Color—hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 1 or 2

Texture of the fine-earth fraction—sand or fine sand

Ap horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 1 or 2

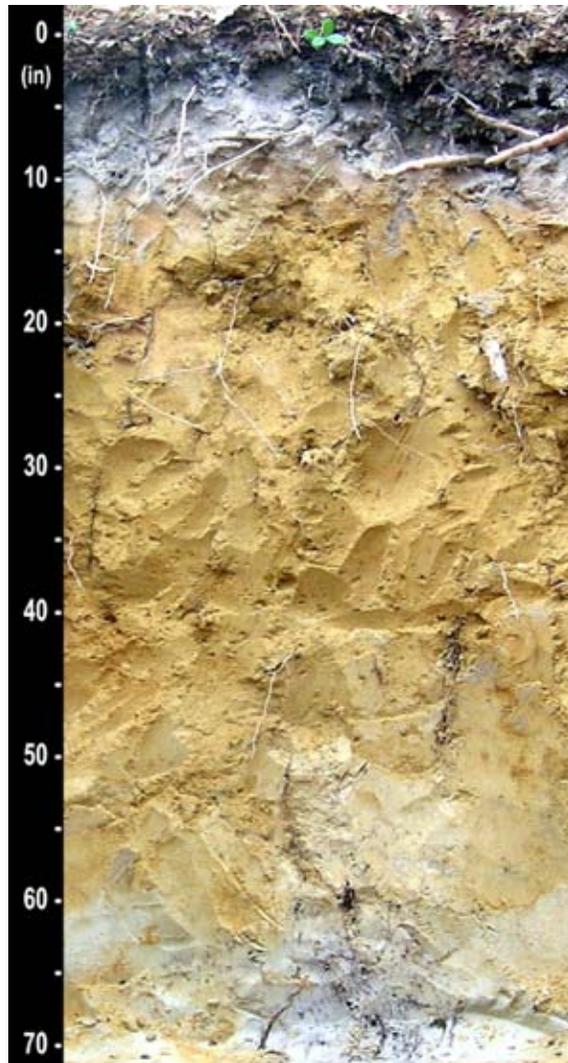


Figure 11.—A profile of a Lakehurst soil. These moderately well drained soils formed in sandy fluviomarine sediments. They are in depressions and on broad flats along streams.

Texture of the fine-earth fraction—sand or fine sand

E horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 or 2

Texture of the fine-earth fraction—sand or fine sand

Bh horizon:

Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 to 6; the redder hue and lower value and chroma restricted to discontinuous thin subhorizons in the uppermost part of the horizon

Texture—sand, loamy sand, or fine sand

BC horizon:

Color—hue of 7.5YR to 2.5YR, value of 4 to 6, and chroma of 3 to 6

Texture—sand, loamy sand, or fine sand

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 6

Texture of the fine-earth fraction within a depth of 40 inches—sand

Texture of the fine-earth fraction below a depth of 40 inches—sand to clay

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Cg horizon:

Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture of the fine-earth fraction within a depth of 40 inches—sand

Texture of the fine-earth fraction below a depth of 40 inches—sand to clay

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Lakewood Series

Drainage class: Excessively drained (fig. 12)

Permeability: Rapid

Landform: Flats and knolls

Landscape: Coastal plain

Parent material: Sandy fluviomarine deposits

Slope: 0 to 5 percent

Taxonomic class: Mesic, coated Spodic Quartzipsamments

Typical Pedon

Lakewood sand, in an area of Lakewood sand, 0 to 5 percent slopes, in Cumberland County, New Jersey; 1.1 miles east of State Highway 55 on State Route 49, about 600 feet north of State Route 49 along a dirt road, and 20 feet east of the road, in a wooded area; USGS Five Points topographic quadrangle; lat. 39 degrees 23 minutes 20 seconds N. and long. 74 degrees 59 minutes 30 seconds W.

A—0 to 3 inches; dark grayish brown (10YR 4/2) sand; single grain; loose; nonsticky, nonplastic; common fine roots; extremely acid; clear smooth boundary.

E—3 to 11 inches; light brownish gray (10YR 6/2) sand; single grain; loose; nonsticky, nonplastic; common fine and medium roots; extremely acid; clear irregular boundary.

- Bh—11 to 13 inches; brown (7.5YR 5/4) loamy sand; massive; friable; nonsticky, nonplastic; common fine and medium roots; extremely acid; clear smooth boundary.
- BC—13 to 30 inches; yellowish brown (10YR 5/6) sand; single grain; loose; nonsticky, nonplastic; common fine roots; very strongly acid; gradual smooth boundary.
- C1—30 to 46 inches; brownish yellow (10YR 6/6) sand; single grain; loose; nonsticky, nonplastic; common fine roots; very strongly acid; gradual smooth boundary.
- C2—46 to 80 inches; very pale brown (10YR 7/4) sand; single grain; loose; nonsticky, nonplastic; common fine roots; very strongly acid.

Range in Characteristics

- Depth to bedrock:* More than 80 inches
- Thickness of the solum:* 30 to 50 inches
- Depth to the seasonal high water table:* More than 60 inches
- Content of rock fragments:* 0 to 15 percent, by volume, in the A, E, and B horizons and 0 to 30 percent in the C horizon; mostly gravel
- Reaction:* In unlimed areas, extremely acid or very strongly acid throughout the profile
- Oi horizon (if it occurs):*
Type of organic material—slightly decomposed plant material, mostly leaves, needles, and twigs
- A horizon:*
Color—hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2 or is neutral with value of 1 or 2
Texture—sand or loamy sand
- Ap horizon (if it occurs):*
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2
Texture—sand or loamy sand
- E horizon:*
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

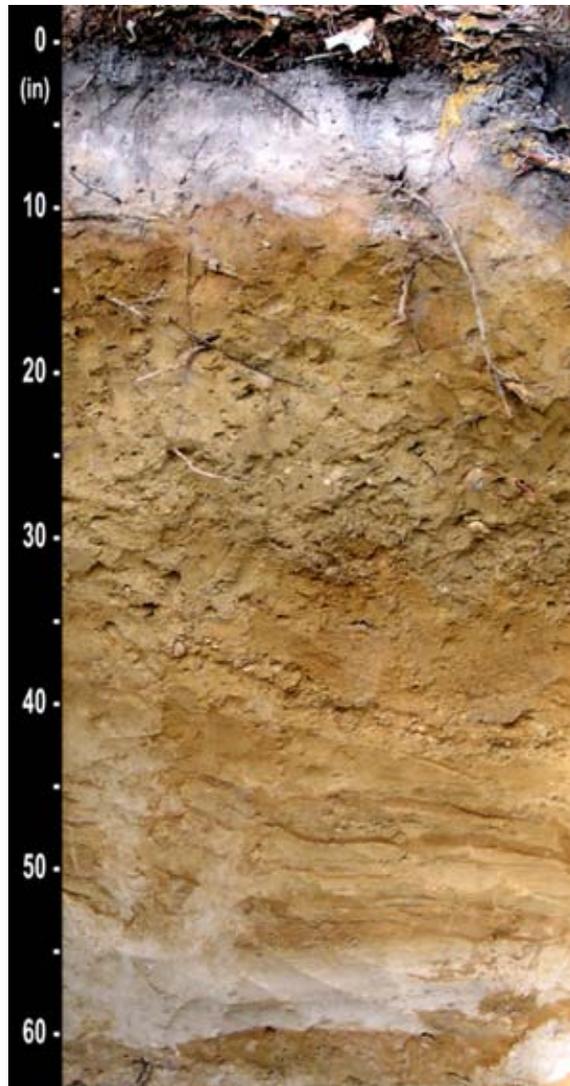


Figure 12.—A profile of a Lakewood soil. These excessively drained soils formed in sandy fluviomarine sediments. They are on flats and knolls.

Texture—sand or loamy sand

Bh horizon:

Color—hue of 10YR to 5YR, value of 4 to 6, and chroma of 3 to 8

Texture—sand or loamy sand

BC horizon:

Color—hue of 10YR to 5YR, value of 4 to 6, and chroma of 3 to 8

Texture—sand or loamy sand

C horizon:

Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8

Texture of the fine-earth fraction—sand, loamy sand, or sandy loam

Manahawkin Series

Drainage class: Very poorly drained (fig. 13)

Permeability: Rapid

Landscape: Coastal plain

Landform: Flood plains and swamps

Parent material: Organic, woody material over sandy alluvium

Slope: 0 to 2 percent

Taxonomic class: Sandy or sandy-skeletal, siliceous, dysic, mesic Terric Haplosaprists

Typical Pedon

Manahawkin muck, in an area of Manahawkin muck, 0 to 2 percent slopes, frequently flooded, in Salem County, New Jersey; near Pittsgrove, northwest of Parvin State Park, south of Centerton Pond, 0.5 mile south of the intersection of Routes 553 and 540 and 200 yards southeast of Route 553, in a wooded area; USGS Elmer topographic quadrangle; lat. 39 degrees 31 minutes 29 seconds N. and long. 75 degrees 10 minutes 08 seconds W.

Oa1—0 to 7 inches; black (10YR 2/1) muck; moderate medium granular structure; 10 percent fiber, unrubbed; 2 percent fiber, rubbed; many fine roots; extremely acid; clear smooth boundary.

Oa2—7 to 28 inches; very dark brown (10YR 2/2) muck; weak medium granular structure; 10 percent fiber, unrubbed; 2 percent fiber, rubbed; common fine roots; very strongly acid; clear smooth boundary.

Oa3—28 to 39 inches; very dark brown (10YR 2/2) muck; massive; 15 percent fiber, unrubbed; 2 percent fiber, rubbed; 10 percent well rounded 0.1 inch wood fragments; very strongly acid; abrupt smooth boundary.

Cg1—39 to 46 inches; grayish brown (10YR 5/2) gravelly sand; single grain; loose; nonsticky, nonplastic; 20 percent rounded quartzite gravel; very strongly acid; abrupt smooth boundary.

Cg2—46 to 72 inches; gray (10YR 6/1) gravelly sand; single grain; loose; nonsticky, nonplastic; 20 percent rounded quartzite gravel; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Seasonal high water table: Within a depth of 6 inches (October to July)

Depth to mineral horizons: 16 to 51 inches

Content of rock fragments: 0 to 50 percent, by volume, in the Cg horizon; mostly fine pebbles

Reaction: Extremely acid or very strongly acid in the surface tier and very strongly acid or strongly acid in the lower tiers and in the mineral substratum

Other features: Mineral content of organic layers ranges from 5 to 80 percent; organic layers mostly sapric material; subhorizons or surface horizon of hemic material up to 10 inches thick in some pedons

Note: Woody fragments range from 0 to 50 percent, by volume, in organic layers; fragments, mostly twigs, branches, or logs ranging from 1/8 inch to 20 inches in diameter, completely break down when rubbed or crushed

Oa horizon:

Color—hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2 or is neutral in hue with value of 2 or 3; broken face and rubbed colors similar but may differ one or two units in value or chroma

Type of organic material—typically muck (sapric material); includes individual layers of mucky peat (hemic material), especially at the soil surface

Cg horizon:

Color—hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 4 or is neutral in hue with value of 2 to 5

Texture of the fine-earth fraction—sand, fine sand, loamy sand, or loamy fine sand

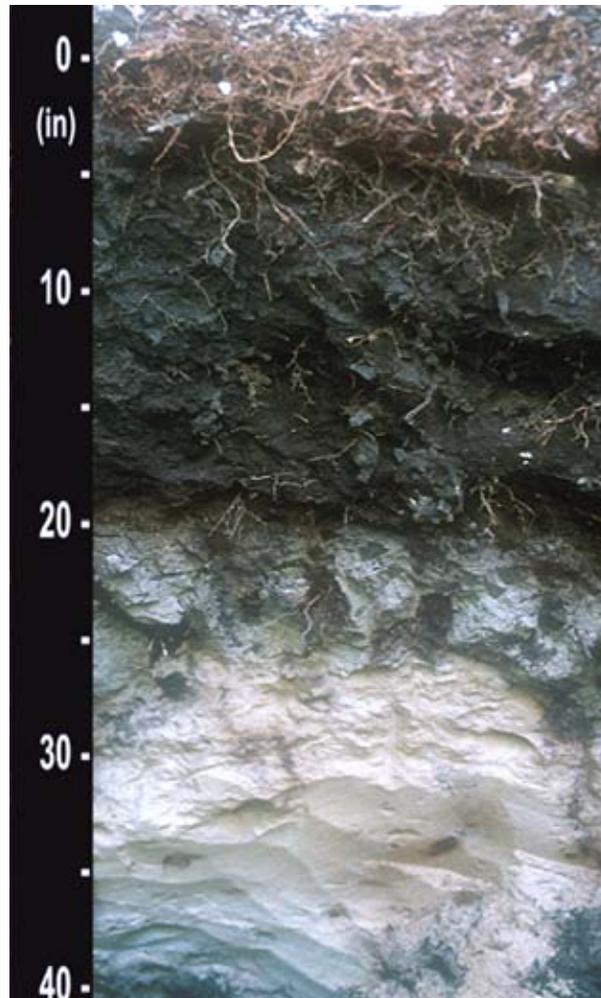


Figure 13.—A profile of a Manahawkin soil. These very poorly drained soils formed in organic deposits underlain by sandy marine sediments. They are in old lake basins and backswamps and on flood plains.

Matapeake Series

Drainage class: Well drained

Permeability: Moderate and moderately rapid

Landscape: Coastal plain

Landform: Broad ridges, upland flats, and upland terraces

Parent material: Silty eolian deposits over marine deposits or silty eolian deposits over coarse fluviomarine deposits, or both

Slope: 0 to 10 percent

Taxonomic class: Fine-silty, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Matapeake silt loam, in an area of Matapeake silt loam, 0 to 2 percent slopes, in Salem County, New Jersey; in Hopewell, 1.1 miles east of the intersection of Buttonwood Road and Cohansey Road and 100 feet north of Buttonwood Road, in a cultivated field; USGS Elmer topographic quadrangle; lat. 39 degrees 35 minutes 36 seconds N. and long. 75 degrees 12 minutes 30 seconds W.

Ap—0 to 10 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable; slightly sticky, slightly plastic; strongly acid; clear smooth boundary.

Bt1—10 to 25 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; 15 percent faint clay films; moderately acid; clear smooth boundary.

Bt2—25 to 33 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; 15 percent faint clay films; moderately acid; abrupt smooth boundary.

2C1—33 to 50 inches; brownish yellow (10YR 6/6) stratified sandy loam and loamy sand; massive; friable; nonsticky, nonplastic; moderately acid; clear smooth boundary.

2C2—50 to 72 inches; brownish yellow (10YR 6/6) sand; single grain; loose; nonsticky, nonplastic; moderately acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Thickness of the solum: 24 to 60 inches

Depth to the seasonal high water table: Dominantly more than 72 inches; an apparent water table between depths of 48 and 72 inches in some pedons having elevation of less than 25 feet

Depth to lithologic discontinuity: 30 to 40 inches

Content of rock fragments: Less than 5 percent, by volume, in the A and Bt horizons and 0 to 10 percent in the 2BC and 2C horizons; mostly quartz pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Note: Transition from the fine-silty Bt horizon to the sandy 2C horizon more than 5 inches thick

Ap horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6

Texture—silt loam, loam, or fine sandy loam

A horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3

Thickness—less than 7 inches if value is 3

Texture—silt loam, loam, or fine sandy loam

E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6

Texture—silt loam, loam, or fine sandy loam

Bt horizon:

Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8

Texture—silt loam or silty clay loam

2BC horizon (if it occurs):

Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8

Texture—loam, fine sandy loam, or sandy loam

2C horizon:

Color—hue of 5YR to 5Y, value of 4 to 7, and chroma of 3 to 8; streaks of clean sand with chroma of 3 or less in some pedons

Texture—fine sandy loam, sandy loam, loamy fine sand, loamy sand, or sand; gravelly strata less than 1 foot thick in some pedons

Mattapex Series

Drainage class: Moderately well drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Upland terraces, upland flats, and broad ridges

Parent material: Silty eolian deposits over coarser fluvio-marine deposits

Slope: 0 to 5 percent

Taxonomic class: Fine-silty, mixed, active, mesic Aquic Hapludults

Typical Pedon

Mattapex silt loam, in an area of Mattapex silt loam, 0 to 2 percent slopes, in Salem County, New Jersey; 1.2 miles southeast of the intersection of Harmersville Pecks Corner Road and Tattletown Jericho Road and 0.5 mile west of Tattletown Jericho Road, south of an unpaved road, in a cultivated field; USGS Elmer topographic quadrangle; lat. 39 degrees 35 minutes 31 seconds N. and long. 75 degrees 12 minutes 30 seconds W.

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; friable; slightly sticky, slightly plastic; many fine and medium roots; slightly acid; clear smooth boundary.

Bt1—7 to 18 inches; brownish yellow (10YR 6/6) silt loam; weak medium subangular blocky structure; friable; slightly sticky, slightly plastic; common fine and medium roots; 15 percent faint clay films; moderately acid; clear smooth boundary.

Bt2—18 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 15 percent faint clay films; moderately acid; gradual smooth boundary.

Bt3—33 to 40 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; moderately sticky, moderately plastic; common very fine and fine roots; 15 percent faint clay films; 10 percent medium prominent irregular light brownish gray (10YR 6/2) iron depletions with clear boundaries throughout; moderately acid; gradual smooth boundary.

2C—40 to 72 inches; yellowish brown (10YR 5/6) loamy sand; single grain; loose; nonsticky, nonplastic; 10 percent medium prominent irregular light brownish gray (10YR 6/2) iron depletions with clear boundaries throughout; moderately acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Thickness of the solum: 24 to 48 inches

Depth to the seasonal high water table: 18 to 36 inches (January to April)

Depth to the lithologic discontinuity: 30 to 50 inches

Content of rock fragments: 0 to 5 percent, by volume, throughout the profile; ranges to 20 percent in individual horizons, which are generally less than 12 inches thick

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 4

Texture—silt loam, loam, or fine sandy loam

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E or BE horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4

Texture—silt loam, loam, or fine sandy loam

Redoximorphic features—masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Bt horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 3 to 8

Texture—silt loam or silty clay loam with 18 to 30 percent clay and more than 50 percent silt in the particle-size control section

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Btg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture—silt loam or silty clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2BC horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6

Texture—loam, fine sandy loam, sandy clay loam, or loamy sand

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2BCg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture—loam, fine sandy loam, sandy clay loam, or loamy sand

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2C horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 6

Texture—loam, fine sandy loam, sandy loam, loamy sand, loamy fine sand, or sand

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2Cg horizon (if it occurs)

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2

Texture—loam, fine sandy loam, sandy loam, loamy sand, loamy fine sand, or sand

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Mispollion Series

Drainage class: Very poorly drained

Permeability: Moderately slow

Landscape: Coastal plain

Landform: Tidal flats

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Parent material: Herbaceous organic material over loamy marine deposits or loamy fluviomarine deposits, or both

Slope: 0 to 1 percent

Taxonomic class: Loamy, mixed, euic, mesic Terric Sulphemists

Typical Pedon

Mispillion mucky peat, in an area of Mispillion-Transquaking-Appoquinimink complex, 0 to 1 percent slopes, very frequently flooded, in Salem County, New Jersey; in an estuarine salt marsh; USGS Canton topographic quadrangle; lat. 39 degrees 27 minutes 34 seconds N. and long. 75 degrees 29 minutes 55 seconds W.

Oe1—0 to 10 inches; very dark grayish brown (2.5Y 3/2) mucky peat; 80 percent fiber, unrubbed; 40 percent fiber, rubbed; many fine, medium, and coarse roots; neutral; clear smooth boundary.

Oe2—10 to 24 inches; black (N 2/0) mucky peat; 60 percent fiber, unrubbed; 25 percent fiber, rubbed; common fine, medium, and coarse roots; neutral; gradual smooth boundary.

Oa—24 to 40 inches; muck, 50 percent black (10YR 2/1) and 50 percent very dark brown (10YR 2/2); 30 percent fiber, unrubbed; 10 percent fiber, rubbed; few fine and medium roots; neutral; abrupt smooth boundary.

Cg1—40 to 54 inches; black (5Y 2.5/1) mucky silt loam; massive; loose; slightly sticky, nonplastic; many coarse roots; 8 percent flat subrounded indurated shell fragments; neutral; clear smooth boundary.

Cg2—54 to 69 inches; dark gray (N 4/0) silty clay loam; massive; loose; moderately sticky, slightly plastic; neutral; gradual smooth boundary.

Cg3—69 to 80 inches; silt loam, 60 percent dark gray (5Y 4/1) and 40 percent gray (10YR 5/1); massive; loose; slightly sticky, nonplastic; 8 percent flat subrounded indurated shell fragments; slightly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Total thickness of the organic soil layers: 16 to 51 inches

High water table: At the surface (January to December); continuously saturated; flooded twice daily by tidal waters

Content of rock fragments: 0 to 5 percent, by volume, in the mineral layers; mostly shells and shell fragments

Electrical conductivity: More than 8 millimhos per centimeter throughout

Reaction: Slightly acid to slightly alkaline throughout the profile; after moist incubation, ultra acid or extremely acid

Other features: n-value typically more than 1.0; thin lenses of silt, silt loam, or very fine sand throughout the organic layers in some pedons

Oe horizon (surface tier, 0 to 12 inches):

Color—hue of 7.5YR to 5Y, value of 2 to 4, and chroma of 1 to 3 or is neutral with value of 2 to 4

Type of organic material—mucky peat (hemic soil materials); fiber content before rubbing more than one-half of the soil volume

Content of mineral material—20 to 70 percent, by weight

Oe or Oa horizon (subsurface tier, 12 to 36 inches):

Color—hue of 5YR to 5Y, value of 2 to 5, and chroma of 1 to 3 or is neutral with value of 2 to 4

Type of organic material—muck (sapric soil materials) or mucky peat (hemic soil materials); thin layers of fibric materials in some pedons

Content of mineral material—20 to 75 percent, by weight

Oe or Oa horizon (bottom tier, 36 to 51 inches):

Color—hue of 5YR to 5Y, value of 2 to 5, and chroma of 1 to 3 or is neutral with value of 2 to 4

Type of organic material—muck (sapric soil materials) or mucky peat (hemic soil materials); thin layers of fibric materials in some pedons

Content of mineral material—20 to 75 percent, by weight

Cg horizon:

Color—hue of 7.5YR to 5GY, value of 2 to 6, and chroma of 1 or 2 or is neutral with value of 2 to 6

Texture of the fine-earth fraction—silt loam, silty clay loam, or loam

Content of organic matter—0 to 15 percent; thin lenses of organic material or sand, 0.5 inch to several inches thick, in some pedons

Mullica Series

Drainage class: Very poorly drained

Permeability: Moderately rapid and rapid

Landscape: Coastal plain

Landform: Flood plains, depressions, and drainageways

Parent material: Sandy fluviomarine deposits or loamy fluviomarine deposits, or both

Slope: 0 to 2 percent

Taxonomic class: Coarse-loamy, siliceous, semiactive, acid, mesic Typic Humaquepts

Typical Pedon

Mullica mucky peat, in an area of Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded, in Salem County, New Jersey; 1.0 mile north of the intersection of Pennsgrove Auburn Road and Pedricktown Road and 0.75 mile northwest of Pedricktown Road, in a wooded area; USGS Penns Grove topographic quadrangle; lat. 39 degrees 44 minutes 09 seconds N. and long. 75 degrees 26 minutes 23 seconds W.

Oa—0 to 4 inches; dark reddish brown (5YR 3/2) mucky peat; massive; extremely acid; abrupt smooth boundary.

Ag—4 to 20 inches; very dark gray (10YR 3/1) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; common fine and medium roots; extremely acid; clear smooth boundary.

Bg1—20 to 28 inches; dark grayish brown (10YR 4/2) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; common very fine and fine roots; extremely acid; clear smooth boundary.

Bg2—28 to 34 inches; dark yellowish brown (10YR 3/4) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; common very fine and fine roots; 1 percent medium distinct irregular dark grayish brown (10YR 4/2) iron depletions with diffuse boundaries throughout; very strongly acid; abrupt smooth boundary.

Cg1—34 to 40 inches; light brownish gray (10YR 6/2) loamy sand; single grain; loose; nonsticky, nonplastic; 15 percent fine prominent irregular yellowish brown (10YR 5/6) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; very strongly acid; abrupt smooth boundary.

Cg2—40 to 45 inches; light brownish gray (10YR 6/2) sandy clay loam; massive; friable; slightly sticky, slightly plastic; 15 percent fine prominent irregular dark yellowish brown (10YR 4/6) masses that have accumulations of iron and

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manganese oxide with clear boundaries throughout; very strongly acid; abrupt smooth boundary.

Cg3—45 to 72 inches; light brownish gray (10YR 6/2) loamy sand; single grain; loose; nonsticky, nonplastic; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Thickness of the solum: 20 to 40 inches

Seasonal high water table: Within a depth of 6 inches (December to May)

Content of rock fragments: 0 to 15 percent, by volume, in the A, E, and B horizons and 0 to 35 percent in the C horizon; mostly fine pebbles

Reaction: In unlimed areas, extremely acid or very strongly acid throughout the profile

Oi horizon (if it occurs):

Type of organic material—peat (fibric soil materials) or slightly decomposed woody plant material

Oe or Oa horizon:

Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 1 or 2 or is neutral with value of 4 to 6

Type of organic material—mucky peat (hemic soil materials) or muck (sapric soil materials)

Ag or Ap horizon:

Color—hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2 or is neutral with value of 2 or 3

Texture of the fine-earth fraction—loam, sandy loam, or loamy sand

Content of organic matter—2 to 20 percent

Eg or BEg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2 or is neutral with value of 4 to 6

Texture—sandy loam or loamy sand

Bg horizon:

Color—hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2 or is neutral with value of 3 to 6

Texture—sandy loam; thin strata of loamy sand or sandy clay loam in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

BCg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2 or is neutral with value of 3 to 6

Texture—sandy loam or loamy sand; thin strata of loam or sandy clay loam in some pedons

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Cg horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2 or is neutral with value of 3 to 6

Texture of the fine-earth fraction—dominantly sand or loamy sand; thin strata of sandy loam or sandy clay loam common below a depth of 40 inches
Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Othello Series

Drainage class: Poorly drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Flats and depressions

Parent material: Silty eolian deposits over fluviomarine deposits

Slope: 0 to 2 percent

Taxonomic class: Fine-silty, mixed, active, mesic Typic Endoaquults

Typical Pedon

Othello silt loam, in an area of Othello and Fallsington soils, 0 to 2 percent slopes, in Salem County, New Jersey; 0.44 mile northeast of the intersection of Pole Tavern-Monroeville Road and Alderman Road, in a wooded area; USGS Elmer topographic quadrangle; lat. 39 degrees 37 minutes 15 seconds N. and long. 75 degrees 12 minutes 45 seconds W.

Oe—0 to 1 inch; dark reddish brown (5YR 3/2) mucky peat; 70 percent fiber, rubbed; weak medium subangular blocky structure; extremely acid; abrupt smooth boundary.

A—1 to 13 inches; brown (7.5YR 4/2) silt loam; moderate medium subangular blocky structure; friable; nonsticky, slightly plastic; many fine and medium roots; 1 percent fine prominent irregular strong brown (7.5YR 5/6) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; extremely acid; abrupt smooth boundary.

Btg1—13 to 32 inches; light brownish gray (10YR 6/2) silt loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 45 percent faint clay films; 15 percent medium distinct irregular yellowish brown (10YR 5/4) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; extremely acid; gradual smooth boundary.

Btg2—32 to 40 inches; gray (10YR 5/1) silty clay loam; strong medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 45 percent faint clay films; 15 percent medium prominent irregular brownish yellow (10YR 6/6) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; very strongly acid; gradual smooth boundary.

2C1—40 to 60 inches; brownish yellow (10YR 6/6) loamy sand; single grain; loose; nonsticky, nonplastic; 30 percent fine and medium prominent irregular gray (N 6/0) iron depletions with clear boundaries throughout; 30 percent fine and medium distinct irregular strong brown (7.5YR 5/8) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; very strongly acid; gradual smooth boundary.

2C2—60 to 80 inches; pale brown (10YR 6/3) sand; single grain; loose; nonsticky, nonplastic; 35 percent fine and medium prominent irregular gray (N 6/0) iron depletions with clear boundaries throughout; 35 percent fine and medium prominent irregular strong brown (7.5YR 5/8) masses that have accumulations of iron and manganese oxide with clear boundaries throughout; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 80 inches

Thickness of the solum: 24 to 50 inches

Seasonal high water table: Within a depth of 12 inches (January to May)

Depth to lithologic discontinuity: 25 to 40 inches

Content of rock fragments: 0 to 5 percent, by volume, in the A horizon; 0 to 10 percent in the B horizon; and 0 to 20 percent in the C horizon; mostly quartz pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Oe or Oa horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 or 2

Type of organic material—mucky peat or muck

A horizon:

Color—hue of 7.5YR to 5Y, value of 3 or 4, and chroma of 1 to 3

Texture—silt loam, mucky silt loam, fine sandy loam, or silty clay loam

Ap horizon (if it occurs):

Color—hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 1 to 3

Texture—silt loam, mucky silt loam, fine sandy loam, or silty clay loam

E or Eg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 to 3

Texture—silt loam, fine sandy loam, or silty clay loam

Btg horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2 or is neutral with value of 5 to 7

Texture—silt loam or silty clay loam

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—sand, loamy sand, loamy fine sand, or sandy loam

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

2C horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 8, and chroma of 3 or 4

Texture—sand, loamy sand, loamy fine sand, or sandy loam; thin strata of finer textured material in some pedons

Redoximorphic features—iron depletions in shades of olive or gray and masses of accumulated iron and manganese oxide in shades of red, brown, yellow, or olive

Pawcatuck Series

Drainage class: Very poorly drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Tidal flats

Parent material: Herbaceous organic material over sandy marine deposits

Slope: 0 to 1 percent

Taxonomic class: Sandy or sandy-skeletal, mixed, euic, mesic Terric Sulphemists

Typical Pedon

Pawcatuck mucky peat, in an area of Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded, in Salem County, New Jersey; in a salt grass tidal marsh; USGS Canton topographic quadrangle; lat. 39 degrees 27 minutes 34 seconds N. and long. 75 degrees 29 minutes 55 seconds W.

Oe1—0 to 12 inches; very dark gray (10YR 3/1) mucky peat, dark grayish brown (10YR 4/2) dry; massive; slightly sticky; 65 percent fiber, unrubbed; 30 percent fiber, rubbed; many very fine, fine, and medium roots; slightly acid; clear wavy boundary.

Oe2—12 to 40 inches; black (10YR 2/1) mucky peat, very dark gray (10YR 3/1) dry; massive; slightly sticky; 50 percent fiber, unrubbed; 25 percent fiber, rubbed; few very fine, fine, and medium roots; slightly acid; gradual wavy boundary.

Oe3—40 to 46 inches; black (10YR 2/1) mucky peat, black (10YR 2/1) dry; massive; slightly sticky; 40 percent fiber, unrubbed; 25 percent fiber, rubbed; slightly acid; clear wavy boundary.

Cg1—46 to 50 inches; gray (N 5/0) very fine sandy loam, gray (10YR 5/1) dry; massive; loose; slightly sticky, nonplastic; slightly acid; clear wavy boundary.

Cg2—50 to 60 inches; black (10YR 2/1) loamy sand, dark gray (10YR 4/1) dry; single grain; loose; nonsticky, nonplastic; 10 percent rounded quartzite gravel; slightly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches

Total thickness of the organic soil layers: 16 to 51 inches

High water table: At the surface (January to December); continuously saturated; flooded twice daily by tidal water

Reaction: Strongly acid to slightly alkaline

Soil salinity: Total salt content ranging from 1,000 to 40,000 parts per million

Other features: Thin layers of silt and very fine sand common in the organic horizons

O horizon (surface tier):

Color—hue of 5YR to 5Y, value of 2 to 5, and chroma of 1 to 3 or is neutral

Type of organic material—hemic; fibric materials in some pedons

Content of organic matter—ranges from 20 to 80 percent or more

O horizon (subsurface and bottom tiers):

Color—hue of 5YR to 5Y, value of 2 to 5, and chroma of 1 to 3 or is neutral

Type of organic material—hemic; as much as 12 inches of layered fibric or sapric materials in some pedons

Content of organic matter—ranges from 20 to 90 percent, generally decreasing with depth

C horizon:

Color—hue of 10YR to 5BG, value of 2 to 7, and chroma of 1 to 3 or is neutral

Texture—loamy sand or sand; finer textured in subhorizons in some pedons but a weighted average texture class of sandy

Content of organic matter—less than 5 percent ranging to 20 percent

Content of fragments—0 to 25 percent gravel; common shell fragments and herbaceous fibers

Psammaquents

Drainage class: Very poorly drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Natural landforms greatly altered by the addition of earthy materials to tidal marshes in most areas

Parent material: Dredged fill or excavated borrow materials derived from river channels, pits, or previously unaltered soils underlain by organic material

Slope range: 0 to 3 percent

Taxonomic class: Psammaquents

Typical Pedon

Psammaquents are in areas where the natural soils have been greatly altered by extensive grading and filling. A typical pedon and the sequence, depth, and composition of the layers of these soils are not provided because soil properties vary. Fill areas are mainly where earthy materials have been pumped from river channels. These soils are subject to frequent flooding.

Range in Characteristics

Because soil properties vary greatly, typical characteristics are not provided.

Psammments

Drainage class: Moderately well drained

Permeability: Rapid

Landscape: Coastal plain

Landform: Natural landforms in most areas greatly altered by the addition of earthy materials to poorly drained or very poorly drained soils

Parent material: Dredged fill or excavated borrow materials derived from river channels, pits, or previously unaltered soils

Slope range: 0 to 3 percent

Taxonomic class: Psammments

Typical Pedon

Psammments are in areas where the natural soils have been greatly altered by extensive grading and filling. A typical pedon and the sequence, depth, and composition of the layers of these soils are not provided because soil properties vary. Fill areas are mainly where earthy materials have been pumped from river channels for use as foundation materials for general urban development such as roads and buildings, for landfills, or, in a very few instances, for agriculture.

Range in Characteristics

Because soil properties greatly vary, typical characteristics are not provided.

Sassafras Series

Drainage class: Well drained

Permeability: Moderate to rapid

Landscape: Coastal plain

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Landform: Knolls and low hills

Parent material: Loamy or gravelly fluviomarine deposits, or both

Slope: 0 to 10 percent

Taxonomic class: Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

Typical Pedon

Sassafras sandy loam, in an area of Sassafras sandy loam, 0 to 2 percent slopes, in Salem County, New Jersey; 0.9 mile northwest of the intersection of Long Bridge Road and Canton Road, 0.5 mile northeast of Canton Road and 0.25 mile southeast of Canton Cemetery, along a road, in a cultivated field; USGS Canton topographic quadrangle; lat. 39 degrees 28 minutes 38 seconds N. and long. 75 degrees 24 minutes 43 seconds W.

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular structure; friable; nonsticky, nonplastic; common fine roots; slightly acid; abrupt smooth boundary.

Bt1—4 to 16 inches; light yellowish brown (10YR 6/4) sandy loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 15 percent faint clay films and 15 percent clay bridging between sand grains; slightly acid; clear smooth boundary.

Bt2—16 to 22 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 15 percent faint clay films and 30 percent clay bridging between sand grains; moderately acid; clear smooth boundary.

Bt3—22 to 45 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 15 percent faint clay films and 30 percent clay bridging between sand grains; moderately acid; clear smooth boundary.

C1—45 to 55 inches; strong brown (7.5YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; 1 percent medium faint irregular very pale brown (10YR 7/4) masses that have accumulations of iron and manganese with diffuse boundaries throughout; moderately acid; clear smooth boundary.

C2—55 to 72 inches; pink (7.5YR 7/4) sand; single grain; loose; nonsticky, nonplastic; 1 percent medium distinct irregular strong brown (7.5YR 5/6) masses that have accumulations of iron and manganese with diffuse boundaries throughout; moderately acid.

Range in Characteristics

Thickness of the solum: 25 to 50 inches

Depth to bedrock: More than 72 inches

Depth to the seasonal high water table: More than 72 inches

Content of rock fragments: 0 to 20 percent, by volume, in the A and B horizons and 0 to 30 percent in the C horizon; mostly quartz pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

Ap horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4

Texture of the fine-earth fraction—loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand

A horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4

Texture of the fine-earth fraction—loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand

Thickness—1 to 4 inches

E horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4

Texture of the fine-earth fraction—fine sandy loam, sandy loam, loamy fine sand, or loamy sand

BA or BE horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—loam, fine sandy loam, sandy loam, or sandy clay loam

Bt horizon:

Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture of the fine-earth fraction—loam, sandy loam, or sandy clay loam with a weighted average silt content of 20 to 35 percent

BC horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 4 to 8

Texture of the fine-earth fraction—loamy sand, loamy fine sand, fine sandy loam, or sandy loam

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 8, and chroma of 3 to 8 or is variegated in shades of these colors

Texture of the fine-earth fraction—sandy loam, loamy sand, or sand; more than 5-inch transition to sand

Redoximorphic features—iron depletions in shades of olive and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive below a depth of 72 inches

Transquaking Series

Drainage class: Very poorly drained

Landscape: Coastal plain

Landform: Tidal flats

Parent material: Herbaceous organic material over loamy sediments

Slope: 0 to 1 percent

Taxonomic class: Euic, mesic Typic Sulfihemists

Typical Pedon

Transquaking mucky peat, in an area of Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded, in Salem County, New Jersey; 0.1 mile east of Hope Creek, 0.06 mile north of Alloway Creek Neck Road, in a tidal marsh; USGS Canton topographic quadrangle; lat. 39 degrees 27 minutes 34 seconds N. and long. 75 degrees 29 minutes 55 seconds W.

Oe1—0 to 14 inches; black (5YR 2.5/1) mucky peat; 70 percent fiber, rubbed; neutral; gradual smooth boundary.

Oe2—14 to 30 inches; dark reddish brown (5YR 3/2) mucky peat; 50 percent fiber, rubbed; neutral; clear smooth boundary.

Oe3—30 to 45 inches; dark reddish brown (5YR 3/2) mucky peat; 30 percent fiber, rubbed; neutral; clear smooth boundary.

Oe4—45 to 70 inches; dark reddish brown (5YR 3/2) mucky peat; 25 percent fiber, rubbed; neutral; clear smooth boundary.

Oa—70 to 90 inches; very dark brown (10YR 2/2) muck; 5 percent fiber, rubbed; neutral.

Range in Characteristics

Thickness of the organic deposits: 52 to 80 inches or more

Depth to bedrock: More than 90 inches

High water table: At the surface (January to December)

Reaction: Slightly acid to neutral in the natural state; ultra acid or extremely acid when dried

Electrical conductivity: More than 8 millimhos per centimeter but typically more than 16 millimhos per centimeter

Sulfur content: 0.75 to 3.5 percent

Mineral content of organic layers: 20 to 70 percent, by weight

Other features: n-value more than 1.0; thin layers of silt and very fine sand in the organic horizons of some pedons

Oi or Oa horizon (surface tier, 0 to 12 inches):

Color—hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3

Type of organic material—peat (fibric soil materials) or mucky peat (hemic soil materials)

Oe or Oa horizon (subsurface tier, 12 to 36 inches):

Color—hue of 5YR to 2.5Y, value of 2 to 5, and chroma of 1 to 4

Type of organic material—mucky peat (hemic soil materials) or muck (sapric soil materials)

Oa horizon (bottom tier, 36 to 51 inches):

Color—hue of 10YR to 5Y, value of 2 to 4, and chroma of 1 or 2

Type of organic material—muck (sapric soil materials)

Cg horizon (if it occurs):

Color—hue of 10YR to 5GY, value of 3 or 4, and chroma of 1 or 2 or is neutral with value of 3 or 4

Texture—silt loam, silty clay loam, or silty clay; thin sandy mineral layers less than 1 inch thick stratified within the horizon in some pedons

Content of organic matter—1 to 20 percent; thin organic layers stratified within the mineral horizon in some pedons

Trussum Series

Drainage class: Poorly drained

Permeability: Slow to moderate

Landscape: Coastal plain

Landform: Depressions

Parent material: Clayey marine deposits

Slope: 0 to 2 percent

Taxonomic class: Fine, mixed, active, mesic Typic Paleaquults

Typical Pedon

Trussum loam, in an area of Othello, Fallsington, and Trussum soils, 0 to 2 percent slopes, in Salem County, New Jersey; 0.8 mile north of the intersection of Clancey Road and Quinton-Mannington Road and 0.1 mile east of Quinton-Mannington Road, in a cultivated field; USGS Salem topographic quadrangle; lat. 39 degrees 35 minutes 00 seconds N. and long. 75 degrees 24 minutes 50 seconds W.

Ap—0 to 12 inches; dark grayish brown (10YR 4/2) loam; moderate medium granular structure; friable; slightly sticky, slightly plastic; many fine and medium roots; moderately acid; abrupt smooth boundary.

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- Btg**—12 to 25 inches; dark grayish brown (10YR 4/2) loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 30 percent faint clay films; 1 percent fine distinct irregular yellowish brown (10YR 5/4) masses that have accumulations of iron and manganese with clear boundaries throughout; moderately acid; abrupt smooth boundary.
- Bt1**—25 to 35 inches; strong brown (7.5YR 5/6) clay; strong medium subangular blocky structure; friable; moderately sticky, very plastic; 30 percent faint clay films; 30 percent fine and medium prominent irregular pinkish gray (7.5YR 6/2) iron depletions with clear boundaries throughout; strongly acid; gradual smooth boundary.
- Bt2**—35 to 60 inches; brown (7.5YR 5/4) clay; moderate medium subangular blocky structure; friable; very sticky, very plastic; 30 percent faint clay films; 30 percent fine and medium distinct irregular pale red (7.5R 7/2) iron depletions with clear boundaries throughout; strongly acid; gradual smooth boundary.
- Bt3**—60 to 66 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; 15 percent faint clay films; 30 percent fine and medium prominent irregular pinkish gray (7.5YR 6/2) iron depletions with clear boundaries throughout; strongly acid; gradual smooth boundary.
- Bt4**—66 to 72 inches; light brown (7.5YR 6/4) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; 15 percent faint clay films; 15 percent fine and medium distinct irregular pinkish gray (7.5YR 6/2) iron depletions with clear boundaries throughout; 15 percent fine and medium prominent irregular yellowish red (5YR 5/8) masses that have accumulations of iron and manganese with clear boundaries throughout; strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches

Seasonal high water table: Within a depth of 12 inches (November to May)

Content of rock fragments: 0 to 10 percent, by volume, throughout the profile; mostly fine gravel

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3

Texture—silt loam, loam, or fine sandy loam

E or Eg horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2 or is neutral with value of 3 to 8

Texture—silt loam, loam, or fine sandy loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of iron and manganese accumulations in shades of red, brown, yellow, or olive

Btg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 8, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—clay, silty clay, silty clay loam, clay loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of iron and manganese accumulations in shades of red, brown, yellow, or olive

BCg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—clay, sandy clay, clay loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of iron and manganese accumulations in shades of red, brown, yellow, or olive

Cg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral with value of 4 to 7

Texture—loamy sand ranging to sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of iron and manganese accumulations in shades of red, brown, yellow, or olive

Udorthents

Drainage class: Well drained

Permeability: Slow to moderately rapid

Landscape: Coastal plain

Landform: In most areas, the natural landforms have been greatly altered by the addition or removal of earthy materials.

Parent material: Dredged fill or excavated borrow materials derived from river channels, pits, or previously unaltered soils

Slope range: 0 to 8 percent

Taxonomic class: Udorthents

Typical Pedon

Udorthents are in areas where the natural soils have been greatly altered by excavation, extensive grading, or filling. A typical pedon and the sequence, depth, and composition of the layers of these soils are not provided because soil properties vary. Excavated or fill areas are mainly where earthy materials have been removed or pumped from river channels for use as foundation materials for general urban development, such as roads and buildings, or for landfills.

Range in Characteristics

Because soil properties greatly vary, typical characteristics are not provided.

Woodstown Series

Drainage class: Moderately well drained

Permeability: Moderate to rapid

Landscape: Coastal plain

Landform: Shallow depressions, broad ridges, flats, and upland terraces

Parent material: Old alluvium or sandy marine deposits, or both

Slope: 0 to 2 percent

Taxonomic class: Fine-loamy, mixed, active, mesic Aquic Hapludults

Typical Pedon

Woodstown sandy loam, in an area of Woodstown sandy loam, 0 to 2 percent slopes, in Salem County, New Jersey; 0.75 mile northwest of the intersection of Long Bridge Road and Canton Road, 0.3 mile northeast of Canton Road and 0.38 mile northeast of Canton Cemetery, along a road, in a cultivated field; USGS Canton topographic

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quadrangle; lat. 39 degrees 29 minutes 05 seconds N. and long. 75 degrees 24 minutes 30 seconds W.

- Ap—0 to 10 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium granular structure; friable; nonsticky, nonplastic; common fine roots; slightly acid; abrupt smooth boundary.
- Bt1—10 to 18 inches; light yellowish brown (10YR 6/4) sandy loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 10 percent faint clay films and 30 percent clay bridging between sand grains; slightly acid; clear smooth boundary.
- Bt2—18 to 22 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; clay bridging between sand grains and 15 percent faint clay films; 1 percent medium distinct irregular very pale brown (10YR 7/4) masses that have accumulations of iron and manganese with diffuse boundaries throughout; slightly acid; clear smooth boundary.
- Bt3—22 to 40 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; slightly sticky, slightly plastic; common very fine and fine roots; 15 percent faint clay films and 30 percent clay bridging between sand grains; 1 percent medium prominent irregular light gray (10YR 7/2) iron depletions with clear boundaries throughout; moderately acid; clear smooth boundary.
- BC—40 to 54 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; nonsticky, nonplastic; 15 percent medium prominent irregular light gray (10YR 7/2) iron depletions with clear boundaries throughout; moderately acid; clear smooth boundary.
- C—54 to 64 inches; brownish yellow (10YR 6/6) sand; single grain; loose; nonsticky, nonplastic; 15 percent medium prominent irregular light gray (10YR 7/1) iron depletions with clear boundaries throughout; moderately acid; gradual smooth boundary.
- Cg—64 to 72 inches; light gray (10YR 7/1) sand; single grain; loose; nonsticky, nonplastic; 15 percent medium prominent irregular brownish yellow (10YR 6/6) masses that have accumulations of iron and manganese with clear boundaries throughout; moderately acid.

Range in Characteristics

Thickness of the solum: 24 to 45 inches

Depth to bedrock: More than 72 inches

Depth to the seasonal high water table: 18 to 42 inches (January to April)

Content of rock fragments: 0 to 15 percent, by volume, in the A, E, and B horizons and 0 to 20 in the C horizon; mostly quartz pebbles

Reaction: In unlimed areas, extremely acid to strongly acid throughout the profile

A horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 4
Texture—loam, fine sandy loam, or sandy loam

Ap horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture—loam, fine sandy loam, or sandy loam

E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4
Texture—fine sandy loam or sandy loam

BE or BA horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8

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Texture—loam, sandy loam, or fine sandy loam

Bt horizon:

Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 8

Texture—sandy clay loam or loam or, less commonly, sandy loam, fine sandy loam, or clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive

BC horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture—sandy clay loam, loam, sandy loam, or fine sandy loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive

BCg horizon (if it occurs):

Color—hue of 10YR to 5Y, value of 4 to 8, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—sandy loam, loamy sand, or sand; may contain thin strata of fine sandy clay loam, silt loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive

C horizon:

Color—hue of 10YR to 5Y, value of 4 to 8, and chroma of 3 to 8

Texture—sandy loam, loamy sand, or sand; may contain thin strata of fine sandy clay loam, silt loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive

Cg horizon:

Color—hue of 10YR to 5Y, value of 4 to 8, and chroma of 1 or 2 or is neutral with value of 4 to 8

Texture—sandy loam, loamy sand, or sand; may contain thin strata of fine sandy clay loam, silt loam, or sandy clay loam

Redoximorphic features—iron depletions in shades of olive, gray, or white and masses of accumulated iron and manganese in shades of red, brown, yellow, or olive

Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in Cumberland County. It also describes the processes of horizon differentiation.

Factors of Soil Formation

The soils in Cumberland County formed by processes of the environment acting upon geologic agents, such as marine sediments, fluviomarine sediments, and alluvial sediments. The characteristics of a soil are determined by the combined influence of parent material, climate, plant and animal life, relief, and time. These five factors are responsible for the profile development and chemical properties that differentiate soils (Buol and others 1980). Figures 14 and 15 illustrate some of the variations in the relationship between soils, landform position, and parent material that occur in the county. Table 24 shows the relationship between soil characteristics, major landforms, and drainage.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. In Cumberland County, it is a major factor in determining what kind of soil forms and can be correlated to some degree to geologic formations.

Parent material is largely responsible for the chemical and mineralogical composition of soils and for the major differences among the soils of the county. Major differences in parent material, such as differences in texture and soil color, can be observed in the field. Less distinct differences, such as differences in mineralogical composition, can be determined only by careful laboratory analysis.

Soils in Cumberland County formed in unconsolidated geologic material that is hundreds of feet thick. The most extensive geologic strata in the county are those of the Cohansey Formation. This formation underlies the entire county but is buried by a thin layer of more recent deposits in many places. It consists mainly of quartz sand, and in places it has lenses or thin strata of light colored clay or gravel. Other important strata are those in the generally more gravelly and clayey Bridgeton Formation, which occurs in many parts of the county. The Bridgeton Formation consists of a reddish surficial deposit that caps the hills and upland areas. This deposit was once nearly continuous but has been eroded so that it remains mostly as isolated remnants on summits. In the Shiloh, Roadstown, and Deerfield areas, the sandy or gravelly deposits are overlain by a mantle of silt loam or loam. In many low areas, finer textured material that washed from uplands has been redeposited. Near Stow Creek and Vineland, the underlying clay beds drain slowly, resulting in extensive areas of moderately well drained or somewhat poorly drained soils.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. It influences the rate at which the sediments and deposits weather and organic matter decomposes. The amount of leaching in a

soil is related to the amount of rainfall and the movement of water through the soil. The effects of climate also control the kinds of plants and animals living in and on the soil. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Cumberland County has a warm, humid climate. It is in a part of the coastal plain in New Jersey where elevation ranges from sea level to about 160 feet. The climate promotes active chemical processes, which result in the decomposition of organic matter and the weathering of sediments and deposits. The effects of climate are reflected in the soils of the county. Mild temperatures throughout the year and abundant rainfall create conditions that allow rapid decomposition of organic matter and considerable leaching of soluble bases. Because variations in the climate of the county are small, climate has probably not caused major local differences among soils. It has mainly affected the formation of soils in the county by altering the parent material through changes in temperature and in the amount of precipitation and through influences on plant and animal life.

Plant and Animal Life

Plants and animals influence the formation and differentiation of soil horizons. The type and number of organisms in and on the soil are determined in part by climate and in part by the nature of the soil material, the landform position, and the age of the soil. Bacteria, fungi, and other micro-organisms aid in the weathering of sediments and deposits and in the decomposition of organic matter. The plants and animals living in an area are the primary sources of organic material for the soils in that area.

Plants largely determine the kinds and amounts of organic matter that are added to a soil under normal conditions and the way in which the organic matter is added. They also influence the leaching processes that occur in soils and the changes in base status. Plant growth and subsequent decomposition effectively redistribute basic nutrients such as calcium and magnesium throughout the soil.

Animals convert complex compounds into simpler forms, add organic matter to the soil, and modify certain chemical and physical properties of soil. In Cumberland County, most of the organic material accumulates on the soil surface. It is acted upon by micro-organisms, fungi, insects, earthworms, and other forms of life and by direct chemical reaction. It is mixed with the uppermost mineral part of the soil by the activities of earthworms and other small invertebrates.

The effects of human activity on the soils are most noticeable in areas where the soils have eroded or have been drained, excavated, or filled. Cultivating the soils, applying fertilizer, and landscaping also change soil properties and characteristics. Walking and driving over the soil can result in compaction. Except for major land forming operations, most of the changes caused by human activities occur slowly; however, human activity is significant because of the extent and magnitude of the alterations that result.

Under the native forest of this county, not enough bases are brought to the surface by plants to counteract the effects of leaching. Generally, the soils of the county developed under a hardwood or pine forest. Trees took up elements from the subsoil and added organic matter to the soil by depositing leaves, roots, twigs, and other plant remains on the surface. The material deposited on the surface was acted upon by organisms and subsequently underwent chemical transformations.

In the better drained areas on uplands, organic matter decomposes at a moderate rate because of the moderate temperature and moisture supply that generally do not restrict biological activity. This results in a low or moderate accumulation of organic matter in the soil. Examples include the Downer, Sassafras, and Chillum soils. In wetter areas, organic matter decomposes more slowly and accumulates in the soils to a greater degree because animal activity, especially micro-organism and earthworm activity, is severely reduced by saturated conditions due to the lack of

oxygen. Berryland, Mullica, Fallsington, and Manahawkin soils are examples. Other examples are the Appoquinimink, Broadkill, Mispillion, Pawcatuck, and Transquaking soils on flooded tidal flats that are subject to daily tidal inundation.

Relief

Relief affects soil formation through its influence on drainage, erosion, plant cover, and soil temperature. Soils on flood plains, on broad flats, or in depressions are generally wetter than soils in the uplands. Soils on flood plains typically have redoximorphic features (commonly iron depletions or iron concentrations) in the subsoil as a result of alternate wetting and drying of the soil layers as the water table fluctuates. Red colors in some soils are caused by the oxidation of iron. Gray colors are caused by the reduction and removal of iron. Soils on flood plains that are frequently flooded are constantly being altered by periodic deposition of fresh sediment; consequently, they have less profile development than soils on uplands or terraces that are not subject to flooding.

Relief greatly affects the potential for erosion. The hazard of erosion is much greater in the steeper areas on uplands than in nearly level or gently sloping areas. The soils in less sloping areas are therefore more stable and generally display more evidence of horizon development than the soils in the steeper areas. Soils on the steeper slopes generally have a thinner surface layer and a thinner subsoil.

Time

The time needed for a soil to form depends on the influences of the other soil-forming factors. Soil formation is more rapid in a warm, moist climate than in a cool, dry climate. Also, some kinds of parent material are more resistant to weathering than others. For example, quartz is a very hard mineral that may change very little by weathering, even if it is exposed to the elements for many centuries. Thus, the age of a soil is measured by the degree of profile development rather than by the length of time during which the soil-forming processes have been taking place.

Very young soils, such as those that formed in recent alluvium, in windblown deposits, or in materials recently deposited by humans, are essentially unaltered parent material. Examples are the Chicone and Evesboro soils. These relatively young soils have horizons that are strongly related to the layers of deposition, and little additional horizon differentiation has occurred.

A soil is considered to be mature when it has developed a distinct profile. Soils with well developed profiles generally have a thick subsoil or have distinct color differences or differences in content of clay between horizons.

The geologic materials exposed in Cumberland County range from very recent to several million years old, but most of the soils are less than a million years old. The oldest soils are those that formed in the remnants of the Bridgeton Formation, which caps the hills. These soils are deeply weathered and have distinct horizons. Other upland soils that are younger also have well developed horizons. Extending inland from the coast at an elevation of less than 50 feet is a system of terraces. On these terraces, which range from 12,000 to 80,000 years in age, the soils have less profile development. Along the streams in low areas the soils are forming in comparatively recent deposits and have less profile development than older soils.

Figure 14 illustrates the typical relationship between soils, landscape position, and parent material of soils formed in loamy materials and sandy eolian deposits. The well drained Aura, Sassafra, Fort Mott, and Downer soils are in the higher landscape positions. The moderately well drained Hammonton soils are in the lower landscape positions in depressions or on flats.

Figure 15 illustrates the typical relationship of the soils, landscape position, and parent material of soils formed in sandy materials and organic deposits. The excessively drained Evesboro and Lakewood soils are in the higher landscape

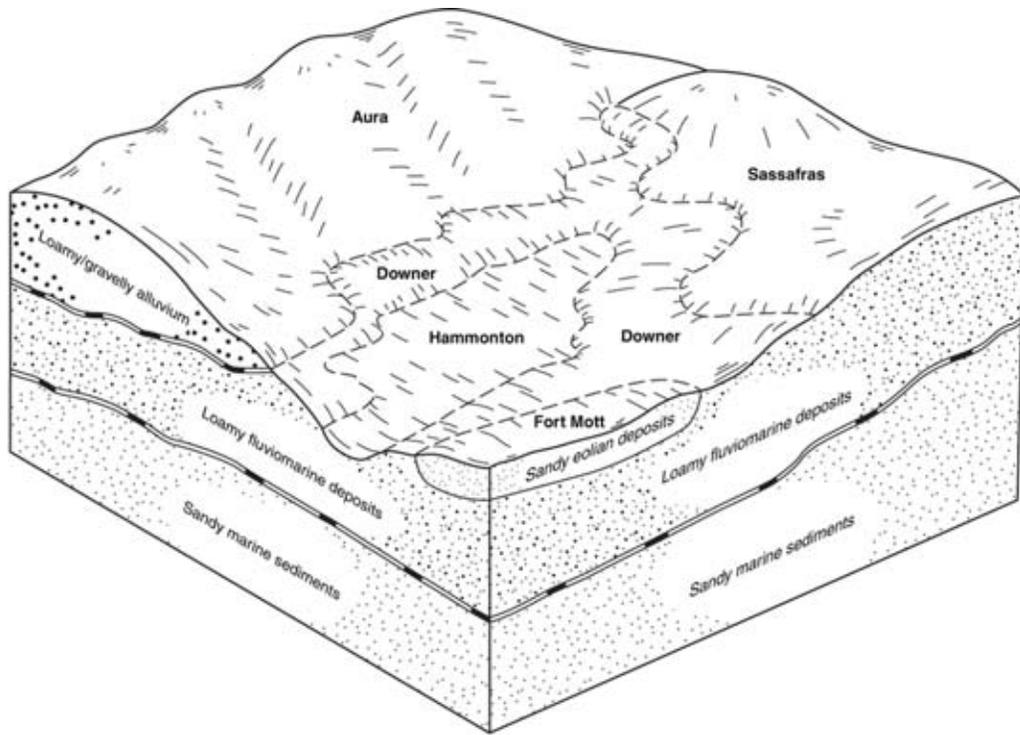


Figure 14.—Typical relationship of the soils, landscape position, and parent material of soils formed in loamy materials and sandy eolian deposits.

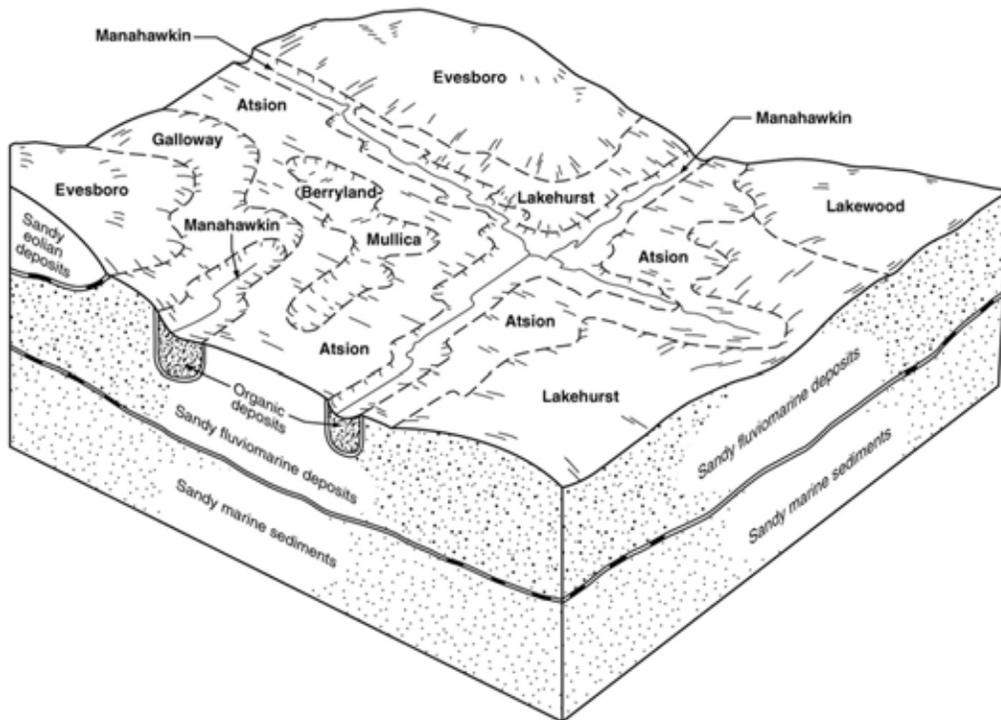


Figure 15.—Typical relationship of the soils, landscape position, and parent material of soils formed in sandy materials and organic deposits.

positions. The very poorly drained Berryland, Mullica, and Manahawkin soils are in the lowest landscape positions. The moderately well drained Galloway and Lakehurst soils are in the intermediate landscape positions. They are higher on the landscape than the poorly drained Atsion soils.

Processes of Horizon Differentiation

One or more soil-forming processes are involved in the formation of soil horizons. These processes are the accumulation of organic matter; the leaching of carbonates and other soluble material; the chemical weathering, mainly by hydrolysis, of primary minerals into silicate clay minerals; the translocation of silicate clay and some silt-sized particles from one horizon to another; and the reduction and transfer of iron.

These processes have been active in the formation of most of the soils in Cumberland County. The interaction of the first four processes is indicated by the strongly expressed horizons in Aura and Sassafras soils. All five processes have been active in the formation of the poorly drained Othello and moderately well drained Woodstown soils, where iron transformation is evident as shown by the grayish colors, which are due to iron reduction, and the yellowish or reddish colors, which are due to iron oxidation.

Organic matter accumulation is evident in nearly all of the soils in the survey area. Most of the soils contain low or moderate amounts of organic matter in the surface layer. The content of organic matter ranges from low, as in the excessively drained Evesboro soils, to high, as in the very poorly drained Manahawkin, Pawcatuck, and Transquaking soils, where the soil is saturated near the surface for long periods of time and decomposition of organic matter is much slower.

The translocation of clay minerals is an important process in the development of many soils in the survey area. As clay minerals are removed from the A horizon, they accumulate initially as clay films on the faces of peds, in pores, and in root channels in the B horizon. Over time the clay coatings are incorporated into the matrix of the B horizon. Plant and animal activity aids in this physical mixing.

As silicate clay forms from primary minerals, some iron is commonly released as hydrated oxides. These oxides are generally red, and even if they occur in small amounts, they give the soil material a brownish color. They are largely responsible for the strong brown, yellowish brown, or reddish brown colors that are dominant in the subsoil of many soils in the survey area.

The reduction and transfer of iron have occurred in all of the soils that are not characterized by good natural drainage. Soil features associated with chemically reduced iron are referred to as redoximorphic features. In poorly drained and very poorly drained soils, seasonal saturation from water occurs for long periods at or near the soil surface. The reduction of iron is most intense in near-surface horizons since these horizons generally have higher amounts of organic matter than lower horizons and organic matter is a source of food for micro-organisms. When the soil is saturated, micro-organisms rapidly deplete the oxygen in the soil, resulting in the reduction of iron. When saturated conditions drop to greater depths, generally during the warmer months, the reduced iron often reoxidizes, forming yellowish or reddish zones, or masses. In poorly drained and very poorly drained soils such as those in the Othello, Fallsington, and Mullica series, the redoximorphic features are evidenced by reddish masses of reoxidized iron occurring in an essentially gray matrix in the subsoil.

In somewhat poorly drained and moderately well drained soils, seasonal saturation from water occurs for shorter periods and at deeper depths below the soil surface. In soils such as those in the Woodstown, Hammonton, and Galloway series, the redoximorphic features are evidenced by gray iron or clay depletions and reddish

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masses of reoxidized iron occurring in an essentially yellow or brown matrix within the subsoil. A gray matrix commonly occurs in the lower part of the subsoil or in the substratum of somewhat poorly drained soils.

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Glossary

- Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
- Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
- Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.
- Alpha,alpha-dipyridyl.** A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.
- Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
- Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.
- Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.
- Aspect.** The direction in which a slope faces.
- Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.
- Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:
- | | |
|-----------------|--------------|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | 9 to 12 |
| Very high | more than 12 |
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.
- Canopy.** The leafy crown of trees or shrubs. (See Crown.)
- 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 material.** Soil material that has, by volume, 15 to 35 percent thin, flat fragments of ironstone as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a chanter.
- Chemical treatment.** Control of unwanted vegetation through the use of chemicals.
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.
- Clayey.** A general texture term that includes sandy clay, silty clay, or clay.
- Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- Coarse textured soil.** Sand or loamy sand.
- Clay spot.** A spot where the texture is silty clay or clay in areas where the texture is typically loamy. Typically 0.25 acre to 2 acres.
- Coarse-loamy.** According to the family criteria in the soil taxonomic system, soil containing less than 18 percent, by weight, clay and 15 percent or more fine sand or coarser material.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- COLE (coefficient of linear extensibility).** See Linear extensibility.
- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.
- Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.
- Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.
- Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance

of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

- 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.
- Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.
- 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.
- Cropping system.** Growing crops according to a planned system of rotation and management practices.
- Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.
- Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.
- Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.
- Depression.** A portion of land surrounded on all sides by higher land. These areas generally do not have outlets for drainage.
- Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.
- Drainage class (natural).** Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained*, *somewhat excessively drained*, *well drained*, *moderately well drained*, *somewhat poorly drained*, *poorly drained*, and *very poorly drained*. These classes are defined in the "Soil Survey Manual."
- Drainage, surface.** Runoff, or surface flow of water, from an area.
- Drainageway.** A general term for a course or channel along which water moves in draining an area.
- Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.
- Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.
- 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.

- Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.
- Eroded (soil phase).** Because of erosion, the soil has lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.
- Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
- 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 border.** A strip of perennial vegetation (trees, shrubs, or herbaceous plants) established on the edge of a field to control erosion, provide travel lanes for farm machinery, control competition from adjacent woodland, or provide food and cover for wildlife.
- Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.
- Fine textured soil.** Sandy clay, silty clay, or clay.
- Fine-loamy.** According to the family criteria in the soil taxonomic system, soil containing 18 to 35 percent, by weight, clay and 15 percent or more fine sand or coarser material.
- Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.
- Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.
- Flat.** A general term for a level or nearly level surface or small area of land marked by little or no relief.
- Flooding.** The temporary covering of the soil surface by flowing water from any source, such as overflowing streams, runoff from adjacent or surrounding slopes, and inflow from high tides. The frequency of flooding generally is expressed as none, rare, occasional, frequent, or very frequent.
- Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.
- Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.
- Fluviomarine deposits.** Marine deposits that have been reworked and transported from their original place by river or stream action.
- Forb.** Any herbaceous plant not a grass or a sedge.
- Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

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.

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.

Glaucinite. A greenish mineral closely related to micas and essentially a hydrous potassium iron silicate. It is a locally important mineral found in certain coastal plain marine sediments and is locally referred to as “greensand” or “marl.” It commonly occurs in soils as sand size “pellets.” New Jersey glauconite classes are based on percent glauconite by volume either in the mineralogy control section or the upper part of the B horizon. They are as follows:

Very low	0 to 2 percent
Low	2 to 10 percent
Moderate	10 to 20 percent
High	20 to 40 percent
Very high	more than 40 percent

Glaucinitic. Refers to soil or parent materials that contain glauconite.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot. An area of soils where the content of rock fragments generally less than 3 inches in diameter is more than 15 percent, by volume, in the surface layer, occurring in a map unit in which the surface layer of the dominant soil or soils has less than 15 percent gravel. Typically 0.25 acre to 5 acres in size.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Gravel pit. An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel. Typically 0.5 acre to 5 acres in size.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

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 potential.

The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

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 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:

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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

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Ironstone. A cemented material formed within a soil and composed of high amounts of precipitated iron. Ironstone forms through complex chemical processes that occur within certain soils over long periods of time. Ironstone fragments (channers) are typically flat and horizontally oriented within a soil horizon.

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.

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.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat} . Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landfill. An area of accumulated waste products from human habitat. Landfill areas can be above or below the natural ground level.

Landform. The description of a given terrain based on position and configuration. Examples are flood plain, flat, hill, knoll, and swamp.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

- Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.
- Loamy.** A general texture term that includes very coarse sandy loam, coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, sandy clay loam, or clay loam.
- Low strength.** The soil is not strong enough to support loads.
- Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.
- Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.
- 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.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Native pasture.** Pasture that has seeded naturally in native grasses.
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.
- No-till farming.** A method of planting crops in which there is virtually no seedbed preparation. A thin slice of the soil is opened, and the seed is planted at the desired depth.
- Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

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 movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

- Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.
- Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.
- 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.
- Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.
- Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

- Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.
- Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.
- Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.
- Reduced matrix.** A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.
- Relief.** The elevations or inequalities of a land surface, considered collectively.
- Rill.** A steep-sided channel resulting from accelerated erosion. A rill generally is 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.
- Root zone.** The part of the soil that can be penetrated by plant roots.

- Rotational grazing.** Moving livestock from one grazing area to another to maintain optimum forage and pasture productivity.
- 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.
- 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.
- Sandy.** A general texture term that includes coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, loamy very fine sand.
- Sandy spot.** An area where the surface layer is sandy (loamy sand or sand) occurring in a map unit in which the dominant soil or soils have a loamy, silty, or clayey surface layer. Excluded are areas where the textural classes are adjoining, such as an area of loamy sand occurring in a map unit in which the dominant soil or soils have a surface layer of sandy loam. Typically 0.25 acre to 2 acres in size.
- 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.
- Saprolite.** Unconsolidated residual material underlying the soil and grading to hard bedrock below.
- Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
- 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. All the soils of a given series have horizons that are similar in composition, thickness, and arrangement.
- Severely eroded spot.** An area where on the average 75 percent or more of the original surface layer has been lost because of accelerated erosion. Typically, 0.25 acre to 2 acres.
- Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- 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.
- Silty.** A general texture term that includes silt, silt loam, or silty clay loam.
- Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.
- Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Sinkhole.** A depression in the landscape where limestone has been dissolved.
- 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.
- Slickensides.** Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the

steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Strongly sloping	5 to 10 percent
Moderately steep	10 to 5 percent
Steep	15 to 25 percent
Very steep	25 percent and higher

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soil. A natural, three-dimensional body at the Earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion 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).

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. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”
- Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.
- Swamp.** A saturated, very poorly drained area that is intermittently covered by water. Swamps are mainly covered by trees or shrubs.
- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.
- Terrace.** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.
- 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.”
- Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- Upland.** Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- Water bars.** Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.
- 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.
- Wet spot.** An area of somewhat poorly drained to very poorly drained soils that are at least two drainage classes wetter than the named soils in the surrounding map unit. Areas identified on the detailed soil maps by a special symbol typically are 0.5 acre to 2 acres in size.
- Wilting point (or permanent wilting point).** The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.
- Windthrow.** The uprooting and tipping over of trees by the wind.

Tables

Soil Survey of Cumberland County, New Jersey

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at the Millville FAA Airport in New Jersey.)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snow-fall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	39.7	22.6	31.1	64	-3	3	3.27	1.67	4.67	6	6.1
February-	42.4	24.5	33.5	68	2	8	3.34	1.91	4.62	5	5.7
March----	52.0	32.6	42.3	78	13	33	3.88	2.43	5.18	6	1.7
April----	62.2	40.9	51.5	86	23	119	3.67	2.07	5.10	6	.2
May-----	72.4	51.2	61.8	91	33	369	3.78	1.90	5.42	6	.0
June-----	81.0	60.6	70.8	95	44	625	3.34	1.54	4.89	5	.0
July-----	85.3	66.3	75.8	97	51	800	3.59	1.64	5.27	5	.0
August---	84.0	65.1	74.6	95	49	761	3.83	1.72	5.63	5	.0
September	77.4	57.6	67.5	93	39	526	3.33	1.74	4.73	4	.0
October--	66.6	45.6	56.1	84	26	222	3.21	1.62	4.59	4	.0
November-	56.0	37.0	46.5	76	17	62	3.43	1.49	5.08	6	.2
December-	44.8	27.7	36.3	67	5	10	3.61	1.90	5.12	6	2.1
Yearly:											
Average-	63.7	44.3	54.0	---	---	---	---	---	---	---	---
Extreme-	---	---	---	98	-5	---	---	---	---	---	---
Total---	---	---	---	---	---	3,537	42.29	35.43	48.86	64	16.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Soil Survey of Cumberland County, New Jersey

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at the Millville FAA Airport
in New Jersey.)

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--	Apr. 6	Apr. 17	May 1
2 years in 10 later than--	Apr. 1	Apr. 13	Apr. 27
5 years in 10 later than--	Mar. 21	Apr. 5	Apr. 19
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 3	Oct. 21	Oct. 10
2 years in 10 earlier than--	Nov. 9	Oct. 26	Oct. 16
5 years in 10 earlier than--	Nov. 20	Nov. 6	Oct. 25

Table 3.--Growing Season

(Recorded in the period 1961-90 at the Millville FAA
Airport in New Jersey.)

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	218	193	168
8 years in 10	226	200	175
5 years in 10	243	214	188
2 years in 10	259	228	202
1 year in 10	268	235	209

Soil Survey of Cumberland County, New Jersey

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded-----	14,194	4.4
AtsAr	Atsion sand, 0 to 2 percent slopes, rarely flooded-----	2,545	0.8
AucB	Aura loamy sand, 0 to 5 percent slopes-----	4,903	1.5
AugA	Aura sandy loam, 0 to 2 percent slopes-----	11,229	3.5
AugB	Aura sandy loam, 2 to 5 percent slopes-----	13,875	4.3
AuhB	Aura gravelly sandy loam, 2 to 5 percent slopes-----	8,349	2.6
AvuB	Aura-Urban land complex, 0 to 5 percent slopes-----	261	*
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded-----	23,834	7.4
BrvAv	Broadkill silt loam, 0 to 1 percent slopes, very frequently flooded-----	2,762	0.9
ChsAt	Chicone silt loam, 0 to 1 percent slopes, frequently flooded-----	11	*
ChtA	Chillum silt loam, 0 to 2 percent slopes-----	2,002	0.6
ChtB	Chillum silt loam, 2 to 5 percent slopes-----	7,452	2.3
DocB	Downer loamy sand, 0 to 5 percent slopes-----	14,537	4.5
DocC	Downer loamy sand, 5 to 10 percent slopes-----	4,819	1.5
DoeA	Downer sandy loam, 0 to 2 percent slopes-----	9,153	2.8
DoeB	Downer sandy loam, 2 to 5 percent slopes-----	8,683	2.7
DouB	Downer-Urban land complex, 0 to 5 percent slopes-----	2,395	0.7
EveB	Evesboro sand, 0 to 5 percent slopes-----	11,076	3.4
EveC	Evesboro sand, 5 to 10 percent slopes-----	2,049	0.6
EveD	Evesboro sand, 10 to 15 percent slopes-----	425	0.1
EvuB	Evesboro-Urban land complex, 0 to 5 percent slopes-----	1,082	0.3
FamA	Fallsington sandy loam, 0 to 2 percent slopes-----	7,163	2.2
FodB	Fort Mott loamy sand, 0 to 5 percent slopes-----	4,379	1.4
GamB	Galloway loamy sand, 0 to 5 percent slopes-----	6,668	2.1
HbmB	Hammonton loamy sand, 0 to 5 percent slopes-----	10,404	3.2
HboA	Hammonton sandy loam, 0 to 2 percent slopes-----	15,324	4.7
HboB	Hammonton sandy loam, 2 to 5 percent slopes-----	1,841	0.6
HbrB	Hammonton-Urban land complex, 0 to 5 percent slopes-----	735	0.2
LakB	Lakehurst sand, 0 to 5 percent slopes-----	2,371	0.7
LasB	Lakewood sand, 0 to 5 percent slopes-----	3,040	0.9
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded-----	16,513	5.1
MbrA	Matapeake silt loam, 0 to 2 percent slopes-----	2,939	0.9
MbrB	Matapeake silt loam, 2 to 5 percent slopes-----	6,912	2.1
MbrC	Matapeake silt loam, 5 to 10 percent slopes-----	2,169	0.7
MbuA	Mattapex silt loam, 0 to 2 percent slopes-----	3,908	1.2
MbuB	Mattapex silt loam, 2 to 5 percent slopes-----	2,407	0.7
MmtAv	Mispillion-Transquaking-Appoquinimink complex, 0 to 1 percent slopes, very frequently flooded-----	4,429	1.4
OthA	Othello silt loam, 0 to 2 percent slopes-----	1,483	0.5
OTKA	Othello and Fallsington soils, 0 to 2 percent slopes-----	53	*
OTMA	Othello, Fallsington, and Trussum soils, 0 to 2 percent slopes-----	22	*
PdWAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded-----	6,206	1.9
PHG	Pits, sand and gravel-----	5,468	1.7
PstAt	Psammaquents, sulfidic substratum, 0 to 3 percent slopes, frequently flooded-----	32	*
PsvAr	Psamments, wet substratum, 0 to 3 percent slopes, rarely flooded-----	177	*
SacA	Sassafras sandy loam, 0 to 2 percent slopes-----	10,177	3.1
SacB	Sassafras sandy loam, 2 to 5 percent slopes-----	7,388	2.3
SacC	Sassafras sandy loam, 5 to 10 percent slopes-----	1,272	0.4
SadA	Sassafras gravelly sandy loam, 0 to 2 percent slopes-----	1,159	0.4
SadB	Sassafras gravelly sandy loam, 2 to 5 percent slopes-----	4,191	1.3
SadC	Sassafras gravelly sandy loam, 5 to 10 percent slopes-----	1,205	0.4
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes-----	670	0.2
TrkAv	Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded--	20,539	6.4
UdrB	Udorthents, refuse substratum, 0 to 8 percent slopes-----	16	*
UR	Urban land-----	848	0.3
WATER	Water-----	15,621	4.8
WoeA	Woodstown sandy loam, 0 to 2 percent slopes-----	7,726	2.4
WoeB	Woodstown sandy loam, 2 to 5 percent slopes-----	1,535	0.5
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes-----	774	0.2
	Total-----	323,400	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the "Percent" column is about 0.2 percent of the survey area.

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas

(Yields in the "N" columns are for nonirrigated areas; those in the "I" columns are for irrigated areas. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
AptAv: Appoquinimink, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
Transquaking, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
Mispillion, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
AtsAr----- Atsion, rarely flooded	5w	---	---	---	---	---	---	---	---	---	---
AucB----- Aura	2s	230	235	70	90	100	200	25	35	30	40
AugA----- Aura	1	250	265	100	120	175	375	35	45	45	55
AugB----- Aura	2e	250	265	100	120	175	375	35	45	45	55
AuhB----- Aura	2e	254	265	100	130	175	375	35	45	45	55
AvuB: Aura-----	2e	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	5w	---	---	---	---	---	---	---	---	---	---
Mullica, occasionally flooded-----	4w	---	---	---	---	---	---	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas--Continued

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
BrvAv----- Broadkill, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
ChsAt----- Chicone, frequently flooded	5w	---	---	---	---	---	---	---	---	---	---
ChtA----- Chillum	1	240	285	130	160	225	500	45	60	50	65
ChtB----- Chillum	2e	240	285	130	160	225	500	45	60	50	65
DocB----- Downer	2s	213	225	90	110	125	325	25	35	35	45
DocC----- Downer:	3e	190	205	80	100	75	275	20	30	30	40
DoeA----- Downer	1	261	270	100	120	175	375	45	50	55	65
DoeB----- Downer	2e	261	270	100	120	175	375	45	50	55	65
DouB: Downer-----	2e	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---
EveB----- Evesboro	7s	---	---	---	---	---	---	---	---	---	---
EveC----- Evesboro	7s	---	---	---	---	---	---	---	---	---	---
EveD----- Evesboro	7s	---	---	---	---	---	---	---	---	---	---
EvuB: Evesboro-----	7s	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas--Continued

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
FamA----- Fallsington	3w	---	---	---	---	---	---	---	---	---	---
FodB----- Fort Mott	3s	128	140	110	150	225	325	25	35	35	45
GamB----- Galloway	3w	118	132	110	130	125	275	30	40	30	40
HbmB----- Hammonton	2w	254	265	90	110	125	275	30	40	35	45
HboA----- Hammonton	2w	267	280	100	120	175	375	35	45	35	45
HboB----- Hammonton	2w	267	280	100	120	175	375	35	45	35	45
HbrB: Hammonton-----	2w	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---
LakB----- Lakehurst	4w	---	---	---	---	---	---	---	---	---	---
LasB----- Lakewood	7s	---	---	---	---	---	---	---	---	---	---
MakAt----- Manahawkin, frequently flooded	7w	---	---	---	---	---	---	---	---	---	---
MbrA----- Matapeake	1	240	270	140	170	225	475	45	60	50	65
MbrB----- Matapeake	2e	240	270	140	170	225	475	45	60	50	65
MbrC----- Matapeake	3e	210	240	120	160	175	425	30	50	35	55
MbuA----- Mattapex	2w	240	270	135	165	175	375	40	55	65	75

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas--Continued

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
MbuB----- Mattapex	2e	240	270	135	165	175	375	40	55	65	75
MmtAv: Mispollion, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
Transquaking, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
Appoquinimink, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
OthA----- Othello	3w	---	---	---	---	---	---	---	---	---	---
OTKA: Othello-----	3w	---	---	---	---	---	---	---	---	---	---
Fallsington-----	3w	---	---	---	---	---	---	---	---	---	---
OTMA: Othello-----	3w	---	---	---	---	---	---	---	---	---	---
Fallsington-----	3w	---	---	---	---	---	---	---	---	---	---
Trussum-----	4w	---	---	---	---	---	---	---	---	---	---
PdwAv: Pawcatuck, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
Transquaking, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
PHG----- Pits, sand and gravel	8s	---	---	---	---	---	---	---	---	---	---
PstAt----- Psammaquents, sulfidic substratum, frequently flooded	8w	---	---	---	---	---	---	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas--Continued

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
PsvAr----- Psamments, wet substratum, rarely flooded	7w	---	---	---	---	---	---	---	---	---	---
SacA----- Sassafras	1	285	300	130	175	225	475	45	55	50	70
SacB----- Sassafras	2e	285	300	130	170	225	475	45	55	50	65
SacC----- Sassafras	3e	240	270	120	150	175	425	40	50	45	55
SadA----- Sassafras	2e	285	300	130	175	225	475	45	55	50	70
SadB----- Sassafras	2e	285	300	130	170	225	475	45	55	50	65
SadC----- Sassafras, eroded	3e	240	270	120	150	175	425	40	50	45	55
SapB: Sassafras-----	2e	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---
TrkAv----- Transquaking, very frequently flooded	8w	---	---	---	---	---	---	---	---	---	---
UdrB----- Udorthents, refuse substratum	7s	---	---	---	---	---	---	---	---	---	---
UR----- Urban land	8s	---	---	---	---	---	---	---	---	---	---
WoeA----- Woodstown	2w	255	280	130	170	175	425	40	50	45	50
WoeB----- Woodstown	2w	255	280	130	170	175	425	40	50	45	50

Table 5.--Land Capability and Yields per Acre of Crops in Irrigated and Nonirrigated Areas--Continued

Map symbol and soil name	Land capability	Snap beans		Corn		Peppers		Soybeans		Wheat	
		N	I	N	I	N	I	N	I	N	I
		Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu	Bu
WooB: Woodstown-----	2w	---	---	---	---	---	---	---	---	---	---
Urban land-----	8s	---	---	---	---	---	---	---	---	---	---

Soil Survey of Cumberland County, New Jersey

Table 6.--Acreage by Capability Class
and Subclass

(Acreage listed as "Unclassified" includes
that of any water areas of significant
size and other miscellaneous areas.)

Capability class	Capability subclass	Acreage
Unclassified	---	15,621
1	---	33,000
2	e	60,237
2	w	41,017
2	s	17,576
3	e	9,251
3	w	17,483
3	s	4,160
4	w	18,026
5	w	20,832
6	s	271
7	w	15,947
7	s	15,470
8	w	46,610
8	s	7,898

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Table 7.--Prime Farmland and Other Important Farmlands

(Only the soils considered prime farmland or important farmland are listed. Urban or built-up areas of the soils listed are not considered prime or important farmland.)

Map symbol	Map unit name
Prime farmland:	
AucB-----	Aura loamy sand, 0 to 5 percent slopes
AugA-----	Aura sandy loam, 0 to 2 percent slopes
AugB-----	Aura sandy loam, 2 to 5 percent slopes
AuhB-----	Aura gravelly sandy loam, 2 to 5 percent slopes
ChtA-----	Chillum silt loam, 0 to 2 percent slopes
ChtB-----	Chillum silt loam, 2 to 5 percent slopes
DoeA-----	Downer sandy loam, 0 to 2 percent slopes
DoeB-----	Downer sandy loam, 2 to 5 percent slopes
HboA-----	Hammonton sandy loam, 0 to 2 percent slopes
HboB-----	Hammonton sandy loam, 2 to 5 percent slopes
MbrA-----	Matapeake silt loam, 0 to 2 percent slopes
MbrB-----	Matapeake silt loam, 2 to 5 percent slopes
MbuA-----	Mattapex silt loam, 0 to 2 percent slopes
MbuB-----	Mattapex silt loam, 2 to 5 percent slopes
SacA-----	Sassafras sandy loam, 0 to 2 percent slopes
SacB-----	Sassafras sandy loam, 2 to 5 percent slopes
SadA-----	Sassafras gravelly sandy loam, 0 to 2 percent slopes
SadB-----	Sassafras gravelly sandy loam, 2 to 5 percent slopes
WoeA-----	Woodstown sandy loam, 0 to 2 percent slopes
WoeB-----	Woodstown sandy loam, 2 to 5 percent slopes
Farmland of statewide importance:	
DocB-----	Downer loamy sand, 0 to 5 percent slopes
DocC-----	Downer loamy sand, 5 to 10 percent slopes
FamA-----	Fallsington sandy loam, 0 to 2 percent slopes
FodB-----	Fort Mott loamy sand, 0 to 5 percent slopes
GamB-----	Galloway loamy sand, 0 to 5 percent slopes
HbmB-----	Hammonton loamy sand, 0 to 5 percent slopes
MbrC-----	Matapeake silt loam, 5 to 10 percent slopes
OthA-----	Othello silt loam, 0 to 2 percent slopes
OTKA-----	Othello and Fallsington soils, 0 to 2 percent slopes
OTMA-----	Othello, Fallsington, and Trussum soils, 0 to 2 percent slopes
SacC-----	Sassafras sandy loam, 5 to 10 percent slopes
SadC-----	Sassafras gravelly sandy loam, 5 to 10 percent slopes
Farmland of unique importance:	
AptAv-----	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded
AtsAr-----	Atsion sand, 0 to 2 percent slopes, rarely flooded
BEXAS-----	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded
BrvAv-----	Broadkill silt loam, 0 to 1 percent slopes, very frequently flooded
MakAt-----	Manahawkin muck, 0 to 2 percent slopes, frequently flooded
MmtAv-----	Mispillion-Transquaking-Appoquinimink complex, 0 to 1 percent slopes, very frequently flooded
PdwAv-----	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded
TrkAv-----	Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded

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Table 8a.--Agricultural Waste Management (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded--	40	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Salinity	1.00	Salinity	1.00
		Flooding	1.00	Flooding	1.00
Transquaking, very frequently flooded--	30	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Salinity	1.00
		Salinity	1.00	Flooding	1.00
Mispillion, very frequently flooded--	25	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Salinity	1.00
		Salinity	0.78	Flooding	1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	0.99	Too acid	1.00
AucB: Aura-----	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31
		Too acid	0.05	Too acid	0.21
		Filtering capacity	0.01	Filtering capacity	0.01
AugA: Aura-----	80	Somewhat limited		Very limited	
		Too acid	0.94	Too acid	1.00
		Slow water movement	0.41	Slow water movement	0.31
		Filtering capacity	0.01	Filtering capacity	0.01
AugB: Aura-----	85	Somewhat limited		Very limited	
		Too acid	0.94	Too acid	1.00
		Slow water movement	0.41	Slow water movement	0.31
		Filtering capacity	0.01	Filtering capacity	0.01

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Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AuhB: Aura-----	90	Somewhat limited Too acid Slow water movement	0.86 0.82	Very limited Too acid Slow water movement	1.00 0.69
AvuB: Aura-----	60	Somewhat limited Too acid Slow water movement Filtering capacity	0.94 0.41 0.01	Very limited Too acid Slow water movement Filtering capacity	1.00 0.31 0.01
Urban land-----	30	Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Filtering capacity Ponding Depth to saturated zone Too acid Leaching	1.00 1.00 1.00 0.86 0.70	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 1.00 1.00
Mullica, occasionally flooded-----	40	Very limited Filtering capacity Ponding Depth to saturated zone Too acid Flooding	1.00 1.00 1.00 0.94 0.60	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 1.00 1.00
BrvAv: Broadkill, very frequently flooded--	100	Very limited Ponding Depth to saturated zone Salinity Flooding Runoff	1.00 1.00 1.00 1.00 1.00 0.40	Very limited Ponding Depth to saturated zone Salinity Flooding Filtering capacity	1.00 1.00 1.00 1.00 0.01
ChsAt: Chicone, frequently flooded-----	95	Very limited Ponding Depth to saturated zone Flooding Runoff Too acid	1.00 1.00 1.00 0.40 0.32	Very limited Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 0.91
ChtA: Chillum-----	85	Somewhat limited Too acid	0.50	Very limited Too acid	0.99
ChtB: Chillum-----	85	Somewhat limited Too acid	0.50	Very limited Too acid	0.99

Soil Survey of Cumberland County, New Jersey

Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
DocB: Downer-----	80	Very limited Filtering capacity Too acid	1.00 0.01	Very limited Filtering capacity Too acid	1.00 0.03
DocC: Downer-----	90	Very limited Filtering capacity Too acid	1.00 0.01	Very limited Filtering capacity Too acid	1.00 0.03
DoeA: Downer-----	85	Somewhat limited Too acid Filtering capacity	0.01 0.01	Somewhat limited Too acid Filtering capacity	0.03 0.01
DoeB: Downer-----	90	Somewhat limited Too acid Filtering capacity	0.01 0.01	Somewhat limited Too acid Filtering capacity	0.03 0.01
DouB: Downer-----	60	Somewhat limited Too acid Filtering capacity	0.11 0.01	Somewhat limited Too acid Filtering capacity	0.42 0.01
Urban land-----	30	Not rated		Not rated	
EveB: Evesboro-----	80	Very limited Filtering capacity Too acid Leaching Low adsorption Droughty	1.00 0.86 0.45 0.38 0.02	Very limited Filtering capacity Too acid Droughty	1.00 1.00 0.02
EveC: Evesboro-----	95	Very limited Filtering capacity Too acid Leaching Low adsorption Droughty	1.00 0.86 0.45 0.38 0.02	Very limited Filtering capacity Too acid Droughty	1.00 1.00 0.02
EveD: Evesboro-----	95	Very limited Filtering capacity Too acid Slope Droughty Leaching	1.00 0.86 0.84 0.65 0.45	Very limited Filtering capacity Too acid Slope Droughty	1.00 1.00 0.84 0.65
EvuB: Evesboro-----	60	Very limited Filtering capacity Too acid Leaching Low adsorption Droughty	1.00 0.86 0.45 0.38 0.02	Very limited Filtering capacity Too acid Droughty	1.00 1.00 0.02
Urban land-----	30	Not rated		Not rated	

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Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
FamA: Fallsington-----	85	Very limited Depth to saturated zone Too acid Leaching Filtering capacity	1.00 0.94 0.70 0.01	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
FodB: Fort Mott-----	85	Very limited Filtering capacity Too acid Leaching	1.00 0.73 0.45	Very limited Filtering capacity Too acid	1.00 1.00
GamB: Galloway-----	85	Very limited Filtering capacity Depth to saturated zone Too acid Leaching Droughty	1.00 1.00 0.86 0.45 0.23	Very limited Filtering capacity Depth to saturated zone Too acid Droughty	1.00 1.00 1.00 0.23
HbmB: Hammonton-----	80	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.22	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.77
HboA: Hammonton-----	85	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.73 0.01	Very limited Too acid Depth to saturated zone Filtering capacity	1.00 0.86 0.01
HboB: Hammonton-----	85	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.78 0.01	Very limited Too acid Depth to saturated zone Filtering capacity	1.00 0.86 0.01
HbrB: Hammonton-----	70	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.22	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.77
Urban land-----	20	Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Filtering capacity Too acid Depth to saturated zone Leaching	1.00 0.99 0.86 0.45	Very limited Filtering capacity Too acid Depth to saturated zone	1.00 1.00 0.86

Soil Survey of Cumberland County, New Jersey

Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LasB: Lakewood-----	85	Very limited		Very limited	
		Filtering capacity	1.00	Droughty	1.00
		Droughty	1.00	Filtering capacity	1.00
		Too acid	0.86	Too acid	1.00
		Leaching	0.45		
		Low adsorption	0.17		
MakAt: Manahawkin, frequently flooded--	85	Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	1.00
		Too acid	0.62	Too acid	1.00
MbrA: Matapeake-----	90	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
MbrB: Matapeake-----	90	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
MbrC: Matapeake-----	90	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
		Slope	0.01	Slope	0.01
MbuA: Mattapex-----	95	Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00
		Depth to saturated zone	0.86	Too acid	1.00
		Too acid	0.73	Depth to saturated zone	0.86
MbuB: Mattapex-----	95	Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00
		Depth to saturated zone	0.86	Too acid	1.00
		Too acid	0.73	Depth to saturated zone	0.86
MmtAv: Mispillion, very frequently flooded--	50	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Salinity	1.00
		Salinity	0.78	Flooding	1.00
		Runoff	0.40	Filtering capacity	0.01
Transquaking, very frequently flooded--	25	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Salinity	1.00
		Slow water movement	1.00	Flooding	1.00
		Salinity	1.00	Slow water movement	1.00

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Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MmtAv: Appoquinimink, very frequently flooded--	20	Very limited Ponding Depth to saturated zone Salinity Flooding Runoff	1.00 1.00 1.00 1.00 0.40	Very limited Ponding Depth to saturated zone Salinity Flooding Sodium content	1.00 1.00 1.00 1.00 0.18
OthA: Othello-----	85	Very limited Depth to saturated zone Leaching Too acid Slow water movement Filtering capacity	1.00 0.50 0.50 0.41 0.01	Very limited Depth to saturated zone Too acid Slow water movement Filtering capacity	1.00 0.99 0.31 0.01
OTKA: Othello-----	55	Very limited Depth to saturated zone Too acid Leaching Filtering capacity	1.00 0.94 0.50 0.01	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Fallsington-----	45	Very limited Depth to saturated zone Too acid Leaching Filtering capacity	1.00 0.94 0.70 0.01	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
OTMA: Othello-----	45	Very limited Depth to saturated zone Too acid Leaching Filtering capacity	1.00 0.94 0.50 0.01	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Fallsington-----	35	Very limited Depth to saturated zone Too acid Leaching Filtering capacity	1.00 0.94 0.70 0.01	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Trussum-----	20	Very limited Depth to saturated zone Slow water movement Too acid Leaching	1.00 1.00 0.78 0.50	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PdwAv: Pawcatuck, very frequently flooded--	60	Very limited Ponding Depth to saturated zone Flooding Salinity Runoff	 1.00 1.00 1.00 1.00 0.40	Very limited Ponding Depth to saturated zone Flooding Salinity	 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded--	25	Very limited Ponding Depth to saturated zone Flooding Slow water movement Salinity	 1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Slow water movement	 1.00 1.00 1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated	
PstAt: Psamments, sulfidic substratum, frequently flooded--	85	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	 1.00 1.00 1.00 1.00 0.86	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	 1.00 1.00 1.00 1.00 1.00
PsvAr: Psamments, wet substratum, rarely flooded-----	85	Very limited Filtering capacity Too acid Depth to saturated zone Low adsorption Leaching	 1.00 0.86 0.86 0.50 0.45	Very limited Filtering capacity Too acid Depth to saturated zone Low adsorption Flooding	 1.00 1.00 0.86 0.40 0.40
SacA: Sassafras-----	80	Somewhat limited Too acid Filtering capacity	 0.01 0.01	Somewhat limited Too acid Filtering capacity	 0.03 0.01
SacB: Sassafras-----	80	Somewhat limited Too acid Filtering capacity	 0.01 0.01	Somewhat limited Too acid Filtering capacity	 0.03 0.01
SacC: Sassafras-----	90	Somewhat limited Too acid Filtering capacity	 0.01 0.01	Somewhat limited Too acid Filtering capacity	 0.03 0.01

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Table 8a.--Agricultural Waste Management (Part 1)--Continued

Map symbol and soil name	Pct. of. map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SadA: Sassafras-----	85	Somewhat limited Too acid	0.73	Very limited Too acid	1.00
SadB: Sassafras-----	90	Somewhat limited Too acid	0.73	Very limited Too acid	1.00
SadC: Sassafras, eroded---	95	Somewhat limited Too acid Slope	0.73 0.01	Very limited Too acid Slope	1.00 0.01
SapB: Sassafras-----	60	Somewhat limited Too acid Filtering capacity	0.11 0.01	Somewhat limited Too acid Filtering capacity	0.42 0.01
Urban land-----	30	Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded--	90	Very limited Ponding Depth to saturated zone Flooding Salinity Runoff	1.00 1.00 1.00 1.00 0.40	Very limited Ponding Depth to saturated zone Salinity Flooding Filtering capacity	1.00 1.00 1.00 1.00 0.01
UdrB: Udorthents, refuse substratum-----	100	Somewhat limited Runoff	0.40	Not limited	
UR: Urban land-----	95	Not rated		Not rated	
WoeA: Woodstown-----	80	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01
WoeB: Woodstown-----	80	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01
WooB: Woodstown-----	65	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01	Somewhat limited Depth to saturated zone Too acid Filtering capacity	0.86 0.01 0.01
Urban land-----	20	Not rated		Not rated	

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Table 8b.--Agricultural Waste Management (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded--	40	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Salinity	1.00
Transquaking, very frequently flooded--	30	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Salinity	1.00
Mispillion, very frequently flooded--	25	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Salinity	1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited		Very limited	
		Ponding	1.00	Filtering capacity	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Too acid	0.42	Depth to saturated zone	1.00
AucB: Aura-----	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.21
		Too acid	0.77	Slow water movement	0.21
				Filtering capacity	0.01
AugA: Aura-----	80	Very limited		Very limited	
		Slow water movement	1.00	Too acid	1.00
		Too acid	0.77	Slow water movement	0.21
				Filtering capacity	0.01

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AugB: Aura-----	85	Very limited Slow water movement Too acid	1.00 0.77	Very limited Too acid Slow water movement Filtering capacity	1.00 0.21 0.01
AuhB: Aura-----	90	Very limited Slow water movement Too acid	1.00 0.42	Very limited Too acid Slow water movement	1.00 0.51
AvuB: Aura-----	60	Very limited Slow water movement Too acid	1.00 0.77	Very limited Too acid Slow water movement Filtering capacity	1.00 0.21 0.01
Urban land-----	30	Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 0.60 0.42	Very limited Filtering capacity Ponding Depth to saturated zone Too acid Flooding	1.00 1.00 1.00 1.00 0.60
Mullica, occasionally flooded-----	40	Very limited Ponding Depth to saturated zone Slow water movement Flooding Too acid	1.00 1.00 0.61 0.60 0.42	Very limited Filtering capacity Ponding Depth to saturated zone Too acid Flooding	1.00 1.00 1.00 1.00 0.60
BrvAv: Broadkill, very frequently flooded--	100	Very limited Ponding Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Filtering capacity	1.00 1.00 1.00 1.00 0.01

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ChsAt: Chicone, frequently flooded-----	95	Very limited Ponding Flooding Depth to saturated zone Slow water movement Too acid	1.00 1.00 1.00 1.00 0.77	Very limited Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 0.91
ChtA: Chillum-----	85	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid	0.99
ChtB: Chillum-----	85	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid Too steep for surface application	0.99 0.08
DocB: Downer-----	80	Somewhat limited Slow water movement Too acid	0.61 0.03	Very limited Filtering capacity Too acid	1.00 0.03
DocC: Downer-----	90	Somewhat limited Slope Slow water movement Too acid	0.88 0.61 0.03	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler irrigation Too acid	1.00 0.92 0.06 0.03
DoeA: Downer-----	85	Somewhat limited Slow water movement Too acid	0.61 0.03	Somewhat limited Too acid Filtering capacity	0.03 0.01
DoeB: Downer-----	90	Somewhat limited Slow water movement Too acid	0.61 0.03	Somewhat limited Too acid Filtering capacity	0.03 0.01
DouB: Downer-----	60	Somewhat limited Slow water movement Too acid	0.61 0.03	Somewhat limited Too acid Filtering capacity	0.42 0.01
Urban land-----	30	Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
EveB: Evesboro-----	80	Somewhat limited Too acid	0.03	Very limited Filtering capacity Too acid Low adsorption	1.00 1.00 0.38
EveC: Evesboro-----	95	Somewhat limited Slope Too acid	0.88 0.03	Very limited Filtering capacity Too acid Too steep for surface application Low adsorption Too steep for sprinkler irrigation	1.00 1.00 0.92 0.38 0.06
EveD: Evesboro-----	95	Very limited Slope Too acid	1.00 0.42	Very limited Filtering capacity Too steep for surface application Too acid Too steep for sprinkler irrigation	1.00 1.00 1.00 1.00
EvuB: Evesboro-----	60	Somewhat limited Too acid	0.03	Very limited Filtering capacity Too acid Low adsorption	1.00 1.00 0.38
Urban land-----	30	Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
FodB: Fort Mott-----	85	Somewhat limited Slow water movement Too acid	0.61 0.14	Very limited Filtering capacity Too acid	1.00 1.00
GamB: Galloway-----	85	Very limited Depth to saturated zone Too acid	1.00 0.42	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HbmB: Hammonton-----	80	Very limited Depth to saturated zone Slow water movement Too acid	1.00 0.31 0.14	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.77
HboA: Hammonton-----	85	Very limited Depth to saturated zone Slow water movement Too acid	1.00 0.31 0.14	Very limited Too acid Depth to saturated zone Filtering capacity	1.00 0.86 0.01
HboB: Hammonton-----	85	Very limited Depth to saturated zone Slow water movement	1.00 0.31	Very limited Too acid Depth to saturated zone Too steep for surface application Filtering capacity	1.00 0.86 0.08 0.01
HbrB: Hammonton-----	70	Very limited Depth to saturated zone Slow water movement Too acid	1.00 0.31 0.14	Very limited Filtering capacity Depth to saturated zone Too acid	1.00 0.86 0.77
Urban land-----	20	Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Depth to saturated zone Too acid	1.00 0.42	Very limited Filtering capacity Too acid Depth to saturated zone	1.00 1.00 0.86
LasB: Lakewood-----	85	Somewhat limited Too acid	0.42	Very limited Filtering capacity Too acid Low adsorption	1.00 1.00 0.17
MakAt: Manahawkin, frequently flooded--	85	Very limited Ponding Flooding Depth to saturated zone Too acid	1.00 1.00 1.00 0.03	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MbrA: Matapeake-----	90	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid	0.99
MbrB: Matapeake-----	90	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid Too steep for surface application	0.99 0.08
MbrC: Matapeake-----	90	Very limited Slow water movement Slope Too acid	1.00 1.00 0.14	Very limited Too steep for surface application Too acid Too steep for sprinkler irrigation	1.00 0.99 0.22
MbuA: Mattapex-----	95	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.14	Very limited Filtering capacity Too acid Depth to saturated zone	1.00 1.00 0.86
MbuB: Mattapex-----	95	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.14	Very limited Filtering capacity Too acid Depth to saturated zone Too steep for surface application	1.00 1.00 0.86 0.08
MmtAv: Mispillion, very frequently flooded--	50	Very limited Ponding Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00 0.31	Very limited Ponding Depth to saturated zone Salinity Flooding Filtering capacity	1.00 1.00 1.00 1.00 0.01
Transquaking, very frequently flooded--	25	Very limited Ponding Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Slow water movement	1.00 1.00 1.00 1.00 0.96

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MmtAv: Appoquinimink, very frequently flooded--	20	Very limited Ponding Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Sodium content	1.00 1.00 1.00 1.00 0.18
OthA: Othello-----	85	Very limited Slow water movement Depth to saturated zone Too acid	1.00 1.00 0.14	Very limited Depth to saturated zone Too acid Slow water movement Filtering capacity	1.00 0.99 0.21 0.01
OTKA: Othello-----	55	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.77	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Fallsington-----	45	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
OTMA: Othello-----	45	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.77	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Fallsington-----	35	Very limited Depth to saturated zone Slow water movement Too acid	1.00 1.00 0.42	Very limited Depth to saturated zone Too acid Filtering capacity	1.00 1.00 0.01
Trussum-----	20	Very limited Slow water movement Depth to saturated zone Too acid	1.00 1.00 0.21	Very limited Depth to saturated zone Too acid Slow water movement	1.00 1.00 0.98

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PdwAv: Pawcatuck, very frequently flooded--	60	Very limited Ponding Flooding Depth to saturated zone Too acid	1.00 1.00 1.00 0.42	Very limited Ponding Depth to saturated zone Flooding Salinity	1.00 1.00 1.00 1.00
Transquaking, very frequently flooded--	25	Very limited Ponding Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Slow water movement	1.00 1.00 1.00 1.00 0.96
PHG: Pits, sand and gravel-----	100	Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded--	85	Very limited Ponding Flooding Depth to saturated zone Too acid	1.00 1.00 1.00 0.42	Very limited Filtering capacity Ponding Depth to saturated zone Flooding Too acid	1.00 1.00 1.00 1.00 1.00 1.00
PsvAr: Psamments, wet substratum, rarely flooded-----	85	Very limited Depth to saturated zone Too acid	1.00 0.42	Very limited Filtering capacity Too acid Depth to saturated zone Low adsorption	1.00 1.00 0.86 0.44
SacA: Sassafras-----	80	Very limited Slow water movement Too acid	1.00 0.03	Somewhat limited Too acid Filtering capacity	0.03 0.01
SacB: Sassafras-----	80	Very limited Slow water movement Too acid	1.00 0.03	Somewhat limited Too acid Filtering capacity	0.03 0.01

Soil Survey of Cumberland County, New Jersey

Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SacC: Sassafras-----	90	Very limited Slow water movement Slope Too acid	1.00 0.88 0.03	Somewhat limited Too steep for surface application Too steep for sprinkler irrigation Too acid Filtering capacity	0.92 0.06 0.03 0.01
SadA: Sassafras-----	85	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid	1.00
SadB: Sassafras-----	90	Very limited Slow water movement Too acid	1.00 0.14	Very limited Too acid Too steep for surface application	1.00 0.08
SadC: Sassafras, eroded----	95	Very limited Slow water movement Slope Too acid	1.00 1.00 0.14	Very limited Too acid Too steep for surface application Too steep for sprinkler irrigation	1.00 1.00 0.22
SapB: Sassafras-----	60	Very limited Slow water movement Too acid	1.00 0.03	Somewhat limited Too acid Filtering capacity	0.42 0.01
Urban land-----	30	Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded--	90	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding Filtering capacity	1.00 1.00 1.00 1.00 0.01
UdrB: Udorthents, refuse substratum-----	100	Very limited Slow water movement	1.00	Somewhat limited Too steep for surface application	0.08

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Table 8b.--Agricultural Waste Management (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UR: Urban land-----	95	Not rated		Not rated	
WoeA: Woodstown-----	80	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.86
		Slow water movement	1.00	Too acid	0.01
				Filtering capacity	0.01
WoeB: Woodstown-----	80	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.86
		Slow water movement	1.00	Too acid	0.01
				Filtering capacity	0.01
WooB: Woodstown-----	65	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.86
		Slow water movement	1.00	Too acid	0.01
				Filtering capacity	0.01
Urban land-----	20	Not rated		Not rated	

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Table 9.--Forestland Productivity

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
AptAv: Appoquinimink, very frequently flooded-----	---	---	---	---
Transquaking, very frequently flooded-----	---	---	---	---
Mispillion, very frequently flooded-----	---	---	---	---
AtsAr: Atsion, rarely flooded--	pitch pine----- red maple----- blackgum-----	65 50 ---	75 29 ---	pitch pine, red maple, sweetgum
AucB: Aura-----	black oak----- white oak----- scarlet oak----- chestnut oak----- pitch pine-----	70 70 70 70 ---	52 52 52 52 ---	shortleaf pine, eastern white pine, black oak
AugA: Aura-----	black oak----- white oak----- scarlet oak----- chestnut oak----- pitch pine-----	70 70 70 --- ---	57 57 57 --- ---	shortleaf pine, eastern white pine, black oak
AugB: Aura-----	black oak----- white oak----- scarlet oak----- chestnut oak----- pitch pine-----	70 70 70 70 ---	52 52 52 52 ---	shortleaf pine, eastern white pine, black oak
AuhB: Aura-----	black oak----- scarlet oak----- Virginia pine----- white oak-----	70 70 70 70	52 52 109 52	Virginia pine
AvuB: Aura-----	black oak----- white oak----- scarlet oak----- chestnut oak----- pitch pine-----	70 70 70 --- ---	57 57 57 --- ---	shortleaf pine, eastern white pine, black oak, pin oak, flowering crabapple, flowering dogwood
Urban land-----	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	pitch pine----- red maple----- blackgum-----	60 --- ---	--- --- ---	pitch pine, red maple, Atlantic white cedar

Soil Survey of Cumberland County, New Jersey

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
BEXAS: Mullica, occasionally flooded-----	sweetgum----- red maple----- blackgum----- pitch pine-----	80 --- --- ---	100 --- --- ---	sweetgum, yellow-poplar, red maple, Atlantic white cedar
BrvAv: Broadkill, very frequently flooded-----	---	---	---	---
ChsAt: Chicone, frequently flooded-----	black willow----- red maple----- sweetgum-----	--- 50 85	--- 29 86	sweetgum, Atlantic white cedar, red maple, willow oak
ChtA: Chillum-----	northern red oak---- southern red oak---- Virginia pine----- white oak-----	80 80 70 80	62 62 114 62	eastern white pine, loblolly pine, yellow-poplar
ChtB: Chillum-----	northern red oak---- southern red oak---- Virginia pine----- white oak-----	80 80 70 80	62 62 114 62	eastern white pine, loblolly pine, yellow-poplar
DocB: Downer-----	black oak----- white oak----- scarlet oak----- pitch pine-----	70 70 70 ---	52 52 52 ---	shortleaf pine, eastern white pine, black oak, white oak
DocC: Downer-----	black oak----- white oak----- scarlet oak----- pitch pine-----	70 70 70 ---	57 57 57 ---	shortleaf pine, eastern white pine, black oak, white oak
DoeA: Downer-----	black oak----- white oak----- scarlet oak----- pitch pine-----	70 70 70 ---	52 52 52 ---	shortleaf pine, eastern white pine, black oak, white oak
DoeB: Downer-----	black oak----- white oak----- scarlet oak----- pitch pine-----	70 70 70 ---	52 52 52 ---	shortleaf pine, eastern white pine, black oak, white oak

Soil Survey of Cumberland County, New Jersey

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
DouB: Downer-----	black oak----- white oak----- scarlet oak----- pitch pine-----	70 70 70 ---	52 52 52 ---	shortleaf pine, pin oak, scarlet oak, sugar maple, eastern white pine, yellow-poplar, flowering crabapple, flowering dogwood
Urban land-----	---	---	---	---
EveB: Evesboro-----	pitch pine----- chestnut oak----- white oak----- scarlet oak-----	60 60 60 ---	--- 52 52 ---	shortleaf pine, pitch pine, white oak, Virginia pine
EveC: Evesboro-----	pitch pine----- chestnut oak----- white oak----- scarlet oak-----	60 60 60 ---	--- 52 52 ---	shortleaf pine, pitch pine, white oak, Virginia pine
EveD: Evesboro-----	black oak----- chestnut oak----- pitch pine----- shortleaf pine----- Virginia pine----- white oak-----	70 70 60 60 70 70	57 57 --- 86 114 57	loblolly pine, Virginia pine
EvuB: Evesboro-----	pitch pine----- chestnut oak----- white oak----- post oak-----	60 60 60 ---	--- 48 48 ---	shortleaf pine, white oak, post oak, scarlet oak
Urban land-----	---	---	---	---
FamA: Fallsington-----	sweetgum----- blackgum----- red maple----- yellow-poplar-----	80 --- --- ---	86 --- --- ---	sweetgum, yellow-poplar, red maple
FodB: Fort Mott-----	black oak----- pitch pine----- shortleaf pine----- Virginia pine----- white oak-----	70 --- 70 70 70	52 --- 110 109 52	Virginia pine
GamB: Galloway-----	pin oak----- sweetgum----- Virginia pine----- white oak-----	70 80 70 70	84 86 109 52	eastern white pine, sweetgum, Virginia pine

Soil Survey of Cumberland County, New Jersey

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
HbmB:				
Hammonton-----	white oak-----	70	52	shortleaf pine, eastern white pine, white oak, yellow-poplar
	black oak-----	70	52	
	pitch pine-----	70	114	
	red maple-----	---	---	
HboA:				
Hammonton-----	black oak-----	80	52	Virginia pine
	pitch pine-----	80	114	
	shortleaf pine-----	70	110	
	Virginia pine-----	70	109	
	white oak-----	80	52	
HboB:				
Hammonton-----	black oak-----	80	57	loblolly pine, Virginia pine
	loblolly pine-----	60	72	
	pitch pine-----	80	114	
	shortleaf pine-----	70	114	
	Virginia pine-----	70	114	
	white oak-----	80	57	
HbrB:				
Hammonton-----	white oak-----	80	62	willow oak, sugar maple, eastern white pine, yellow-poplar, American sycamore, flowering crabapple, flowering dogwood
	black oak-----	80	62	
	pitch pine-----	80	114	
	yellow-poplar-----	---	---	
	red maple-----	---	---	
Urban land-----	---	---	---	---
LakB:				
Lakehurst-----	pitch pine-----	60	---	pitch pine, shortleaf pine, eastern white pine, scarlet oak
	chestnut oak-----	---	---	
	post oak-----	---	---	
	scarlet oak-----	---	---	
LasB:				
Lakewood-----	pitch pine-----	60	---	pitch pine, shortleaf pine
	chestnut oak-----	---	---	
	post oak-----	---	---	
	scarlet oak-----	---	---	
MakAt:				
Manahawkin, frequently flooded-----	Atlantic white cedar	50	92	Atlantic white cedar, red maple
	red maple-----	75	43	
MbrA:				
Matapeake-----	Virginia pine-----	75	115	eastern white pine, loblolly pine, sweetgum, yellow- poplar
	white oak-----	75	57	
	yellow-poplar-----	90	114	
MbrB:				
Matapeake-----	Virginia pine-----	75	115	eastern white pine, loblolly pine, sweetgum, yellow- poplar
	white oak-----	75	57	
	yellow-poplar-----	90	114	

Soil Survey of Cumberland County, New Jersey

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
MbrC:				
Matapeake-----	Virginia pine-----	75	115	eastern white pine, loblolly pine, sweetgum, yellow- poplar
	white oak-----	75	57	
	yellow-poplar-----	90	114	
MbuA:				
Mattapex-----	northern red oak----	70	52	eastern white pine, loblolly pine, yellow-poplar
	sweetgum-----	80	86	
	Virginia pine-----	70	114	
	white oak-----	70	52	
MbuB:				
Mattapex-----	northern red oak----	70	52	eastern white pine, loblolly pine, yellow-poplar
	sweetgum-----	80	86	
	Virginia pine-----	70	114	
	white oak-----	70	52	
MntAv:				
Mispillion, very frequently flooded-----	---	---	---	---
Transquaking, very frequently flooded-----	---	---	---	---
Appoquinimink, very frequently flooded-----	---	---	---	---
OthA:				
Othello-----	sweetgum-----	80	86	sweetgum, yellow- poplar, red maple
	red maple-----	50	29	
	blackgum-----	---	---	
	yellow-poplar-----	---	---	
OTKA:				
Othello-----	sweetgum-----	80	86	sweetgum, yellow- poplar, red maple
	red maple-----	50	29	
	blackgum-----	---	---	
Fallsington-----	sweetgum-----	80	86	sweetgum, yellow- poplar, red maple
	blackgum-----	---	---	
	red maple-----	---	---	
OTMA:				
Othello-----	red maple-----	50	29	loblolly pine
	sweetgum-----	80	86	
	white oak-----	80	62	
Fallsington-----	sweetgum-----	80	86	eastern white pine, loblolly pine, sweetgum, yellow- poplar
	white oak-----	80	62	
	willow oak-----	---	---	
Trussum-----	blackgum-----	---	---	loblolly pine
	red maple-----	---	---	
	southern red oak----	---	---	
	sweetgum-----	80	86	
	willow oak-----	---	---	

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Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
PdwAv: Pawcatuck, very frequently flooded-----	---	---	---	---
Transquaking, very frequently flooded-----	---	---	---	---
PHG: Pits, sand and gravel---	---	---	---	---
PstAt: Psammaquents, sulfidic substratum, frequently flooded-----	---	---	---	---
PsvAr: Psamments, wet substratum, rarely flooded-----	---	---	---	---
SacA: Sassafras-----	black oak----- white oak----- scarlet oak----- northern red oak---- yellow-poplar-----	70 70 70 70 80	52 52 52 52 72	shortleaf pine, eastern white pine, northern red oak, yellow-poplar
SacB: Sassafras-----	black oak----- white oak----- scarlet oak----- northern red oak---- yellow-poplar-----	70 70 70 70 80	52 52 52 52 71	shortleaf pine, eastern white pine, northern red oak, yellow-poplar
SacC: Sassafras-----	black oak----- white oak----- scarlet oak----- northern red oak---- yellow-poplar-----	70 70 70 70 80	52 52 52 52 71	shortleaf pine, eastern white pine, northern red oak, yellow-poplar
SadA: Sassafras-----	loblolly pine----- Virginia pine----- white oak----- yellow-poplar-----	85 70 70 80	114 114 57 72	eastern white pine, loblolly pine, yellow-poplar
SadB: Sassafras-----	loblolly pine----- Virginia pine----- white oak----- yellow-poplar-----	85 70 70 80	114 114 57 72	eastern white pine, loblolly pine, yellow-poplar
SadC: Sassafras, eroded-----	loblolly pine----- Virginia pine----- white oak----- yellow-poplar-----	85 70 70 80	114 114 57 72	eastern white pine, loblolly pine, yellow-poplar

Soil Survey of Cumberland County, New Jersey

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber cu ft/ac	
SapB:				
Sassafras-----	black oak-----	70	57	shortleaf pine, pin oak, northern red oak, sugar maple, eastern white pine, yellow-poplar, flowering crabapple, flowering dogwood
	white oak-----	70	57	
	scarlet oak-----	70	57	
	northern red oak----	70	57	
	yellow-poplar-----	80	72	
Urban land-----	---	---	---	---
TrkAv:				
Transquaking, very frequently flooded-----	---	---	---	---
UdrB:				
Udorthents, refuse substratum-----	---	---	---	---
UR:				
Urban land-----	---	---	---	---
WoeA:				
Woodstown-----	sweetgum-----	90	100	northern red oak, yellow-poplar, eastern white pine, sweetgum
	yellow-poplar-----	90	86	
	white oak-----	80	57	
	northern red oak----	---	---	
WoeB:				
Woodstown-----	sweetgum-----	90	100	northern red oak, yellow-poplar, eastern white pine, sweetgum
	yellow-poplar-----	90	86	
	white oak-----	80	57	
	northern red oak----	---	---	
WooB:				
Woodstown-----	sweetgum-----	90	100	willow oak, sugar maple, eastern white pine, yellow-poplar, American sycamore, flowering crabapple, flowering dogwood
	yellow-poplar-----	90	86	
	white oak-----	80	57	
	northern red oak----	---	---	
Urban land-----	---	---	---	---

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	30	Very limited Depth to saturated zone Salinity Flooding Ponding Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Salinity Too clayey	1.00 1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
Mispillion, very frequently flooded-	25	Very limited Depth to saturated zone Salinity Flooding Ponding Slow water movement	1.00 1.00 1.00 1.00 0.21	Very limited Ponding Depth to saturated zone Salinity Flooding Slow water movement	1.00 1.00 1.00 0.60 0.21	Very limited Depth to saturated zone Salinity Flooding Ponding Slow water movement	1.00 1.00 1.00 1.00 0.21
AtsAr: Atsion, rarely flooded-----	85	Very limited Depth to saturated zone Flooding Ponding Too sandy	1.00 1.00 1.00 1.00 1.00	Very limited Too sandy Depth to saturated zone	1.00 1.00 1.00	Very limited Depth to saturated zone Too sandy Ponding	1.00 1.00 1.00 1.00
AucB: Aura-----	90	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50
AugA: Aura-----	80	Not limited		Not limited		Somewhat limited Gravel content	0.32
AugB: Aura-----	85	Not limited		Not limited		Somewhat limited Gravel content Slope	0.32 0.12
AuhB: Aura-----	90	Somewhat limited Gravel content	0.01	Somewhat limited Gravel content	0.01	Very limited Gravel content Slope	1.00 0.12

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AvuB: Aura-----	60	Not limited		Not limited		Somewhat limited Gravel content Slope	0.32 0.12
Urban land-----	30	Not rated		Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Depth to saturated zone Flooding Ponding Too sandy	1.00 1.00 1.00 1.00	Very limited Too sandy Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited Depth to saturated zone Too sandy Ponding Flooding	1.00 1.00 1.00 1.00 0.60
Mullica, occasionally flooded-----	40	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 1.00 0.60
BrvAv: Broadkill, very frequently flooded-	100	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding	1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.40	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00 1.00
ChtA: Chillum-----	85	Not limited		Not limited		Not limited	
ChtB: Chillum-----	85	Not limited		Not limited		Somewhat limited Slope	0.50
DocB: Downer-----	80	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy Slope	0.50 0.12
DocC: Downer-----	90	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Very limited Slope Too sandy	1.00 0.50
DoeA: Downer-----	85	Not limited		Not limited		Not limited	

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DoeB: Downer-----	90	Not limited		Not limited		Somewhat limited Slope	0.12
DouB: Downer-----	60	Not limited		Not limited		Somewhat limited Slope	0.12
Urban land-----	30	Not rated		Not rated		Not rated	
EveB: Evesboro-----	80	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Slope	1.00 0.12
EveC: Evesboro-----	95	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Slope	1.00 1.00
EveD: Evesboro-----	95	Very limited Too sandy Slope	1.00 0.84	Very limited Too sandy Slope	1.00 0.84	Very limited Slope Too sandy Gravel content	1.00 1.00 0.08
EvuB: Evesboro-----	60	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Slope	1.00 0.12
Urban land-----	30	Not rated		Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
FodB: Fort Mott-----	85	Somewhat limited Too sandy	0.79	Somewhat limited Too sandy	0.79	Somewhat limited Too sandy Slope Gravel content	0.79 0.12 0.04
GamB: Galloway-----	85	Very limited Depth to saturated zone Too sandy	1.00 0.81	Somewhat limited Depth to saturated zone Too sandy	0.94 0.81	Very limited Depth to saturated zone Too sandy	1.00 0.81
HbmB: Hammonton-----	80	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy Slope	0.50 0.12
HboA: Hammonton-----	85	Not limited		Not limited		Somewhat limited Gravel content	0.04
HboB: Hammonton-----	85	Not limited		Not limited		Somewhat limited Slope Gravel content	0.50 0.04

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HbrB: Hammonton-----	70	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy Slope	0.50 0.12
Urban land-----	20	Not rated		Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Slope	1.00 0.12
LasB: Lakewood-----	85	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Slope	1.00 0.12
MakAt: Manahawkin, frequently flooded-	85	Very limited Depth to saturated zone Flooding Ponding Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Flooding	1.00 1.00 1.00 0.40	Very limited Depth to saturated zone Organic matter content Flooding Ponding	1.00 1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Not limited		Not limited		Not limited	
MbrB: Matapeake-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
MbrC: Matapeake-----	90	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	Very limited Slope	1.00
MbuA: Mattapex-----	95	Not limited		Not limited		Not limited	
MbuB: Mattapex-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
MmtAv: Mispillion, very frequently flooded-	50	Very limited Depth to saturated zone Salinity Flooding Ponding Slow water movement	1.00 1.00 1.00 1.00 0.21	Very limited Ponding Depth to saturated zone Salinity Flooding Slow water movement	1.00 1.00 1.00 0.60 0.21	Very limited Depth to saturated zone Salinity Flooding Ponding Slow water movement	1.00 1.00 1.00 1.00 0.21

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmtAv: Transquaking, very frequently flooded-	25	Very limited Depth to saturated zone Salinity Flooding Ponding Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Salinity Too clayey	1.00 1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
Appoquinimink, very frequently flooded-	20	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Salinity Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
OthA: Othello-----	85	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21
OTKA: Othello-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
OTMA: Othello-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Trussum-----	20	Very limited Depth to saturated zone Slow water movement	1.00 0.96	Very limited Depth to saturated zone Slow water movement	1.00 0.96	Very limited Depth to saturated zone Slow water movement	1.00 0.96
PdwAv: Pawcatuck, very frequently flooded-	60	Very limited Depth to saturated zone Flooding Ponding Organic matter content Salinity	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Salinity Flooding	1.00 1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Flooding Ponding Salinity	1.00 1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PdwAv: Transquaking, very frequently flooded-	25	Very limited Depth to saturated zone Salinity Flooding Ponding Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Salinity Too clayey	1.00 1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	85	Very limited Depth to saturated zone Flooding Ponding Too sandy	1.00 1.00 1.00 1.00	Very limited Too sandy Ponding Depth to saturated zone Flooding	1.00 1.00 1.00 0.40	Very limited Depth to saturated zone Too sandy Flooding Ponding Gravel content	1.00 1.00 1.00 1.00 0.03
PsvAr: Psammments, wet substratum, rarely flooded-----	85	Very limited Flooding Too sandy	1.00 1.00	Very limited Too sandy	1.00	Very limited Too sandy Gravel content	1.00 0.03
SacA: Sassafras-----	80	Not limited		Not limited		Not limited	
SacB: Sassafras-----	80	Not limited		Not limited		Somewhat limited Slope	0.12
SacC: Sassafras-----	90	Not limited		Not limited		Very limited Slope	1.00
SadA: Sassafras-----	85	Somewhat limited Gravel content	0.88	Somewhat limited Gravel content	0.88	Very limited Gravel content	1.00
SadB: Sassafras-----	90	Somewhat limited Gravel content	0.88	Somewhat limited Gravel content	0.88	Very limited Gravel content Slope	1.00 0.50
SadC: Sassafras, eroded---	95	Somewhat limited Gravel content Slope	0.88 0.01	Somewhat limited Gravel content Slope	0.88 0.01	Very limited Slope Gravel content	1.00 1.00
SapB: Sassafras-----	60	Not limited		Not limited		Somewhat limited Slope	0.12

Soil Survey of Cumberland County, New Jersey

Table 10a.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SapB: Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Very limited Depth to saturated zone Salinity Flooding Ponding Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Salinity Too clayey	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Salinity Flooding Ponding	1.00 1.00 1.00 1.00 1.00
UdrB: Udorthents, refuse substratum-----	100	Not limited		Not limited		Somewhat limited Slope	0.50
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Not limited		Not limited		Not limited	
WoeB: Woodstown-----	80	Not limited		Not limited		Somewhat limited Slope	0.12
WooB: Woodstown-----	65	Not limited		Not limited		Somewhat limited Slope	0.12
Urban land-----	20	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 10b.--Recreational Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	30	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
Mispillion, very frequently flooded-	25	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited Depth to saturated zone Too sandy Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Too sandy Ponding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Droughty	1.00 1.00 0.80
AucB: Aura-----	90	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Not limited	
AugA: Aura-----	80	Not limited		Not limited		Not limited	
AugB: Aura-----	85	Not limited		Not limited		Not limited	
AuhB: Aura-----	90	Not limited		Not limited		Somewhat limited Gravel content	0.01
AvuB: Aura-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 10b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BEXAS: Berryland, occasionally flooded-----	50	Very limited Depth to saturated zone Too sandy Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Too sandy Ponding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Droughty Flooding Too sandy	1.00 1.00 0.98 0.60 0.50
Mullica, occasionally flooded-----	40	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.60
BrvAv: Broadkill, very frequently flooded-	100	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.40	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.40	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
ChtA: Chillum-----	85	Not limited		Not limited		Not limited	
ChtB: Chillum-----	85	Not limited		Not limited		Not limited	
DocB: Downer-----	80	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Not limited	
DocC: Downer-----	90	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Not limited	
DoeA: Downer-----	85	Not limited		Not limited		Not limited	
DoeB: Downer-----	90	Not limited		Not limited		Not limited	
DouB: Downer-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 10b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EveB: Evesboro-----	80	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
EveC: Evesboro-----	95	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
EveD: Evesboro-----	95	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Slope Droughty Too sandy	0.84 0.69 0.50
EvuB: Evesboro-----	60	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
Urban land-----	30	Not rated		Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
FodB: Fort Mott-----	85	Somewhat limited Too sandy	0.79	Somewhat limited Too sandy	0.79	Somewhat limited Droughty	0.03
GamB: Galloway-----	85	Somewhat limited Depth to saturated zone Too sandy	0.86 0.81	Somewhat limited Depth to saturated zone Too sandy	0.86 0.81	Somewhat limited Depth to saturated zone Droughty	0.94 0.13
HbmB: Hammonton-----	80	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Not limited	
HboA: Hammonton-----	85	Not limited		Not limited		Not limited	
HboB: Hammonton-----	85	Not limited		Not limited		Not limited	
HbrB: Hammonton-----	70	Somewhat limited Too sandy	0.50	Somewhat limited Too sandy	0.50	Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty	0.22
LasB: Lakewood-----	85	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Droughty Too sandy	1.00 0.50

Soil Survey of Cumberland County, New Jersey

Table 10b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MakAt: Manahawkin, frequently flooded-	85	Very limited Depth to saturated zone Organic matter content Ponding Flooding	1.00 1.00 1.00 0.40	Very limited Depth to saturated zone Organic matter content Ponding Flooding	1.00 1.00 1.00 0.40	Very limited Ponding Flooding Organic matter content Depth to saturated zone	1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Not limited		Not limited		Not limited	
MbrB: Matapeake-----	90	Not limited		Not limited		Not limited	
MbrC: Matapeake-----	90	Not limited		Not limited		Somewhat limited Slope	0.01
MbuA: Mattapex-----	95	Not limited		Not limited		Not limited	
MbuB: Mattapex-----	95	Not limited		Not limited		Not limited	
MmtAv: Mispillion, very frequently flooded-	50	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
Appoquinimink, very frequently flooded-	20	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.60	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
OthA: Othello-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

Soil Survey of Cumberland County, New Jersey

Table 10b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OTKA: Othello-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
OTMA: Othello-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Trussum-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
PdwAv: Pawcatuck, very frequently flooded-	60	Very limited Depth to saturated zone Organic matter content Ponding Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Ponding Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Ponding Flooding Organic matter content Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 1.00 0.60	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	85	Very limited Depth to saturated zone Too sandy Ponding Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Depth to saturated zone Too sandy Ponding Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Ponding Flooding Too sandy Depth to saturated zone Droughty	1.00 1.00 1.00 1.00 1.00

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Table 10b.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PsvAr: Psammments, wet substratum, rarely flooded-----	85	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Very limited Too sandy Droughty	1.00 1.00
SacA: Sassafras-----	80	Not limited		Not limited		Not limited	
SacB: Sassafras-----	80	Not limited		Not limited		Not limited	
SacC: Sassafras-----	90	Not limited		Not limited		Not limited	
SadA: Sassafras-----	85	Not limited		Not limited		Somewhat limited Gravel content	0.88
SadB: Sassafras-----	90	Not limited		Not limited		Somewhat limited Gravel content	0.88
SadC: Sassafras, eroded---	95	Not limited		Not limited		Somewhat limited Gravel content Slope	0.88 0.01
SapB: Sassafras-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Depth to saturated zone Organic matter content Ponding Too clayey Flooding	1.00 1.00 1.00 1.00 0.60	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
UdrB: Udorthents, refuse substratum-----	100	Not limited		Not limited		Not limited	
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Not limited		Not limited		Not limited	
WoeB: Woodstown-----	80	Not limited		Not limited		Not limited	
WooB: Woodstown-----	65	Not limited		Not limited		Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	

Table 11.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AptAv: Appoquinimink, very frequently flooded-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Transquaking, very frequently flooded-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Mispillion, very frequently flooded-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
AtsAr: Atsion, rarely flooded--	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair
AucB: Aura-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
AugA: Aura-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
AugB: Aura-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
AuhB: Aura-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
AvuB: Aura-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	Very poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
BEXAS: Mullica, occasionally flooded-----	Very poor	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair
BrvAv: Broadkill, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
ChsAt: Chicone, frequently flooded-----	Very poor	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Fair	Good
ChtA: Chillum-----	Good	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ChtB: Chillum-----	Good	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DocB: Downer-----	Poor	Fair	Good	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor
DocC: Downer-----	Poor	Fair	Good	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor
DoeA: Downer-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DoeB: Downer-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DouB: Downer-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
EveB: Evesboro-----	Poor	Poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
EveC: Evesboro-----	Poor	Poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
EveD: Evesboro-----	Very poor	Very poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
EvuB: Evesboro-----	Poor	Poor	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---
FamA: Fallsington-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
FodB: Fort Mott-----	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Very poor	Fair	Poor	Very poor
GamB: Galloway-----	Fair	Fair	Good	Fair	Fair	Fair	Poor	Poor	Fair	Fair	Poor
HbmB: Hammonton-----	Poor	Fair	Good	Fair	Fair	Fair	Poor	Poor	Fair	Fair	Poor
HboA: Hammonton-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Poor	Good	Fair	Poor
HboB: Hammonton-----	Fair	Good	Good	Fair	Fair	Fair	Poor	Poor	Good	Fair	Poor
HbrB: Hammonton-----	Poor	Fair	Good	Fair	Fair	Fair	Poor	Poor	Fair	Fair	Poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---
LakB: Lakehurst-----	Poor	Poor	Fair	Poor	Poor	Poor	Poor	Fair	Poor	Poor	Poor

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
LasB: Lakewood-----	Poor	Poor	Fair	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
MakAt: Manahawkin, frequently flooded-----	Very poor	Poor	Poor	Poor	Poor	Poor	Good	Poor	Poor	Poor	Fair
MbrA: Matapeake-----	Good	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
MbrB: Matapeake-----	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
MbrC: Matapeake-----	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
MbuA: Mattapex-----	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
MbuB: Mattapex-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MmtAv: Mispillion, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Transquaking, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Appoquinimink, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
OthA: Othello-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
OTKA:											
Othello-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
Fallsington-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
OTMA:											
Othello-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
Fallsington-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
Trussum-----	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
PdwAv:											
Pawcatuck, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
Transquaking, very frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
PHG:											
Pits, sand and gravel---	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
PstAt:											
Psammaquents, sulfidic substratum, frequently flooded----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
PsvAr:											
Psamments, wet substratum, rarely flooded-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Very poor	Very poor	Very poor	Fair
SacA:											
Sassafras-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SacB:											
Sassafras-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SacC: Sassafras-----	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SadA: Sassafras-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SadB: Sassafras-----	Good	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SadC: Sassafras, eroded-----	Fair	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SapB: Sassafras-----	Fair	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---
TrkAv: Transquaking, very frequently flooded-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
UdrB: Udorthents, refuse substratum-----	---	---	---	---	---	---	---	---	---	---	---
UR: Urban land-----	---	---	---	---	---	---	---	---	---	---	---
WoeA: Woodstown-----	Fair	Good	Good	Good	Poor	Good	Poor	Poor	Good	Good	Poor
WoeB: Woodstown-----	Fair	Good	Good	Good	Poor	Good	Poor	Very poor	Good	Good	Very poor
WooB: Woodstown-----	Fair	Good	Good	Good	Poor	Good	Poor	Very poor	Good	Good	Very poor
Urban land-----	---	---	---	---	---	---	---	---	---	---	---

Soil Survey of Cumberland County, New Jersey

Table 12.--Hydric Soils

(All map unit components for the survey area are listed in this table. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the table.)

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
AptAv----- Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Appoquinimink, very frequently flooded	40	Tidal marshes	Yes	2B3, 3
	Transquaking, very frequently flooded	30	Tidal marshes	Yes	1
	Mispillion, very frequently flooded	25	Tidal marshes	Yes	1
	Hammonton	5	Depressions, flats	No	---
AtsAr----- Atsion sand, 0 to 2 percent slopes, rarely flooded	Atsion, rarely flooded	85	Flats	Yes	2B3
	Berryland, occasionally flooded	5	Depressions, drainageways, flats	Yes	2B3, 3
	Lakehurst	5	Flats	No	---
	Manahawkin, frequently flooded	5	Flood plains	Yes	1, 3
AucB----- Aura loamy sand, 0 to 5 percent slopes	Aura	90	Low hills	No	---
	Sassafras	5	Knolls	No	---
	Woodstown	5	Drainageways	No	---
AugA----- Aura sandy loam, 0 to 2 percent slopes	Aura	80	Low hills	No	---
	Downer	5	Low hills	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
	Sassafras	5	Knolls	No	---
	Woodstown	5	Drainageways	No	---
AugB----- Aura sandy loam, 2 to 5 percent slopes	Aura	85	Low hills	No	---
	Downer	5	Low hills	No	---
	Sassafras	5	Knolls	No	---
	Woodstown	5	Drainageways	No	---
AuhB----- Aura gravelly sandy loam, 2 to 5 percent slopes	Aura	90	Knolls, low hills	No	---
	Downer	5	Flats, knolls, low hills	No	---
	Sassafras	5	Flats, knolls	No	---

Soil Survey of Cumberland County, New Jersey

Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
AvuB----- Aura-Urban land complex, 0 to 5 percent slopes	Aura	60	Low hills	No	---
	Urban land	30	Low hills	No	---
	Downer	5	Low hills	No	---
	Sassafras	5	Knolls	No	---
BEXAS----- Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Berryland, occasionally flooded	50	Depressions, drainageways, flats	Yes	2B3, 3
	Mullica, occasionally flooded	40	Depressions, drainageways, flood plains	Yes	2B3
	Atsion	5	Flats	Yes	2B3
	Manahawkin, frequently flooded	5	Flood plains	Yes	1, 3
BrvAv----- Broadkill silt loam, 0 to 1 percent slopes, very frequently flooded	Broadkill, very frequently flooded	100	Tidal marshes	Yes	2B3
ChsAt----- Chicone silt loam, 0 to 1 percent slopes, frequently flooded	Chicone, frequently flooded	95	Flood plains	Yes	2B3
	Manahawkin, frequently flooded	5	Flood plains	Yes	1, 3
ChtA----- Chillum silt loam, 0 to 2 percent slopes	Chillum	85	Ridges, terraces	No	---
	Matapeake	10	Low hills, ridges, terraces	No	---
	Mattapex	5	Flats, ridges, terraces	No	---
ChtB----- Chillum silt loam, 2 to 5 percent slopes	Chillum	85	Ridges, terraces	No	---
	Matapeake	10	Low hills, ridges, terraces	No	---
	Mattapex	5	Flats, hillslopes, terraces	No	---
DocB----- Downer loamy sand, 0 to 5 percent slopes	Downer	80	Knolls, low hills	No	---
	Atsion	5	Flats	Yes	2B3
	Evesboro	5	Dunes, low hills	No	---
	Hammonton	5	Depressions, flats	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3

Soil Survey of Cumberland County, New Jersey

Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
DocC----- Downer loamy sand, 5 to 10 percent slopes	Downer	90	Knolls, low hills	No	---
	Evesboro	5	Dunes, low hills	No	---
	Sassafras	5	Knolls, low hills	No	---
DoeA----- Downer sandy loam, 0 to 2 percent slopes	Downer	85	Knolls, low hills	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
	Sassafras	5	Knolls, low hills	No	---
	Woodstown	5	Drainageways, flats	No	---
DoeB----- Downer sandy loam, 2 to 5 percent slopes	Downer	90	Knolls, low hills	No	---
	Sassafras	5	Knolls, low hills	No	---
	Woodstown	5	Drainageways, flats	No	---
DouB----- Downer-Urban land complex, 0 to 5 percent slopes	Downer	60	Knolls, low hills	No	---
	Urban land	30	Knolls, low hills	No	---
	Sassafras	5	Knolls, low hills	No	---
	Woodstown	5	Drainageways, flats	No	---
EveB----- Evesboro sand, 0 to 5 percent slopes	Evesboro	80	Low hills	No	---
	Atsion	5	Flats	Yes	2B3
	Downer	5	Knolls, low hills	No	---
	Lakehurst	5	Depressions, flats	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
EveC----- Evesboro sand, 5 to 10 percent slopes	Evesboro	95	Low hills	No	---
	Downer	5	Knolls, low hills	No	---
EveD----- Evesboro sand, 10 to 15 percent slopes	Evesboro	95	Dunes, low hills	No	---
	Downer	5	Knolls, low hills	No	---
EvuB----- Evesboro-Urban land complex, 0 to 5 percent slopes	Evesboro	60	Low hills	No	---
	Urban land	30	Low hills	No	---
	Downer	5	Knolls, low hills	No	---
	Lakehurst	5	Depressions, flats	No	---

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Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
FamA----- Fallsington sandy loam, 0 to 2 percent slopes	Fallsington	85	Flats	Yes	2B3
	Manahawkin, frequently flooded	5	Flood plains, swamps	Yes	1, 3
	Mullica	5	Depressions, drainageways, flood plains	Yes	2B3
	Woodstown	5	Flats	No	---
FodB----- Fort Mott loamy sand, 0 to 5 percent slopes	Fort Mott	85	Ridges, terraces	No	---
	Galestown	10	Ridges, terraces	No	---
	Downer	5	Knolls, low hills	No	---
GamB----- Galloway loamy sand, 0 to 5 percent slopes	Galloway	85	Dunes, flats	No	---
	Atsion	5	Drainageways, flats	Yes	2B3
	Downer	5	Knolls, low hills	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
HbmB----- Hammonton loamy sand, 0 to 5 percent slopes	Hammonton	80	Depressions, flats	No	---
	Atsion	5	Depressions	Yes	2B3
	Fallsington	5	Depressions, flats	Yes	2B3
	Glassboro	5	Drainageways, flats	No	---
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
HboA----- Hammonton sandy loam, 0 to 2 percent slopes	Hammonton	85	Depressions, flats	No	---
	Atsion, rarely flooded	5	Drainageways, flats	Yes	2B3
	Fallsington	5	Depressions, flats	Yes	2B3
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3

Soil Survey of Cumberland County, New Jersey

Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
HboB----- Hammonton sandy loam, 2 to 5 percent slopes	Hammonton	85	Depressions, flats	No	---
	Downer	5	Knolls, low hills	No	---
	Fallsington	5	Depressions, flats	Yes	2B3
	Glassboro	5	Drainageways, flats	No	---
HbrB----- Hammonton-Urban land complex, 0 to 5 percent slopes	Hammonton	70	Depressions, flats	No	---
	Urban land	20	Depressions, flats	No	---
	Downer	5	Knolls, low hills	No	---
	Glassboro	5	Drainageways, flats	No	---
LakB----- Lakehurst sand, 0 to 5 percent slopes	Lakehurst	85	Dunes, flats	No	---
	Atsion, rarely flooded	5	Depressions, flats	Yes	2B3
	Berryland, rarely flooded	5	Depressions, drainageways, flats	Yes	2B3, 3
	Quakerbridge	5	Flats, knolls	No	---
LasB----- Lakewood sand, 0 to 5 percent slopes	Lakewood	85	Flats, knolls	No	---
	Atsion, rarely flooded	5	Depressions, flats	Yes	2B3
	Lakehurst	5	Depressions, flats	No	---
	Quakerbridge	5	Flats, knolls	No	---
MakAt----- Manahawkin muck, 0 to 2 percent slopes, frequently flooded	Manahawkin, frequently flooded	85	Flood plains, swamps	Yes	1, 3
	Atsion	5	Flats	Yes	2B3
	Berryland, occasionally flooded	5	Depressions, drainageways, flats	Yes	2B3, 3
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
MbrA----- Matapeake silt loam, 0 to 2 percent slopes	Matapeake	90	Flats, ridges, terraces	No	---
	Chillum	5	Ridges, terraces	No	---
	Mattapex	5	Flats, ridges, terraces	No	---

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Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
MbrB----- Matapeake silt loam, 2 to 5 percent slopes	Matapeake	90	Flats, ridges, terraces	No	---
	Aura	5	Low hills	No	---
	Chillum	5	Ridges, terraces	No	---
MbrC----- Matapeake silt loam, 5 to 10 percent slopes	Matapeake	90	Flats, ridges, terraces	No	---
	Aura	5	Low hills	No	---
	Chillum	5	Ridges, terraces	No	---
MbuA----- Mattapex silt loam, 0 to 2 percent slopes	Mattapex	95	Flats, ridges, terraces	No	---
	Othello	5	Depressions	Yes	2B3
MbuB----- Mattapex silt loam, 2 to 5 percent slopes	Mattapex	95	Flats, terraces	No	---
	Othello	5	Depressions	Yes	2B3
MmtAv----- Mispillion-Transquaking-Appoquinimink complex, 0 to 1 percent slopes, very frequently flooded	Mispillion, very frequently flooded	50	Tidal marshes	Yes	2B3, 3
	Transquaking, very frequently flooded	25	Tidal marshes	Yes	1
	Appoquinimink, very frequently flooded	20	Tidal marshes	Yes	2B3
	Berryland, frequently flooded	2	Depressions	Yes	2B3, 3
	Mullica, rarely flooded	2	Depressions, flats, flood plains	Yes	2B3
	Hammonton	1	Depressions, flats	No	---
OthA----- Othello silt loam, 0 to 2 percent slopes	Othello	85	Depressions	Yes	2B3
	Berryland, occasionally flooded	5	Depressions, drainageways, flats	Yes	2B3, 3
	Manahawkin, frequently flooded	5	Flood plains, swamps	Yes	1, 3
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
OTKA----- Othello and Fallsington soils, 0 to 2 percent slopes	Othello	55	Depressions	Yes	2B3
	Fallsington	45	Depressions, flats	Yes	2B3

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Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
OTMA----- Othello, Fallsington, and Trussum soils, 0 to 2 percent slopes	Othello	45	Depressions	Yes	2B3
	Fallsington	35	Depressions	Yes	2B3
	Trussum	20	Depressions	Yes	2B3
PdwAv----- Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Pawcatuck, very frequently flooded	60	Tidal marshes	Yes	1, 3
	Transquaking, very frequently flooded	25	Tidal marshes	Yes	1
	Appoquinimink, very frequently flooded	5	Tidal marshes	Yes	2B3, 3
	Berryland, frequently flooded	5	Flats	Yes	2B3, 3
	Mullica, rarely flooded	5	Flats	Yes	2B3
PHG----- Pits, sand and gravel	Pits, sand and gravel	100	---	No	---
PstAt----- Psammaquents, sulfidic substratum, 0 to 3 percent slopes, frequently flooded	Psammaquents, sulfidic substratum, frequently flooded	85	Flats	No	---
	Appoquinimink, very frequently flooded	5	Tidal marshes	Yes	2B3, 3
	Pawcatuck, very frequently flooded	5	Tidal marshes	Yes	1, 3
	Transquaking, very frequently flooded	5	Tidal marshes	Yes	1
PsvAr----- Psammets, wet substratum, 0 to 3 percent slopes, rarely flooded	Psammets, wet substratum, rarely flooded	85	Flats	No	---
	Berryland, occasionally flooded	5	Depressions, drainageways, flats	Yes	2B3, 3
	Manahawkin, frequently flooded	5	Flood plains, swamps	Yes	1, 3
	Mullica, rarely flooded	5	Depressions, drainageways, flood plains	Yes	2B3
SacA----- Sassafras sandy loam, 0 to 2 percent slopes	Sassafras	80	Knolls	No	---
	Aura	5	Low hills	No	---
	Downer	5	Low hills	No	---
	Fallsington	5	Depressions, flats	Yes	2B3
	Woodstown	5	Drainageways	No	---

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Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
SacB----- Sassafras sandy loam, 2 to 5 percent slopes	Sassafras	80	Knolls, low hills	No	---
	Aura	5	Knolls, low hills	No	---
	Downer	5	Knolls, low hills	No	---
	Fallsington	5	Depressions, flats	Yes	2B3
	Woodstown	5	Drainageways, flats	No	---
SacC----- Sassafras sandy loam, 5 to 10 percent slopes	Sassafras	90	Hillslopes, knolls	No	---
	Aura	5	Low hills	No	---
	Downer	5	Knolls, low hills	No	---
SadA----- Sassafras gravelly sandy loam, 0 to 2 percent slopes	Sassafras	85	Knolls, low hills	No	---
	Aura	5	Knolls, low hills	No	---
	Hammonton	5	Depressions, flats	No	---
	Woodstown	5	Drainageways	No	---
SadB----- Sassafras gravelly sandy loam, 2 to 5 percent slopes	Sassafras	90	Knolls, low hills	No	---
	Aura	5	Knolls, low hills	No	---
	Fallsington	5	Depressions, flats	Yes	2B3
SadC----- Sassafras gravelly sandy loam, 5 to 10 percent slopes	Sassafras, eroded	95	Knolls, low hills	No	---
	Aura	5	Knolls, low hills	No	---
SapB----- Sassafras-Urban land complex, 0 to 5 percent slopes	Sassafras	60	Knolls	No	---
	Urban land	30	Knolls	No	---
	Aura	5	Low hills	No	---
	Downer	5	Low hills	No	---
TrkAv----- Transquaking mucky peat, 0 to 1 percent slopes, very frequently flooded	Transquaking, very frequently flooded	90	Tidal marshes	Yes	1
	Appoquinimink, very frequently flooded	5	Tidal marshes	Yes	2B3, 3
	Broadkill, very frequently flooded	5	Tidal marshes	Yes	2B3
UdrB----- Udorthents, refuse substratum, 0 to 8 percent slopes	Udorthents, refuse substratum	100	Low hills	No	---
	Urban land	95	Low hills	No	---
UR----- Urban land	Urban land	95	Low hills	No	---
	Udorthents	5	Low hills	No	---

Soil Survey of Cumberland County, New Jersey

Table 12.--Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria*
WoeA----- Woodstown sandy loam, 0 to 2 percent slopes	Woodstown	80	Drainageways, flats	No	---
	Fallsington	10	Depressions	Yes	2B3
	Sassafras	5	Knolls, low hills	No	---
	Downer	5	Low hills	No	---
WoeB----- Woodstown sandy loam, 2 to 5 percent slopes	Woodstown	80	Drainageways, flats	No	---
	Downer	5	Knolls, low hills	No	---
	Fallsington	5	Depressions, flats	Yes	2B3
	Glassboro	5	Drainageways, flats	No	---
WooB----- Woodstown-Urban land complex, 0 to 5 percent slopes	Woodstown	65	Low hills	No	---
	Urban land	20	Low hills	No	---
	Downer	5	Low hills	No	---
	Glassboro	5	Drainageways	No	---
	Sassafras	5	Knolls	No	---

* Explanation of hydric criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - 2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
 - 3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
Transquaking, very frequently flooded-	30	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
Mispollion, very frequently flooded-	25	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
AucB: Aura-----	90	Not limited		Not limited		Not limited	
AugA: Aura-----	80	Not limited		Not limited		Not limited	
AugB: Aura-----	85	Not limited		Not limited		Not limited	
AuhB: Aura-----	90	Not limited		Not limited		Not limited	
AvuB: Aura-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BEXAS: Berryland, occasionally flooded-----	50	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
Mullica, occasionally flooded-----	40	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
BrvAv: Broadkill, very frequently flooded-	100	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00
ChtA: Chillum-----	85	Not limited		Not limited		Not limited	
ChtB: Chillum-----	85	Not limited		Not limited		Not limited	
DocB: Downer-----	80	Not limited		Not limited		Not limited	
DocC: Downer-----	90	Not limited		Not limited		Somewhat limited Slope	0.88
DoeA: Downer-----	85	Not limited		Not limited		Not limited	
DoeB: Downer-----	90	Not limited		Not limited		Not limited	
DouB: Downer-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EveB: Evesboro-----	80	Not limited		Not limited		Not limited	
EveC: Evesboro-----	95	Not limited		Not limited		Somewhat limited Slope	0.88
EveD: Evesboro-----	95	Somewhat limited Slope	0.84	Somewhat limited Slope	0.84	Very limited Slope	1.00
EvuB: Evesboro-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
FodB: Fort Mott-----	85	Not limited		Not limited		Not limited	
GamB: Galloway-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HbmB: Hammonton-----	80	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HboA: Hammonton-----	85	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HboB: Hammonton-----	85	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
HbrB: Hammonton-----	70	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	
LakB: Lakehurst-----	85	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
LasB: Lakewood-----	85	Not limited		Not limited		Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MakAt: Manahawkin, frequently flooded-	85	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Not limited		Not limited		Not limited	
MbrB: Matapeake-----	90	Not limited		Not limited		Not limited	
MbrC: Matapeake-----	90	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	Very limited Slope	1.00
MbuA: Mattapex-----	95	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
MbuB: Mattapex-----	95	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
MmtAv: Mispillion, very frequently flooded-	50	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
Appoquinimink, very frequently flooded-	20	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OthA:							
Othello-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
OTKA:							
Othello-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
OTMA:							
Othello-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Trussum-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Shrink-swell	1.00	Very limited Depth to saturated zone	1.00
PdwAv:							
Pawcatuck, very frequently flooded-	60	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
PHG:							
Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt:							
Psammaquents, sulfidic substratum, frequently flooded-	85	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PsvAr: Psammments, wet substratum, rarely flooded-----	85	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.99	Very limited Flooding	1.00
SacA: Sassafras-----	80	Not limited		Not limited		Not limited	
SacB: Sassafras-----	80	Not limited		Not limited		Not limited	
SacC: Sassafras-----	90	Not limited		Not limited		Somewhat limited Slope	0.88
SadA: Sassafras-----	85	Not limited		Not limited		Not limited	
SadB: Sassafras-----	90	Not limited		Not limited		Not limited	
SadC: Sassafras, eroded---	95	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	Very limited Slope	1.00
SapB: Sassafras-----	60	Not limited		Not limited		Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Subsidence Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
UdrB: Udorthents, refuse substratum-----	100	Not limited		Not limited		Not limited	
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
WoeB: Woodstown-----	80	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13a.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WooB: Woodstown-----	65	Not limited		Somewhat limited Depth to saturated zone	0.99	Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Very limited Ponding Depth to saturated zone Frost action Flooding Low strength	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	30	Very limited Ponding Depth to saturated zone Subsidence Frost action Flooding	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content Too clayey	1.00 1.00 1.00 1.00 0.02	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
Mispillion, very frequently flooded-	25	Very limited Ponding Depth to saturated zone Subsidence Flooding Frost action	1.00 1.00 1.00 1.00 0.50	Very limited Ponding Flooding Depth to saturated zone Organic matter content Cutbanks cave	1.00 1.00 1.00 1.00 0.10	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited Ponding Depth to saturated zone Frost action Flooding	1.00 1.00 0.50 0.40	Very limited Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Droughty	1.00 1.00 0.80
AucB: Aura-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
AugA: Aura-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
AugB: Aura-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
AuhB: Aura-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Gravel content	0.01

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AvuB: Aura-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Ponding Depth to saturated zone Flooding Frost action	1.00 1.00 1.00 0.50	Very limited Ponding Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 1.00 0.60	Very limited Ponding Depth to saturated zone Droughty Flooding Too sandy	1.00 1.00 0.98 0.60 0.50
Mullica, occasionally flooded-----	40	Very limited Ponding Depth to saturated zone Frost action Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 1.00 0.60	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 0.60
BrvAv: Broadkill, very frequently flooded-	100	Very limited Ponding Depth to saturated zone Frost action Flooding Low strength	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Cutbanks cave Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Ponding Depth to saturated zone Frost action Flooding	1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave Organic matter content Flooding	1.00 1.00 1.00 1.00 0.80	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 1.00
ChtA: Chillum-----	85	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave	1.00	Not limited	
ChtB: Chillum-----	85	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave	1.00	Not limited	
DocB: Downer-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DocC: Downer-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DoeA: Downer-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DoeB: Downer-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DouB: Downer-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
EveB: Evesboro-----	80	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
EveC: Evesboro-----	95	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
EveD: Evesboro-----	95	Somewhat limited Slope	0.84	Very limited Cutbanks cave Slope	1.00 0.84	Somewhat limited Slope Droughty Too sandy	0.84 0.69 0.50
EvuB: Evesboro-----	60	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty Too sandy	0.69 0.50
Urban land-----	30	Not rated		Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
FodB: Fort Mott-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.03
GamB: Galloway-----	85	Somewhat limited Depth to saturated zone	0.94	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.94 0.13
HbmB: Hammonton-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HboA: Hammonton-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
HboB: Hammonton-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
HbrB: Hammonton-----	70	Somewhat limited Frost action	0.50	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	
LakB: Lakehurst-----	85	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Somewhat limited Droughty	0.22
LasB: Lakewood-----	85	Not limited		Very limited Cutbanks cave	1.00	Very limited Droughty Too sandy	1.00 0.50
MakAt: Manahawkin, frequently flooded-	85	Very limited Ponding Depth to saturated zone Flooding Frost action	1.00 1.00 1.00 0.50	Very limited Ponding Depth to saturated zone Cutbanks cave Organic matter content Flooding	1.00 1.00 1.00 1.00 1.00 0.80	Very limited Ponding Flooding Organic matter content Depth to saturated zone	1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave	1.00	Not limited	
MbrB: Matapeake-----	90	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave	1.00	Not limited	
MbrC: Matapeake-----	90	Very limited Frost action Low strength Slope	1.00 1.00 0.01	Very limited Cutbanks cave Slope	1.00 0.01	Somewhat limited Slope	0.01
MbuA: Mattapex-----	95	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MbuB: Mattapex-----	95	Very limited Frost action Low strength	1.00 1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
MmtAv: Mispillion, very frequently flooded-	50	Very limited Ponding Depth to saturated zone Subsidence Flooding Frost action	1.00 1.00 1.00 1.00 1.00 0.50	Very limited Ponding Flooding Depth to saturated zone Organic matter content Cutbanks cave	1.00 1.00 1.00 1.00 1.00 0.10	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Ponding Depth to saturated zone Subsidence Frost action Flooding	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content Too clayey	1.00 1.00 1.00 1.00 1.00 0.12	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00 1.00
Appoquinimink, very frequently flooded-	20	Very limited Ponding Depth to saturated zone Frost action Flooding Low strength	1.00 1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Salinity Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
OthA: Othello-----	85	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
OTKA: Othello-----	55	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
Fallsington-----	45	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
OTMA: Othello-----	45	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OTMA: Fallsington-----	35	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited Depth to saturated zone	1.00
Trussum-----	20	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 0.78	Very limited Depth to saturated zone Too clayey Cutbanks cave	1.00 0.32 0.10	Very limited Depth to saturated zone	1.00
PdwAv: Pawcatuck, very frequently flooded-	60	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Cutbanks cave Organic matter content	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Organic matter content Depth to saturated zone Sulfur content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Ponding Depth to saturated zone Subsidence Frost action Flooding	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content Too clayey	1.00 1.00 1.00 1.00 1.00 0.02	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	85	Very limited Ponding Depth to saturated zone Flooding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Cutbanks cave Organic matter content Flooding	1.00 1.00 1.00 1.00 0.80	Very limited Ponding Flooding Too sandy Depth to saturated zone Droughty	1.00 1.00 1.00 1.00 0.91
PsvAr: Psammments, wet substratum, rarely flooded-----	85	Somewhat limited Flooding	0.40	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Very limited Too sandy Droughty	1.00 1.00
SacA: Sassafras-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SacB: Sassafras-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
SacC: Sassafras-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
SadA: Sassafras-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Gravel content	0.88
SadB: Sassafras-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Gravel content	0.88
SadC: Sassafras, eroded--	95	Somewhat limited Frost action Slope	0.50 0.01	Very limited Cutbanks cave Slope	1.00 0.01	Somewhat limited Gravel content Slope	0.88 0.01
SapB: Sassafras-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Very limited Ponding Depth to saturated zone Subsidence Frost action Flooding	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Organic matter content Too clayey	1.00 1.00 1.00 1.00 0.12	Very limited Ponding Flooding Organic matter content Salinity Depth to saturated zone	1.00 1.00 1.00 1.00
UdrB: Udorthents, refuse substratum-----	100	Very limited Low strength	1.00	Somewhat limited Cutbanks cave	0.10	Not limited	
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Very limited Frost action	1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
WoeB: Woodstown-----	80	Very limited Frost action	1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	

Soil Survey of Cumberland County, New Jersey

Table 13b.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WooB: Woodstown-----	65	Very limited Frost action	1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 0.99	Not limited	
Urban land-----	20	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded---	40	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00 1.00 0.72	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded---	30	Very limited Flooding Slow water movement Ponding Depth to saturated zone Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00
Mispillion, very frequently flooded---	25	Very limited Flooding Ponding Depth to saturated zone Slow water movement Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer Flooding	1.00 1.00 1.00 1.00 1.00 0.40	Very limited Ponding Seepage Depth to saturated zone Organic matter content Flooding	1.00 1.00 1.00 1.00 0.40
AucB: Aura-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 1.00	Very limited Seepage	1.00
AugA: Aura-----	80	Very limited Seepage, bottom layer Slow water movement	1.00 1.00	Very limited Seepage	1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AugB: Aura-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 1.00	Very limited Seepage Slope	1.00 0.08
AuhB: Aura-----	90	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.08
AvuB: Aura-----	60	Very limited Seepage, bottom layer Slow water movement	1.00 1.00	Very limited Seepage Slope	1.00 0.08
Urban land-----	30	Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Filtering capacity	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
Mullica, occasionally flooded-----	40	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer	1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
BrvAv: Broadkill, very frequently flooded---	100	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00 1.00 0.72	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ChsAt: Chicone, frequently flooded-----	95	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00 1.00 0.72	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00
ChtA: Chillum-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Somewhat limited Seepage	0.53
ChtB: Chillum-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Somewhat limited Seepage Slope	0.53 0.32
DocB: Downer-----	80	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
DocC: Downer-----	90	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 1.00
DoeA: Downer-----	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
DoeB: Downer-----	90	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
DouB: Downer-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
Urban land-----	30	Not rated		Not rated	
EveB: Evesboro-----	80	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage Slope	1.00 0.08

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
EveC: Evesboro-----	95	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage Slope	1.00 1.00
EveD: Evesboro-----	95	Very limited Seepage, bottom layer Filtering capacity Slope	1.00 1.00 0.84	Very limited Slope Seepage	1.00 1.00
EvuB: Evesboro-----	60	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage Slope	1.00 0.08
Urban land-----	30	Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00
FodB: Fort Mott-----	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
GamB: Galloway-----	85	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00
HbmB: Hammonton-----	80	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.08
HboA: Hammonton-----	85	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HboB: Hammonton-----	85	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.32
HbrB: Hammonton-----	70	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.08
Urban land-----	20	Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Depth to saturated zone Seepage, bottom layer Filtering capacity	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.08
LasB: Lakewood-----	85	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.08
MakAt: Manahawkin, frequently flooded---	85	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Filtering capacity	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage	1.00
MbrB: Matapeake-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage Slope	1.00 0.32

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MbrC: Matapeake-----	90	Very limited Seepage, bottom layer Slow water movement Slope	1.00 0.72 0.01	Very limited Slope Seepage	1.00 1.00
MbuA: Mattapex-----	95	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone	1.00 1.00
MbuB: Mattapex-----	95	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.32
MmtAv: Mispillion, very frequently flooded---	50	Very limited Flooding Ponding Depth to saturated zone Slow water movement Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
Transquaking, very frequently flooded---	25	Very limited Flooding Slow water movement Ponding Depth to saturated zone Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
Appoquinimink, very frequently flooded---	20	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00 1.00 0.72	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
OthA: Othello-----	85	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00
OTKA: Othello-----	55	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00
Fallsington-----	45	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00
OTMA: Othello-----	45	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00
Fallsington-----	35	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00
Trussum-----	20	Very limited Slow water movement Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 0.53
PdWAv: Pawcatuck, very frequently flooded---	60	Very limited Flooding Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Depth to saturated zone Seepage Organic matter content	1.00 1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PdwAv: Transquaking, very frequently flooded---	25	Very limited Flooding Slow water movement Ponding Depth to saturated zone Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated	
PstAt: Psamments, sulfidic substratum, frequently flooded---	85	Very limited Flooding Ponding Depth to saturated zone Filtering capacity Seepage, bottom layer	1.00 1.00 1.00 1.00 1.00 1.00	Very limited Ponding Flooding Seepage Depth to saturated zone Organic matter content	1.00 1.00 1.00 1.00 1.00
PsvAr: Psamments, wet substratum, rarely flooded-----	85	Very limited Depth to saturated zone Filtering capacity Seepage, bottom layer Flooding	1.00 1.00 1.00 1.00 0.40	Very limited Seepage Depth to saturated zone Flooding	1.00 1.00 0.40
SacA: Sassafras-----	80	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage	1.00
SacB: Sassafras-----	80	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage Slope	1.00 0.08
SacC: Sassafras-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage Slope	1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SadA: Sassafras-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 0.46	Very limited Seepage	1.00
SadB: Sassafras-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.46	Very limited Seepage Slope	1.00 0.32
SadC: Sassafras, eroded----	95	Very limited Seepage, bottom layer Slow water movement Slope	1.00 0.46 0.01	Very limited Slope Seepage	1.00 1.00
SapB: Sassafras-----	60	Very limited Seepage, bottom layer Slow water movement	1.00 0.72	Very limited Seepage Slope	1.00 0.08
Urban land-----	30	Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded---	90	Very limited Flooding Ponding Depth to saturated zone Subsidence Slow water movement	1.00 1.00 1.00 1.00 0.50	Very limited Ponding Flooding Organic matter content Seepage Depth to saturated zone	1.00 1.00 1.00 1.00 1.00
UdrB: Udorthents, refuse substratum-----	100	Somewhat limited Slow water movement	0.46	Somewhat limited Seepage Slope	0.53 0.32
UR: Urban land-----	95	Not rated		Not rated	
WoeA: Woodstown-----	80	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone	1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 14.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
WoeB: Woodstown-----	80	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.08
WooB: Woodstown-----	65	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.72	Very limited Seepage Depth to saturated zone Slope	1.00 1.00 0.08
Urban land-----	20	Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. The system type listed under "Type of installation permitted in New Jersey" was derived from NJAC 7: 9A standards--see footnotes at end of table. The system type is generally the most desirable for the given soil and site conditions. Where no system type is listed, the soil is unsuitable for all available systems. See text for further explanation of ratings, suitability classes, and system types used in this table.)

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
AptAv: Appoquinimink, very frequently flooded-----	40	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	Not permitted Flooding	1.00
		Not permitted Flooding	1.00	Not permitted Flooding	1.00	IIIWr	1.00
		Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00
Transquaking, very frequently flooded-----	30	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	Not permitted Flooding	1.00
		Not permitted Flooding	1.00	Not permitted Flooding	1.00	IIIWr	1.00
		Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00
Mispillion, very frequently flooded-----	25	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	Not permitted Flooding	1.00
		Not permitted Flooding	1.00	Not permitted Flooding	1.00	IIIWr	1.00
		Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00
AtsAr: Atsion, rarely flooded-----	85	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	Not permitted Flooding	1.00
		Not permitted Flooding	1.00	Not permitted Flooding	1.00	IIIWr	1.00
		Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00
AucB: Aura-----	90	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
AugA: Aura-----	80	Very limited Restrictive substratum Restrictive horizon	1.00 1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00 1.00	IIIHr IIISr	1.00 1.00
AugB: Aura-----	85	Very limited Restrictive substratum Restrictive horizon	1.00 1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00 1.00	IIIHr IIISr	1.00 1.00
AuhB: Aura-----	90	Very limited Restrictive substratum Restrictive horizon	1.00 1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00 1.00	IIIHr IIISr	1.00 1.00
AvuB: Aura-----	60	Very limited Restrictive substratum Restrictive horizon	1.00 1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00 1.00	IIIHr IIISr	1.00 1.00
Urban land-----	30	Not rated		Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
Mullica, occasionally flooded-----	40	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
BrvAv: Broadkill, very frequently flooded-----	100	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
ChtA: Chillum-----	85	Not limited		C		I	
ChtB: Chillum-----	85	Not limited		C		I	
DocB: Downer-----	80	Not limited		C		I	
DocC: Downer-----	90	Not limited		C		I	
DoeA: Downer-----	85	Not limited		C		I	
DoeB: Downer-----	90	Not limited		C		I	
DouB: Downer-----	60	Not limited		C		I	
Urban land-----	30	Not rated		Not rated		Not rated	
EveB: Evesboro-----	80	Not limited		C		I	
EveC: Evesboro-----	95	Not limited		C		I	
EveD: Evesboro-----	95	Not limited		C		I	
EvuB: Evesboro-----	60	Not limited		C		I	
Urban land-----	30	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
FamA: Fallsington-----	85	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
FodB: Fort Mott-----	85	Not limited		C		I	
GamB: Galloway-----	85	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
HbmB: Hammonton-----	80	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
HboA: Hammonton-----	85	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
HboB: Hammonton-----	85	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
HbrB: Hammonton-----	70	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
Urban land-----	20	Not rated		Not rated		Not rated	
LakB: Lakehurst-----	85	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
LasB: Lakewood-----	85	Not limited		C		I	

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
MakAt: Manahawkin, frequently flooded-----	85	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00 1.00
MbrA: Matapeake-----	90	Not limited		C		I	
MbrB: Matapeake-----	90	Not limited		C		I	
MbrC: Matapeake-----	90	Not limited		C		I	
MbuA: Mattapex-----	95	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
MbuB: Mattapex-----	95	Somewhat limited Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
MntAv: Mispillion, very frequently flooded-----	50	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00 1.00
Transquaking, very frequently flooded-----	25	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
MmtAv: Appoquinimink, very frequently flooded-----	20	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
OthA: Othello-----	85	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
OTKA: Othello-----	55	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
Fallsington-----	45	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
OTMA: Othello-----	45	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
Fallsington-----	35	Very limited Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	Depth to apparent zone of saturation Not permitted Hydric soil	1.00 1.00	IIIWr Not permitted Hydric soil	1.00 1.00
Trussum-----	20	Very limited Depth to apparent zone of saturation Restrictive substratum Not permitted Hydric soil	1.00 1.00 1.00	Depth to apparent zone of saturation Restrictive substratum Not permitted Hydric soil	1.00 1.00 1.00	IIIWr IIISr Not permitted Hydric soil	1.00 1.00 1.00

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
PdwAv: Pawcatuck, very frequently flooded-----	60	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
Transquaking, very frequently flooded-----	25	Very limited Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding Not permitted Hydric soil	1.00 1.00 1.00 1.00	Not permitted Flooding IIIWr Not permitted Hydric soil	1.00 1.00 1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-----	85	Very limited Depth to apparent zone of saturation Not permitted Flooding	1.00 1.00	Depth to apparent zone of saturation Not permitted Flooding	1.00 1.00	Not permitted Flooding IIIWr	1.00 1.00
PsvAr: Psammets, wet substratum, rarely flooded---	85	Very limited Not permitted Flooding Depth to apparent zone of saturation	1.00 0.83	Not permitted Flooding M	1.00 0.83	Not permitted Flooding IIWr	1.00 0.83
SacA: Sassafras-----	80	Not limited		C		I	
SacB: Sassafras-----	80	Not limited		C		I	
SacC: Sassafras-----	90	Not limited		C		I	
SadA: Sassafras-----	85	Not limited		C		I	
SadB: Sassafras-----	90	Not limited		C		I	

Soil Survey of Cumberland County, New Jersey

Table 15.--Disposal Fields--Continued

Map symbol and soil name	Pct. of map unit	Disposal field NJAC 7: 9A		Type of installation permitted in NJ*		NJ suitability class** (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and permitted system type	Value	Suitability class and limiting feature	Value
SadC: Sassafras, eroded-	95	Not limited		C		I	
SapB: Sassafras-----	60	Not limited		C		I	
Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-----	90	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	Not permitted Flooding	1.00
		Not permitted Flooding	1.00	Not permitted Flooding	1.00	IIIWr	1.00
		Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00	Not permitted Hydric soil	1.00
UdrB: Udorthents, refuse substratum-----	100	Not limited		C		I	
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Somewhat limited					
		Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
WoeB: Woodstown-----	80	Somewhat limited					
		Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
WooB: Woodstown-----	65	Somewhat limited					
		Depth to apparent zone of saturation	0.83	M	0.83	IIWr	0.83
Urban land-----	20	Not rated		Not rated		Not rated	

* Type of disposal field installation (see text for further explanation):

C = Conventional installation
 C drain = Interceptor drain or other means of removing the perched zone of saturation
 SRB = Soil replacement, bottom-lined installation
 SRE = Soil replacement, fill enclosed installation
 M = Mound installation
 NJ Suitability Classes: I, IIHc, IIHr, IIIHr, IISc, IISr, IIISr, IIWp, IIIWp, IIWr, IIIWr

** For further explanation of the NJ suitability classes (IIHr, IIIWr, etc.), refer to NJAC 7: 9A, "Standards for Individual Subsurface Sewage Disposal Systems." These classes are briefly described in the text.

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
AptAv: Appoquinimink, very frequently flooded---	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Transquaking, very frequently flooded---	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Mispillion, very frequently flooded---	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
AtsAr: Atsion, rarely flooded-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.47 0.47
AucB: Aura-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.13
AugA: Aura-----	80	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.13
AugB: Aura-----	85	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.13
AuhB: Aura-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.64
AvuB: Aura-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.13
Urban land-----	30	Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.30 0.47

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BEXAS: Mullica, occasionally flooded-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.08
BrvAv: Broadkill, very frequently flooded---	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
ChsAt: Chicone, frequently flooded-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.47
ChtA: Chillum-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.03 0.64
ChtB: Chillum-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.03 0.64
DocB: Downer-----	80	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.64
DocC: Downer-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.64
DoeA: Downer-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.64
DoeB: Downer-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.64
DouB: Downer-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.64
Urban land-----	30	Not rated		Not rated	
EveB: Evesboro-----	80	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.14 0.47

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
EveC: Evesboro-----	95	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.47
EveD: Evesboro-----	95	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.10
EvuB: Evesboro-----	60	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.14
		Thickest layer	0.00	Thickest layer	0.47
Urban land-----	30	Not rated		Not rated	
FamA: Fallsington-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.24
		Thickest layer	0.00	Thickest layer	0.24
FodB: Fort Mott-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.10
GamB: Galloway-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.16
		Thickest layer	0.00	Bottom layer	0.42
HbmB: Hammonton-----	80	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.47
HboA: Hammonton-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.03
		Thickest layer	0.00	Bottom layer	0.38
HboB: Hammonton-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.03
		Thickest layer	0.00	Bottom layer	0.38
HbrB: Hammonton-----	70	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.47
Urban land-----	20	Not rated		Not rated	
LakB: Lakehurst-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.47
		Thickest layer	0.00	Thickest layer	0.47
LasB: Lakewood-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.47
		Thickest layer	0.00	Thickest layer	0.47

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
MakAt: Manahawkin, frequently flooded---	85	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.47
MbrA: Matapeake-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.64
MbrB: Matapeake-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.64
MbrC: Matapeake-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.10 0.64
MbuA: Mattapex-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.07
MbuB: Mattapex-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.58
MntAv: Mispillion, very frequently flooded---	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Transquaking, very frequently flooded---	25	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Appoquinimink, very frequently flooded---	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
OthA: Othello-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.47
OTKA: Othello-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.08 0.47
Fallsington-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.24 0.24

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
OTMA:					
Othello-----	45	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00	Bottom layer	0.47
Fallsington-----	35	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.24
		Thickest layer	0.00	Thickest layer	0.24
Trussum-----	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PdwAv:					
Pawcatuck, very frequently flooded---	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.64
Transquaking, very frequently flooded---	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PHG:					
Pits, sand and gravel-----	100	Not rated		Not rated	
PstAt:					
Psammaquents, sulfidic substratum, frequently flooded---	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.48
PsvAr:					
Psammments, wet substratum, rarely flooded-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.75
SacA:					
Sassafras-----	80	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.24
		Thickest layer	0.00	Thickest layer	0.24
SacB:					
Sassafras-----	80	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.24
		Thickest layer	0.00	Thickest layer	0.24
SacC:					
Sassafras-----	90	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.24
		Thickest layer	0.00	Thickest layer	0.24
SadA:					
Sassafras-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.07

Soil Survey of Cumberland County, New Jersey

Table 16a.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
SadB: Sassafras-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.07
SadC: Sassafras, eroded----	95	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
SapB: Sassafras-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.24 0.24
Urban land-----	30	Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded---	90	Poor Bottom layer Thickest layer Organic matter content	0.00 0.00 0.00	Poor Bottom layer Thickest layer Organic matter content	0.00 0.00 0.00
UdrB: Udortheints, refuse substratum-----	100	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
UR: Urban land-----	95	Not rated		Not rated	
WoeA: Woodstown-----	80	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.03 0.10
WoeB: Woodstown-----	80	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.03 0.10
WooB: Woodstown-----	65	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.03 0.10
Urban land-----	20	Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Salinity	0.00 0.00
Transquaking, very frequently flooded-	30	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
Mispillion, very frequently flooded-	25	Fair Salinity	0.50	Poor Wetness depth Low strength	0.00 0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
AtsAr: Atsion, rarely flooded-----	85	Poor Too sandy Organic matter content low Too acid Droughty	0.00 0.00 0.00 0.62	Poor Wetness depth	0.00	Poor Too sandy Wetness depth Too acid	0.00 0.00 0.32
AucB: Aura-----	90	Poor Wind erosion Too acid Organic matter content low	0.00 0.00 0.02	Good		Fair Too acid Rock fragments Hard to reclaim (rock fragments)	0.12 0.82 0.95
AugA: Aura-----	80	Poor Too acid Organic matter content low	0.00 0.02	Good		Poor Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.68 0.95
AugB: Aura-----	85	Poor Too acid Organic matter content low	0.00 0.02	Good		Poor Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.68 0.95
AuhB: Aura-----	90	Fair Too acid Organic matter content low	0.03 0.08	Good		Poor Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.32 0.39

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AvuB: Aura-----	60	Poor Too acid Organic matter content low	0.00 0.02	Good		Poor Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.68 0.95
Urban land-----	30	Not rated		Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Poor Wind erosion Organic matter content low Too sandy Too acid Droughty	0.00 0.00 0.00 0.03 0.91	Poor Wetness depth	0.00	Poor Wetness depth Too sandy Too acid	0.00 0.00 0.76
Mullica, occasionally flooded-----	40	Poor Organic matter content low Too acid	0.00 0.00	Poor Wetness depth	0.00	Poor Wetness depth Hard to reclaim (rock fragments) Too acid	0.00 0.26 0.76
BrvAv: Broadkill, very frequently flooded-	100	Poor Salinity	0.00	Poor Wetness depth Low strength	0.00 0.00	Poor Wetness depth Salinity	0.00 0.00
ChsAt: Chicone, frequently flooded-----	95	Poor Too acid	0.00	Poor Wetness depth	0.00	Poor Wetness depth Too acid	0.00 0.98
ChtA: Chillum-----	85	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.90	Good		Fair Too acid	0.88
ChtB: Chillum-----	85	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.90	Good		Fair Too acid	0.88
DocB: Downer-----	80	Poor Wind erosion Organic matter content low Too acid	0.00 0.00 0.20	Good		Good	

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DocC: Downer-----	90	Poor Wind erosion Organic matter content low Too acid	0.00 0.00 0.20	Good		Good	
DoeA: Downer-----	85	Poor Organic matter content low Too acid	0.00 0.20	Good		Good	
DoeB: Downer-----	90	Poor Organic matter content low Too acid	0.00 0.20	Good		Good	
DouB: Downer-----	60	Poor Organic matter content low Too acid	0.00 0.20	Good		Good	
Urban land-----	30	Not rated		Not rated		Not rated	
EveB: Evesboro-----	80	Poor Wind erosion Organic matter content low Too sandy Too acid Droughty	0.00 0.00 0.00 0.50 0.98	Good		Poor Too sandy Too acid	0.00 0.76
EveC: Evesboro-----	95	Poor Wind erosion Organic matter content low Too sandy Too acid Droughty	0.00 0.00 0.00 0.50 0.98	Good		Poor Too sandy Too acid	0.00 0.76
EveD: Evesboro-----	95	Poor Wind erosion Organic matter content low Droughty Too sandy Too acid	0.00 0.00 0.35 0.42 0.50	Good		Fair Slope Too acid Too sandy Rock fragments	0.16 0.32 0.42 0.98

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EvuB: Evesboro-----	60	Poor Wind erosion Organic matter content low Too sandy Too acid Droughty	0.00 0.00 0.00 0.50 0.98	Good		Poor Too sandy Too acid	0.00 0.76
Urban land-----	30	Not rated		Not rated		Not rated	
FamA: Fallsington-----	85	Poor Too acid Organic matter content low	0.00 0.12	Poor Wetness depth	0.00	Poor Wetness depth Too acid Rock fragments	0.00 0.59 0.76
FodB: Fort Mott-----	85	Poor Wind erosion Too sandy Too acid	0.00 0.02 0.12	Good		Fair Too sandy Too acid Rock fragments	0.02 0.59 0.98
GamB: Galloway-----	85	Poor Wind erosion Too sandy Too acid Organic matter content low Droughty	0.00 0.01 0.03 0.05 0.77	Fair Wetness depth	0.04	Fair Too sandy Wetness depth Too acid	0.01 0.04 0.32
HbmB: Hammonton-----	80	Poor Wind erosion Organic matter content low Too acid	0.00 0.00 0.50	Fair Wetness depth	0.89	Fair Too acid Wetness depth	0.59 0.89
HboA: Hammonton-----	85	Fair Organic matter content low Too acid	0.12 0.50	Fair Wetness depth	0.89	Fair Too acid Wetness depth Rock fragments	0.88 0.89 0.99
HboB: Hammonton-----	85	Fair Too acid Organic matter content low	0.08 0.12	Fair Wetness depth	0.89	Fair Rock fragments Too acid Wetness depth	0.32 0.88 0.89
HbrB: Hammonton-----	70	Poor Wind erosion Organic matter content low Too acid	0.00 0.00 0.50	Fair Wetness depth	0.89	Fair Too acid Wetness depth	0.59 0.89
Urban land-----	20	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LakB: Lakehurst-----	85	Poor Too sandy Organic matter content low Too acid	0.00 0.00 0.00	Fair Wetness depth	0.89	Poor Too sandy Too acid Wetness depth	0.00 0.32 0.89
LasB: Lakewood-----	85	Poor Too sandy Wind erosion Droughty Organic matter content low Too acid	0.00 0.00 0.00 0.00 0.00	Good		Poor Too sandy Too acid	0.00 0.76
MakAt: Manahawkin, frequently flooded-	85	Poor Wind erosion Too acid Organic matter content low	0.00 0.20 0.88	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Too acid	0.00 0.00 0.76
MbrA: Matapeake-----	90	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.68	Good		Fair Too acid	0.59
MbrB: Matapeake-----	90	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.68	Good		Fair Too acid	0.59
MbrC: Matapeake-----	90	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.68	Good		Fair Too acid	0.59
MbuA: Mattapex-----	95	Fair Too acid Organic matter content low Water erosion Too clayey	0.12 0.12 0.90 0.92	Fair Wetness depth	0.89	Fair Too clayey Too acid Wetness depth	0.53 0.59 0.89
MbuB: Mattapex-----	95	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.90	Poor Low strength Wetness depth	0.00 0.89	Fair Too acid Wetness depth	0.59 0.89

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmtAv: Mispillion, very frequently flooded-	50	Fair Salinity	0.50	Poor Wetness depth Low strength	0.00 0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
Transquaking, very frequently flooded-	25	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
Appoquinimink, very frequently flooded-	20	Poor Salinity Sodium content	0.00 0.90	Poor Wetness depth	0.00	Poor Wetness depth Salinity Sodium content	0.00 0.00 0.98
OthA: Othello-----	85	Fair Too acid Organic matter content low Water erosion Too clayey	0.12 0.12 0.90 0.98	Poor Wetness depth Low strength	0.00 0.00	Poor Wetness depth Too clayey Too acid	0.00 0.57 0.59
OTKA: Othello-----	55	Poor Too acid Organic matter content low	0.00 0.12	Poor Wetness depth	0.00	Poor Wetness depth Too acid	0.00 0.12
Fallsington-----	45	Poor Too acid Organic matter content low	0.00 0.12	Poor Wetness depth	0.00	Poor Wetness depth Too acid Rock fragments	0.00 0.59 0.76
OTMA: Othello-----	45	Poor Too acid Organic matter content low	0.00 0.12	Poor Wetness depth	0.00	Poor Wetness depth Too acid	0.00 0.12
Fallsington-----	35	Poor Too acid Organic matter content low	0.00 0.12	Poor Wetness depth	0.00	Poor Wetness depth Too acid Rock fragments	0.00 0.59 0.76
Trussum-----	20	Fair Too acid Organic matter content low Water erosion	0.08 0.12 0.90	Poor Wetness depth Low strength Shrink-swell	0.00 0.00 0.20	Poor Wetness depth Too acid	0.00 0.50

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PdWAv: Pawcatuck, very frequently flooded-	60	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Salinity Rock fragments	0.00 0.00 0.00 0.24
Transquaking, very frequently flooded-	25	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	85	Poor Too sandy Salinity Too acid	0.00 0.00 0.03	Poor Wetness depth	0.00	Poor Too sandy Wetness depth Rock fragments Too acid	0.00 0.00 0.00 0.32
PsvAr: Psamments, wet substratum, rarely flooded-----	85	Poor Too sandy Wind erosion Organic matter content low Too acid Droughty	0.00 0.00 0.00 0.50 0.94	Fair Wetness depth	0.89	Poor Too sandy Rock fragments Too acid Wetness depth	0.00 0.00 0.32 0.89
SacA: Sassafras-----	80	Fair Organic matter content low Too acid	0.12 0.84	Good		Good	
SacB: Sassafras-----	80	Fair Organic matter content low Too acid	0.12 0.84	Good		Good	
SacC: Sassafras-----	90	Fair Organic matter content low Too acid	0.12 0.84	Good		Good	

Soil Survey of Cumberland County, New Jersey

Table 16b.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SadA: Sassafras-----	85	Fair Organic matter content low Too acid Water erosion	0.01 0.50 0.99	Good		Fair Too acid Rock fragments	0.59 0.92
SadB: Sassafras-----	90	Fair Organic matter content low Too acid Water erosion	0.01 0.50 0.99	Good		Fair Too acid Rock fragments	0.59 0.92
SadC: Sassafras, eroded---	95	Poor Organic matter content low Too acid Water erosion	0.00 0.50 0.99	Good		Fair Too acid Hard to reclaim (rock fragments) Rock fragments	0.59 0.61 0.92
SapB: Sassafras-----	60	Fair Organic matter content low Too acid	0.12 0.84	Good		Good	
Urban land-----	30	Not rated		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Poor Salinity	0.00	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Salinity	0.00 0.00 0.00
UdrB: Udorthents, refuse substratum-----	100	Fair Water erosion	0.99	Poor Low strength	0.00	Good	
UR: Urban land-----	95	Not rated		Not rated		Not rated	
WoeA: Woodstown-----	80	Fair Organic matter content low Too acid	0.02 0.50	Fair Wetness depth	0.89	Fair Wetness depth	0.89
WoeB: Woodstown-----	80	Fair Organic matter content low Too acid	0.02 0.50	Fair Wetness depth	0.89	Fair Wetness depth	0.89
WooB: Woodstown-----	65	Fair Organic matter content low Too acid	0.02 0.50	Fair Wetness depth	0.89	Fair Wetness depth	0.89
Urban land-----	20	Not rated		Not rated		Not rated	

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AptAv: Appoquinimink, very frequently flooded-	40	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Salinity Piping	1.00 1.00 1.00 1.00 1.00	Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
Transquaking, very frequently flooded-	30	Somewhat limited Seepage	0.70	Very limited Organic matter content Ponding Depth to saturated zone Piping Salinity	1.00 1.00 1.00 1.00 1.00	Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
Mispillion, very frequently flooded-	25	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Piping Salinity	1.00 1.00 0.95 0.50	Somewhat limited Salinity and saturated zone Cutbanks cave	0.78 0.10
AtsAr: Atsion, rarely flooded-----	85	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage	1.00 1.00 0.47	Very limited Cutbanks cave	1.00
AucB: Aura-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Depth to water	1.00
AugA: Aura-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Depth to water	1.00
AugB: Aura-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Depth to water	1.00
AuhB: Aura-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AvuB: Aura-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.13	Very limited Depth to water	1.00
Urban land-----	30	Not limited		Not rated		Not rated	
BEXAS: Berryland, occasionally flooded-----	50	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage	1.00 1.00 0.47	Very limited Cutbanks cave	1.00
Mullica, occasionally flooded-----	40	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage	1.00 1.00 0.08	Very limited Cutbanks cave	1.00
BrvAv: Broadkill, very frequently flooded-	100	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Salinity	1.00 1.00 1.00 1.00	Very limited Cutbanks cave Salinity and saturated zone	1.00 1.00
ChsAt: Chicone, frequently flooded-----	95	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Seepage	1.00 1.00 1.00 0.47	Very limited Cutbanks cave	1.00
ChtA: Chillum-----	85	Very limited Seepage	1.00	Somewhat limited Piping Seepage	0.90 0.64	Very limited Depth to water	1.00
ChtB: Chillum-----	85	Very limited Seepage Slope	1.00 0.08	Somewhat limited Piping Seepage	0.90 0.64	Very limited Depth to water	1.00
DocB: Downer-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
DocC: Downer-----	90	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DoeA: Downer-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
DoeB: Downer-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
DouB: Downer-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
Urban land-----	30	Not limited		Not rated		Not rated	
EveB: Evesboro-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.47	Very limited Depth to water	1.00
EveC: Evesboro-----	95	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.47	Very limited Depth to water	1.00
EveD: Evesboro-----	95	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00
EvuB: Evesboro-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.47	Very limited Depth to water	1.00
Urban land-----	30	Not limited		Not rated		Not rated	
FamA: Fallsington-----	85	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.24	Very limited Cutbanks cave	1.00
FodB: Fort Mott-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00
GamB: Galloway-----	85	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.42	Very limited Cutbanks cave	1.00
HbmB: Hammonton-----	80	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.47	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
HboA: Hammonton-----	85	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.38	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HboB: Hammonton-----	85	Very limited Seepage Slope	1.00 0.08	Somewhat limited Depth to saturated zone Seepage	0.86 0.38	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
HbrB: Hammonton-----	70	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.47	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
Urban land-----	20	Not limited		Not rated		Not rated	
LakB: Lakehurst-----	85	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.47	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
LasB: Lakewood-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.47	Very limited Depth to water	1.00
MakAt: Manahawkin, frequently flooded-	85	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Seepage	1.00 1.00 0.47	Very limited Cutbanks cave	1.00
MbrA: Matapeake-----	90	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
MbrB: Matapeake-----	90	Very limited Seepage Slope	1.00 0.08	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
MbrC: Matapeake-----	90	Very limited Slope Seepage	1.00 1.00	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
MbuA: Mattapex-----	95	Very limited Seepage	1.00	Somewhat limited Piping Depth to saturated zone Seepage	0.98 0.86 0.07	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
MbuB: Mattapex-----	95	Very limited Seepage Slope	1.00 0.08	Somewhat limited Piping Depth to saturated zone Seepage	0.97 0.86 0.58	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmtAv: Mispillion, very frequently flooded-	50	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Piping Salinity	1.00 1.00 0.95 0.50	Somewhat limited Salinity and saturated zone Cutbanks cave	0.78 0.10
Transquaking, very frequently flooded-	25	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Piping Salinity	1.00 1.00 1.00 1.00 1.00	Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
Appoquinimink, very frequently flooded-	20	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Salinity Piping	1.00 1.00 1.00 1.00 1.00	Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
OthA: Othello-----	85	Very limited Seepage	1.00	Very limited Depth to saturated zone Piping Seepage	1.00 0.98 0.47	Very limited Cutbanks cave	1.00
OTKA: Othello-----	55	Very limited Seepage	1.00	Very limited Depth to saturated zone Piping Seepage	1.00 1.00 0.47	Very limited Cutbanks cave	1.00
Fallsington-----	45	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.24	Very limited Cutbanks cave	1.00
OTMA: Othello-----	45	Very limited Seepage	1.00	Very limited Depth to saturated zone Piping Seepage	1.00 1.00 0.47	Very limited Cutbanks cave	1.00
Fallsington-----	35	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.24	Very limited Cutbanks cave	1.00

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OTMA: Trussum-----	20	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
PdwAv: Pawcatuck, very frequently flooded-	60	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Salinity Seepage	1.00 1.00 1.00 1.00 0.64	Very limited Cutbanks cave Salinity and saturated zone	1.00 1.00
Transquaking, very frequently flooded-	25	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Piping Salinity	1.00 1.00 1.00 1.00	Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	85	Very limited Seepage	1.00	Very limited Organic matter content Ponding Depth to saturated zone Salinity Seepage	1.00 1.00 1.00 1.00 0.48	Very limited Cutbanks cave Salinity and saturated zone	1.00 1.00
PsvAr: Psamments, wet substratum, rarely flooded-----	85	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.75	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
SacA: Sassafras-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.24	Very limited Depth to water	1.00
SacB: Sassafras-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.24	Very limited Depth to water	1.00
SacC: Sassafras-----	90	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.24	Very limited Depth to water	1.00

Soil Survey of Cumberland County, New Jersey

Table 17.--Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SadA: Sassafras-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.07	Very limited Depth to water	1.00
SadB: Sassafras-----	90	Very limited Seepage Slope	1.00 0.08	Somewhat limited Seepage	0.07	Very limited Depth to water	1.00
SadC: Sassafras, eroded---	95	Very limited Slope Seepage	1.00 1.00	Somewhat limited Seepage	0.04	Very limited Depth to water	1.00
SapB: Sassafras-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.24	Very limited Depth to water	1.00
Urban land-----	30	Not limited		Not rated		Not rated	
TrkAv: Transquaking, very frequently flooded-	90	Very limited Seepage	1.00	Not rated		Very limited Salinity and saturated zone Cutbanks cave	1.00 0.10
UdrB: Udorthents, refuse substratum-----	100	Somewhat limited Seepage Slope	0.72 0.08	Very limited Piping	1.00	Very limited Depth to water	1.00
UR: Urban land-----	95	Not limited		Not rated		Not rated	
WoeA: Woodstown-----	80	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.10	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
WoeB: Woodstown-----	80	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.10	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
WooB: Woodstown-----	65	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.86 0.10	Very limited Cutbanks cave Depth to saturated zone	1.00 0.06
Urban land-----	20	Not limited		Not rated		Not rated	

Table 18.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
AptAv: Appoquinimink, very frequently flooded-----	0-12	Mucky silt loam	CL-ML, OH	A-4, A-7-5	0	0	100	100	91-100	84-99	28-74	7-17
	12-30	Silt loam, silty clay loam, mucky silt loam	ML, OH, CL-ML	A-4, A-7-5	0	0	100	100	94-100	89-100	26-72	7-27
	30-80	Mucky peat, muck	PT	A-8	0	0	100	100	94-100	89-100	---	---
Transquaking, very frequently flooded-----	0-14	Mucky peat	PT	A-8	0	0	100	100	84-100	79-100	---	---
	14-60	Muck, mucky peat	PT	A-8	0	0	100	100	84-100	79-100	---	---
	60-90	Silty clay, silty clay loam	OH, CH, CL	A-6, A-7-5	0	0	100	100	84-100	79-100	36-103	18-40
Mispillion, very frequently flooded-----	0-10	Mucky peat	PT	A-8	0	0	100	100	77-100	64-97	---	---
	10-26	Muck, mucky peat	PT	A-8	0	0	100	100	77-100	64-97	---	---
	26-90	Silt loam, silty clay loam, loam	ML, OH	A-4, A-7-5, A-7-6	0	0	100	100	77-100	64-97	22-68	3-27
AtsAr: Atsion, rarely flooded-----	0-2	Peat	PT	A-8	0	0	84-100	80-100	61-83	9-18	---	---
	2-4	Sand	SP-SM, SM	A-3, A-2-4	0	0	77-100	72-100	55-83	8-18	0-30	NP-5
	4-26	Sand	SP-SM, SC-SM	A-3, A-2-4	0	0	82-100	78-100	59-83	8-18	0-21	NP-5
	26-34	Sand, loamy sand	SP-SM, SC	A-3, A-2-4	0	0	82-100	78-100	59-88	8-23	0-26	NP-9
	34-46	Sand, loamy sand	SP-SM, SC	A-3, A-2-4	0	0	80-100	76-100	58-88	8-23	0-26	NP-9
	46-51	Sand	SP-SM, SC-SM	A-3, A-2-4	0	0	80-100	76-100	58-83	8-18	0-21	NP-5
	51-80	Sand, loamy sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-3, A-2-4	0	0	55-100	51-100	39-88	6-23	0-25	NP-9

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
AucB: Aura-----	0-7	Loamy sand	SC, SM	A-2-4	0	0	80-92	78-92	60-78	21-32	0-30	NP-9
	7-22	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-1-b, A-2-4, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	22-28	Gravelly coarse sandy loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly sandy loam	SC, GC-GM	A-1-a, A-2-4, A-2-6	0	0	32-78	28-76	16-52	10-33	18-28	4-11
	28-59	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-2-6, A-7-6	0	0	31-77	27-76	23-75	12-45	29-43	13-24
	59-80	Gravelly loamy coarse sand, gravelly coarse sand, gravelly coarse sandy loam, very gravelly coarse sandy loam, very gravelly coarse sand, very gravelly loamy coarse sand	SC-SM, GP-GM, SC	A-1-a, A-1-b, A-2-6	0	0	33-79	29-78	14-50	5-24	0-28	NP-11

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
AugA: Aura-----	0-8	Sandy loam, coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-6, A-2-4	0	0	54-92	52-92	39-76	19-42	20-33	4-11
	8-13	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-1-b, A-2-4, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	13-22	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-1-b, A-2-4, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	22-28	Gravelly coarse sandy loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly sandy loam	SC, GC-GM	A-1-a, A-2-4, A-2-6	0	0	33-79	29-78	17-52	10-34	18-28	4-11
	28-44	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-2-6, A-7-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	44-59	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-2-6, A-7-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	59-80	Gravelly loamy coarse sand, gravelly coarse sand, gravelly coarse sandy loam, very gravelly coarse sandy loam, very gravelly coarse sand, very gravelly loamy coarse sand	SC-SM, GP-GM, SC	A-1-a, A-1-b, A-2-6	0	0	33-79	29-78	14-50	5-24	0-28	NP-11

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
AugB: Aura-----	0-8	Sandy loam, coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-2-4, A-6	0	0	54-92	52-92	39-76	19-42	20-33	4-11
	8-13	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-1-b, A-2-4, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	13-22	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-1-b, A-2-4, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	22-28	Gravelly coarse sandy loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly sandy loam	SC, GC-GM	A-2-4, A-1-a, A-2-6	0	0	33-79	29-78	17-52	10-34	18-28	4-11
	28-44	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-7-6, A-2-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	44-59	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-7-6, A-2-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	59-80	Gravelly loamy coarse sand, gravelly coarse sand, gravelly coarse sandy loam, very gravelly coarse sandy loam, very gravelly coarse sand, very gravelly loamy coarse sand	SC-SM, SC, GP-GM	A-1-a, A-1-b, A-2-6	0	0	33-79	29-78	14-50	5-24	0-28	NP-11
AuhB: Aura-----	0-8	Gravelly sandy loam	SC, SM	A-1-b, A-2-4	0	0	86-92	49-75	37-62	18-34	20-37	3-13
	8-12	Gravelly sandy loam	SC, SM	A-1-b, A-2-4	0	0	86-92	49-75	37-62	18-34	20-37	3-13
	12-20	Gravelly sandy clay loam	SC	A-2-4, A-2-6, A-7-6	0	0	77-92	53-77	40-75	21-46	25-44	9-25
	20-36	Gravelly sandy clay loam	SC	A-2-4, A-2-6, A-7-6	0	0	77-93	54-78	41-75	21-46	25-44	9-25
	36-40	Gravelly sand, loamy sand	SP-SM, SW, SC	A-1-b, A-7-6	0	0	86-100	52-100	39-100	4-37	0-41	NP-22
	40-72	Gravelly sand, loamy sand	SP-SM, SW, SC	A-1-b, A-7-6	0	0	86-100	52-100	39-100	4-37	0-41	NP-22

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
AvuB: Aura-----	0-8	Sandy loam, coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-2-4, A-6	0	0	54-92	52-92	39-76	19-42	20-33	4-11
	8-13	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-2-4, A-1-b, A-6	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	13-22	Coarse sandy loam, sandy loam, gravelly coarse sandy loam, gravelly sandy loam	SC-SM, SC	A-2-4, A-6, A-1-b	0	0	54-92	52-92	32-64	18-41	18-28	4-11
	22-28	Gravelly coarse sandy loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly sandy loam	SC, GC-GM	A-2-4, A-1-a, A-2-6	0	0	33-79	29-78	17-52	10-34	18-28	4-11
	28-44	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-7-6, A-2-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	44-59	Gravelly sandy clay loam, very gravelly sandy clay loam	SC, GC	A-7-6, A-2-6	0	0	32-78	28-77	24-76	13-46	29-43	13-24
	59-80	Gravelly loamy coarse sand, gravelly coarse sand, gravelly coarse sandy loam, very gravelly coarse sandy loam, very gravelly coarse sand, very gravelly loamy coarse sand	SC-SM, SC, GP-GM	A-1-b, A-1-a, A-2-6	0	0	33-79	29-78	14-50	5-24	0-28	NP-11
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	0-11	Sand	SP-SM, SM	A-3, A-2-4	0	0	72-100	70-100	53-83	8-18	0-30	NP-5
	11-19	Sand, loamy sand	SP-SM, SC	A-3, A-2-4	0	0	79-100	78-100	59-88	8-23	0-26	NP-9
	19-32	Sand, loamy sand	SP-SM, SC	A-3, A-2-4	0	0	79-100	78-100	59-88	8-23	0-25	NP-9
	32-40	Sand, loamy sand	SP-SM, SC	A-3, A-2-4	0	0	79-100	78-100	59-88	8-23	0-26	NP-9
	40-44	Sand, loamy sand	SC, SP-SM	A-3, A-2-4	0	0	78-100	76-100	58-88	8-23	0-25	NP-9
	44-80	Stratified sand to sandy loam, sand	SC-SM, SP-SM, SC	A-2-4, A-3	0	0	78-100	76-100	55-86	5-20	0-26	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
In												
					Pct	Pct					Pct	
BEXAS: Mullica, occasionally flooded-----	0-2	Mucky peat	PT	A-8	0	0	79-100	78-100	58-83	28-45	---	---
	2-9	Sandy loam	SM	A-2-4, A-4	0	0	79-100	78-100	58-83	28-45	21-35	3-10
	9-14	Sandy loam	SC-SM, SC, SM	A-2-4, A-4	0	0	79-100	78-100	56-81	29-46	19-31	3-10
	14-28	Sandy loam	SC-SM, SC, SM	A-2-4, A-4	0	0	79-100	78-100	56-81	29-46	19-31	3-10
	28-31	Loamy sand, sand, stratified sand to loamy sand	SM, SC	A-2-4, A-4	0	0	80-100	79-100	60-88	20-38	0-26	NP-9
	31-40	Sand, loamy sand, stratified sand to loamy sand	SP-SM, SC	A-2-4, A-3	0	0	80-100	79-100	60-88	9-23	0-26	NP-9
	40-80	Gravelly loamy sand, gravelly sand, loamy sand, sand	SM, GM, SC	A-4, A-1-b	0	0	53-95	53-95	40-83	14-36	0-25	NP-9
BrvAv: Broadkill, very frequently flooded-----	0-6	Mucky peat	PT	A-8	0	0	100	100	79-100	72-100	0-30	NP-15
	6-13	Silt loam, silty clay loam	ML, OH, CL-ML	A-7-6, A-4, A-7-5	0	0	100	100	91-100	84-100	26-68	7-27
	13-38	Silt loam, silty clay loam	ML, CL-ML, OH	A-7-6, A-4, A-7-5	0	0	100	100	93-100	86-100	26-68	7-27
	38-72	Stratified sand to silty clay loam, silty clay loam	ML, OH	A-4, A-7-5	0	0	100	78-100	56-100	52-100	0-88	NP-26
ChsAt: Chicone, frequently flooded-----	0-5	Silt loam	CL-ML, ML	A-4, A-6	0	0	97-100	96-100	95-100	79-88	26-40	7-12
	5-20	Silt loam	CL-ML, CL	A-4, A-6	0	0	97-100	96-100	95-100	79-88	22-33	7-12
	20-28	Silt loam, loam	CL-ML, CL, ML	A-4, A-6	0	0	97-100	96-100	90-100	74-88	18-33	3-12
	28-65	Mucky peat	PT	A-8	0	0	72-100	70-100	54-88	8-23	---	---
	65-80	Sand, loamy sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-2-4, A-3	0	0	55-100	52-100	40-88	6-23	0-28	NP-9

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
ChtA: Chillum-----	0-10	Silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	95-100	86-100	24-43	7-18
	10-15	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	15-28	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	28-34	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	34-38	Loam	CL-ML, ML, CL	A-6, A-4	0	0	100	100	89-100	67-87	18-38	3-19
	38-61	Sandy loam, very gravelly sandy loam, gravelly sandy loam	SC, SM	A-2-4, A-1-b, A-6	0	0	63-100	49-100	31-82	13-45	0-32	NP-13
	61-66	Sandy loam, very gravelly sandy loam, gravelly sandy loam	SM, SC	A-2-4, A-1-b, A-6	0	0	63-100	49-100	31-82	13-45	0-32	NP-13
	66-72	Sand	SP-SM, SC-SM	A-2-4	0	0	92-100	77-100	57-82	5-15	0-23	NP-6
ChtB: Chillum-----	0-10	Silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	95-100	86-100	24-43	7-18
	10-15	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	15-28	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	28-34	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	81-96	22-38	7-19
	34-38	Loam	CL-ML, ML, CL	A-6, A-4	0	0	100	100	89-100	67-87	18-38	3-19
	38-61	Sandy loam, very gravelly sandy loam, gravelly sandy loam	SC, SM	A-2-4, A-1-b, A-6	0	0	63-100	49-100	31-82	13-45	0-32	NP-13
	61-66	Sandy loam, very gravelly sandy loam, gravelly sandy loam	SC, SM	A-2-4, A-1-b, A-6	0	0	63-100	49-100	31-82	13-45	0-32	NP-13
	66-72	Sand	SP-SM, SC-SM	A-2-4	0	0	92-100	77-100	57-82	5-15	0-23	NP-6
DocB: Downer-----	0-10	Loamy sand	SM, SC	A-2-4, A-4	0	0	81-100	78-100	60-88	21-38	0-30	NP-9
	10-16	Loamy sand	SM, SC	A-2-4, A-4	0	0	78-100	77-100	59-88	21-38	0-26	NP-9
	16-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4, A-1-b	0	0	54-100	52-100	37-81	19-46	17-27	3-10
	36-48	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4, A-1-b, A-4	0	0	55-100	52-100	40-89	14-39	0-26	NP-10
	48-80	Stratified sand to sandy loam, stratified gravelly sand to gravelly sandy loam	SP-SM, SC	A-2-4, A-1-b	0	0	55-100	52-100	39-87	4-20	0-26	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
DocC: Downer-----	0-10	Loamy sand	SM, SC	A-2-4, A-4	0	0	81-100	78-100	60-88	21-38	0-30	NP-9
	10-16	Loamy sand	SM, SC	A-2-4, A-4	0	0	78-100	77-100	59-88	21-38	0-26	NP-9
	16-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	54-100	52-100	37-81	19-46	17-27	3-10
	36-48	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4, A-1-b, A-4	0	0	55-100	52-100	40-89	14-39	0-26	NP-10
	48-80	Stratified sand to sandy loam, stratified gravelly sand to gravelly sandy loam	SP-SM, SC	A-2-4, A-1-b	0	0	55-100	52-100	39-87	4-20	0-26	NP-10
DoeA: Downer-----	0-10	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	79-100	78-100	58-81	29-44	18-30	2-7
	10-16	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	55-100	52-100	38-81	19-46	17-27	3-10
	16-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	54-100	52-100	37-81	19-46	17-27	3-10
	36-48	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4, A-1-b, A-4	0	0	55-100	52-100	40-89	14-39	0-26	NP-10
	48-80	Stratified sand to sandy loam, stratified gravelly sand to gravelly sandy loam	SP-SM, SC	A-2-4, A-1-b	0	0	55-100	52-100	39-87	4-20	0-26	NP-10
DoeB: Downer-----	0-10	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	79-100	78-100	58-81	29-44	18-30	2-7
	10-16	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	55-100	52-100	38-81	19-46	17-27	3-10
	16-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	54-100	52-100	37-81	19-46	17-27	3-10
	36-48	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4, A-1-b, A-4	0	0	55-100	52-100	40-89	14-39	0-26	NP-10
	48-80	Stratified sand to sandy loam, stratified gravelly sand to gravelly sandy loam	SP-SM, SC	A-2-4, A-1-b	0	0	55-100	52-100	39-87	4-20	0-26	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
DouB: Downer-----	0-10	Sandy loam, loamy sand	SC-SM, SM, SC	A-4, A-2-4	0	0	93-100	92-100	63-80	29-44	0-31	NP-10
	10-16	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	55-100	52-100	38-81	19-46	17-27	3-10
	16-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-1-b, A-4	0	0	54-100	52-100	37-81	19-46	17-27	3-10
	36-48	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4, A-1-b, A-4	0	0	55-100	52-100	40-89	14-39	0-26	NP-10
	48-80	Stratified sand to sandy loam, stratified gravelly sand to gravelly sandy loam	SP-SM, SC	A-2-4, A-1-b	0	0	55-100	52-100	39-87	4-20	0-26	NP-10
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
EveB: Evesboro-----	0-4	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-24	NP-5
	4-17	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-21	NP-5
	17-31	Sand, loamy sand	SP-SM, SC	A-2-4, A-3	0	0	82-100	78-100	60-88	9-23	0-25	NP-9
	31-80	Stratified loamy sand to sand, sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SC-SM, SP-SM, SC	A-2-4, A-1-b	0	0	61-100	52-100	40-90	8-28	0-26	NP-10
EveC: Evesboro-----	0-4	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-24	NP-5
	4-17	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-21	NP-5
	17-31	Sand, loamy sand	SP-SM, SC	A-2-4, A-3	0	0	82-100	78-100	60-88	9-23	0-25	NP-9
	31-80	Stratified loamy sand to sand, sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SC-SM, SP-SM, SC	A-2-4, A-1-b	0	0	61-100	52-100	39-88	10-31	0-26	NP-10
EveD: Evesboro-----	0-5	Sand	SC-SM, SP-SM	A-3, A-2-4	0	0	90-100	76-100	57-84	5-16	0-24	NP-6
	5-28	Loamy sand, sand	SM, SC	A-2-4, A-4	0	0	90-100	77-100	58-89	20-40	0-27	NP-10
	28-60	Stratified loamy sand to sand, sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SC-SM, SC, SP-SM	A-2-4, A-1-b	0	0	61-100	52-100	39-88	10-31	0-26	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
EvuB: Evesboro-----	0-4	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-24	NP-5
	4-17	Sand	SP-SM, SC-SM	A-2-4, A-3	0	0	83-100	79-100	60-83	9-18	0-21	NP-5
	17-31	Sand, loamy sand	SP-SM, SC	A-2-4, A-3	0	0	82-100	78-100	60-88	9-23	0-25	NP-9
	31-80	Stratified loamy sand to sand, sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SC-SM, SP-SM, SC	A-2-4, A-1-b	0	0	61-100	52-100	40-90	8-28	0-26	NP-10
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
FamA: Fallsington-----	0-2	Mucky peat	PT	A-8	0	0	85-100	84-100	60-80	29-44	---	---
	2-5	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	85-100	84-100	60-80	29-44	19-35	3-10
	5-8	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	8-14	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	14-31	Sandy clay loam, loam	SC, CL	A-2-6, A-7-6, A-6	0	0	84-100	83-100	66-96	33-57	27-44	12-25
	31-62	Sand, loamy sand, sandy loam	SM, SC	A-2-6, A-2-4	0	0	80-100	79-100	62-94	13-32	0-30	NP-12
	62-80	Gravelly sand, gravelly loamy sand, gravelly sandy loam	SP-SM, SC	A-2-6, A-2-4	0	0	56-79	53-78	41-73	8-25	0-30	NP-12
FodB: Fort Mott-----	0-8	Loamy sand	SC-SM, SM, SC	A-2-4, A-2	0	0	90-100	77-100	57-88	13-31	0-31	NP-10
	8-30	Loamy sand	SC-SM, SM, SC	A-2-4, A-2	0	0	90-100	77-100	57-88	13-31	0-31	NP-10
	30-33	Sandy loam	SC, SC-SM, SM	A-2-4, A-1-b, A-6	0	0	91-100	78-100	49-82	20-45	0-32	NP-13
	33-49	Sandy loam	SC, SC-SM, SM	A-2-6, A-1-b, A-6	0	0	91-100	78-100	47-79	17-41	0-32	NP-13
	49-72	Loamy sand, gravelly loamy sand	SC-SM, SC, SP-SM	A-2-4, A-1-b	0	0	86-100	52-100	37-86	9-31	0-27	NP-10
GamB: Galloway-----	0-2	Loamy sand	SC, SC-SM, SM	A-2-4	0	0	100	94-100	70-88	17-31	0-33	NP-10
	2-10	Loamy sand	SC, SC-SM, SM	A-2-4	0	0	100	94-100	70-88	17-31	0-33	NP-10
	10-24	Loamy sand	SC, SC-SM, SM	A-2-4	0	0	100	94-100	70-88	17-31	0-33	NP-10
	24-36	Loamy sand	SC, SC-SM, SM	A-2-4	0	0	100	94-100	70-88	17-31	0-33	NP-10
	36-52	Sand	SC-SM, SP-SM	A-2-4, A-3	0	0	90-100	76-100	58-84	7-17	0-22	NP-6
	52-60	Sand	SC-SM, SP-SM	A-2-4, A-3	0	0	90-100	76-100	58-84	7-17	0-22	NP-6

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
HbmB: Hammonton-----	0-8	Loamy sand	SM, SC	A-2-4, A-4	0	0	78-100	78-100	60-88	21-38	0-32	NP-9
	8-18	Loamy sand, gravelly loamy sand	SM, SC	A-2-4, A-4	0	0	52-100	52-100	40-88	14-38	0-27	NP-9
	18-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-2-4, A-4	0	0	52-100	52-100	37-81	19-46	17-28	3-10
	36-80	Sand, loamy sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-1-b, A-2-4	0	0	53-100	53-100	41-88	6-23	0-25	NP-9
HboA: Hammonton-----	0-8	Sandy loam	SC-SM, SM, SC	A-2-4, A-6	0	0	90-100	76-100	57-89	27-50	18-37	2-13
	8-18	Sandy loam	SC-SM, SM, SC	A-2-4, A-6	0	0	90-100	76-100	57-89	27-50	16-32	2-13
	18-36	Sandy loam	SC, SM	A-2-4, A-6	0	0	91-100	78-100	53-83	24-45	16-32	2-13
	36-60	Sand	SP-SM, SC-SM	A-2-4	0	0	91-100	79-100	59-83	8-19	0-23	NP-6
HboB: Hammonton-----	0-10	Sandy loam	SC-SM, SM, CL	A-6, A-2-4	0	0	90-100	76-100	54-89	24-51	0-37	NP-13
	10-48	Sandy loam, gravelly sandy loam	SC, SM	A-1-b, A-6, A-2-4	0	0	86-100	52-100	33-83	14-45	0-32	NP-13
	48-72	Sand	SP-SM, SC-SM	A-2-4	0	0	91-100	79-100	59-83	8-19	0-23	NP-6
HbrB: Hammonton-----	0-8	Loamy sand	SM, SC	A-2-4, A-4	0	0	78-100	78-100	60-88	21-38	0-32	NP-9
	8-18	Loamy sand, gravelly loamy sand	SM, SC	A-2-4, A-4	0	0	52-100	52-100	40-88	14-38	0-27	NP-9
	18-36	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-2-4, A-4	0	0	52-100	52-100	37-81	19-46	17-28	3-10
	36-80	Sand, loamy sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-1-b, A-2-4	0	0	53-100	53-100	41-88	6-23	0-25	NP-9
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
LakB: Lakehurst-----	0-2	Slightly decomposed plant material	PT	A-8	0	0	81-100	79-100	60-83	9-18	---	---
	2-4	Sand	SP-SM, SM	A-2-4, A-3	0	0	81-100	79-100	60-83	9-18	0-28	NP-5
	4-18	Sand, fine sand	SP-SM, SC-SM	A-2-4, A-3	0	0	81-100	79-100	60-83	9-18	0-21	NP-5
	18-32	Sand, loamy sand, fine sand	SP-SM, SC	A-2-4, A-3	0	0	80-100	78-100	60-88	9-23	0-28	NP-9
	32-45	Sand, loamy sand, fine sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-2-4, A-3	0	0	57-100	53-100	41-88	6-23	0-26	NP-9
	45-54	Sand, gravelly sand, loamy sand, gravelly loamy sand	SP-SM, SC	A-2-4, A-3	0	0	57-100	53-100	41-90	6-25	0-27	NP-10
	54-80	Sand, gravelly sand, sandy loam, gravelly sandy loam	SP-SM, SC	A-2-4, A-3	0	0	57-100	53-100	41-90	6-25	0-27	NP-10
LasB: Lakewood-----	0-3	Sand	SP-SM, SC-SM	A-3, A-2-4	0	0	83-100	79-100	60-83	9-18	0-25	NP-5
	3-11	Sand	SP-SM, SC-SM	A-3, A-2-4	0	0	83-100	79-100	60-83	9-18	0-21	NP-5
	11-13	Loamy sand	SM, SC	A-2-4	0	0	82-100	78-100	59-86	17-33	0-28	NP-9
	13-30	Sand	SP-SM, SC-SM	A-3, A-2-4	0	0	83-100	79-100	60-83	9-18	0-21	NP-5
	30-46	Sand, gravelly sand	SP-SM, SC-SM	A-1-b, A-2-4	0	0	62-100	53-100	41-83	6-18	0-21	NP-5
	46-80	Sand, loamy sand, gravelly sand, gravelly loamy sand	SP-SM, SC	A-1-b, A-2-4	0	0	62-100	53-100	41-88	6-23	0-26	NP-9
MakAt: Manahawkin, frequently flooded-----	0-13	Muck	PT	A-8	0	0	38-100	34-100	26-88	4-23	---	---
	13-26	Muck	PT	A-8	0	0	38-100	34-100	26-88	4-23	---	---
	26-47	Muck	PT	A-8	0	0	38-100	34-100	26-88	4-23	---	---
	47-80	Sand, loamy sand, gravelly sand, gravelly loamy sand, very gravelly sand	SP-SM, GP, SC	A-1-a, A-2-4	0	0	30-100	26-100	20-88	3-23	0-28	NP-9

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
MbrA:												
Matapeake-----	0-10	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	100	100	98-100	90-100	24-41	7-19
	10-25	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	25-33	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	33-50	Stratified sandy loam to loamy sand, sand, loamy sand, sandy loam	SM, SC-SM, SC	A-6, A-2-4	0	0	96-100	87-100	64-92	15-36	0-32	NP-13
	50-72	Sand, loamy sand, sandy loam	SP-SM, SC-SM	A-2-4, A-2, A-3	0	0	96-100	87-100	64-82	6-15	0-23	NP-6
MbrB:												
Matapeake-----	0-10	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	100	100	98-100	90-100	24-41	7-19
	10-25	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	25-33	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	33-50	Stratified sandy loam to loamy sand, sand, loamy sand, sandy loam	SC-SM, SM, SC	A-2-4, A-6	0	0	96-100	87-100	64-92	15-36	0-32	NP-13
	50-72	Sand, loamy sand, sandy loam	SP-SM, SC-SM	A-2-4, A-2, A-3	0	0	96-100	87-100	64-82	6-15	0-23	NP-6
MbrC:												
Matapeake-----	0-10	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	100	100	98-100	90-100	24-41	7-19
	10-25	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	25-33	Silt loam, silty clay loam, loam	CL, CL-ML	A-6, A-4	0	0	100	100	89-100	82-97	22-38	7-19
	33-50	Stratified sandy loam to loamy sand, sand, loamy sand, sandy loam	SC-SM, SM, SC	A-2-4, A-6	0	0	96-100	87-100	64-92	15-36	0-32	NP-13
	50-72	Sand, loamy sand, sandy loam	SP-SM, SC-SM	A-2-4, A-2, A-3	0	0	96-100	87-100	64-82	6-15	0-23	NP-6
MbuA:												
Mattapex-----	0-7	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	94-100	83-100	81-100	74-100	23-43	7-18
	7-18	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	88-100	84-99	22-38	7-19
	18-33	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	80-100	76-100	22-49	7-28
	33-40	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	80-100	76-100	22-49	7-28
	40-72	Loamy sand, sand, sandy loam	SM, SC	A-4, A-2-4	0	0	95-100	86-100	65-89	22-40	0-27	NP-10

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
MbuB: Mattapex-----	0-9	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	94-100	83-100	81-100	74-100	23-43	7-18
	9-12	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	94-100	83-100	81-100	74-100	23-43	7-18
	12-52	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	88-100	84-99	22-38	7-19
	52-56	Stratified loamy sand to fine sandy loam, loamy sand, loam, fine sandy loam	SP-SM, SC, SC-SM	A-3, A-2-4	0	0	95-100	86-100	61-85	9-25	0-27	NP-10
	56-72	Stratified sand to loamy sand, loamy sand, sand	SP-SM, SC-SM	A-3, A-2-4	0	0	95-100	86-100	63-82	6-16	0-23	NP-6
MmtAv: Mispillion, very frequently flooded-----	0-10	Mucky peat	PT	A-8	0	0	100	100	82-97	69-84	---	---
	10-26	Muck, mucky peat	PT	A-8	0	0	100	100	82-97	69-84	---	---
	26-90	Silt loam, silty clay loam, loam	ML, CL-ML, OH	A-7-5, A-4	0	0	100	100	82-97	69-84	28-59	7-18
Transquaking, very frequently flooded-----	0-14	Peat	PT	A-8	0	0	100	100	81-100	76-100	---	---
	14-22	Mucky peat, muck	PT	A-8	0	0	100	100	81-100	76-100	---	---
	22-46	Mucky peat, muck	PT	A-8	0	0	100	100	81-100	76-100	---	---
	46-65	Muck, mucky peat	PT	A-8	0	0	100	100	81-100	76-100	---	---
	65-80	Silty clay, silty clay loam	OH, CH, CL	A-6, A-7-5	0	0	100	100	81-100	76-100	38-105	19-40
Appoquinimink, very frequently flooded-----	0-12	Mucky silt loam	OH, CL-ML	A-4, A-7-5	0	0	100	100	93-100	86-100	28-74	7-17
	12-30	Silt loam, silty clay loam, mucky silt loam	ML, CL-ML, OH	A-4, A-7-5	0	0	100	100	94-100	88-100	26-72	7-27
	30-80	Mucky peat, muck	PT	A-8	0	0	100	100	94-100	88-100	---	---
OthA: Othello-----	0-5	Silt loam	CL, CL-ML	A-4, A-7-6	0	0	100	100	96-100	87-100	24-41	7-19
	5-9	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	83-100	78-100	22-49	7-28
	9-28	Silty clay loam, silt loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	80-100	76-100	22-49	7-28
	28-38	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4, A-7-6	0	0	100	100	94-100	86-100	22-49	7-28
	38-46	Loamy sand, gravelly loamy sand	SM, SC-SM, SC	A-4, A-2-4	0	0	55-100	52-100	40-88	14-38	0-26	NP-9
	46-60	Sand, gravelly sand	SP-SM, SC-SM	A-2, A-3, A-2-4	0	0	56-100	53-100	41-83	6-18	0-22	NP-5

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
OTKA: Othello-----	0-1	Mucky peat	PT	A-8	0	0	92-100	91-100	88-100	72-89	---	---
	1-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	92-100	91-100	88-100	72-89	21-33	4-12
	13-32	Silt loam	CL	A-6, A-4	0	0	84-100	83-100	79-100	68-94	24-38	9-19
	32-40	Silty clay loam	CL	A-7-6, A-6	0	0	84-100	83-100	76-100	69-95	37-50	19-28
	40-60	Loamy sand, gravelly loamy sand	SM, SC	A-2-4, A-4	0	0	55-100	52-100	40-88	14-38	0-26	NP-9
	60-80	Sand, gravelly sand	SP-SM, SC-SM	A-3, A-2-4	0	0	56-100	53-100	41-83	6-18	0-22	NP-5
Fallsington----	0-2	Mucky peat	PT	A-8	0	0	84-100	83-100	66-100	45-74	---	---
	2-5	Loam	CL, ML, SM	A-4, A-7-6	0	0	84-100	83-100	66-100	45-74	20-45	3-18
	5-8	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	8-14	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	14-31	Sandy clay loam, loam	SC, CL	A-2-6, A-7-6, A-6	0	0	84-100	83-100	66-96	33-57	27-44	12-25
	31-62	Sand, loamy sand, sandy loam	SM, SC	A-2-6, A-2-4	0	0	80-100	79-100	62-94	13-32	0-30	NP-12
	62-80	Gravelly sand, gravelly loamy sand, gravelly sandy loam	SP-SM, SC	A-2-4, A-2-6	0	0	56-79	53-78	41-73	8-25	0-30	NP-12
OTMA: Othello-----	0-1	Mucky peat	PT	A-8	0	0	92-100	91-100	88-100	72-89	---	---
	1-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	92-100	91-100	88-100	72-89	21-33	4-12
	13-32	Silt loam	CL	A-6, A-4	0	0	84-100	83-100	79-100	68-94	24-38	9-19
	32-40	Silty clay loam	CL	A-7-6, A-6	0	0	84-100	83-100	76-100	69-95	37-50	19-28
	40-60	Loamy sand, gravelly loamy sand	SM, SC-SM, SC	A-2-4, A-4	0	0	55-100	52-100	40-88	14-38	0-26	NP-9
	60-80	Sand, gravelly sand	SP-SM, SC-SM	A-2-4, A-2, A-3	0	0	56-100	53-100	41-83	6-18	0-22	NP-5
Fallsington----	0-2	Mucky peat	PT	A-8	0	0	84-100	83-100	66-100	45-74	---	---
	2-5	Loam	CL, SM, ML	A-7-6, A-4	0	0	84-100	83-100	66-100	45-74	20-45	3-18
	5-8	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	8-14	Sandy loam	SC	A-2-6, A-6	0	0	85-100	84-100	65-79	34-42	27-32	12-13
	14-31	Sandy clay loam, loam	SC, CL, SC-SM	A-6, A-2-6, A-7-6	0	0	84-100	83-100	66-96	33-57	27-44	12-25
	31-62	Sand, loamy sand, sandy loam	SM, SC	A-2-6, A-2-4	0	0	80-100	79-100	62-94	13-32	0-30	NP-12
	62-80	Gravelly sand, gravelly loamy sand, gravelly sandy loam	SP-SM, SC	A-2-4, A-2-6	0	0	56-79	53-78	41-73	8-25	0-30	NP-12

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
OTMA: Trussum-----	0-12	Loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	100	77-97	53-73	20-45	3-18
	12-25	Loam	CL-ML, ML, CL	A-4, A-6	0	0	100	100	74-94	51-71	18-38	3-19
	25-35	Clay, silty clay loam	CH, CL	A-7-6, A-6	0	0	100	100	77-100	60-100	37-102	19-73
	35-60	Clay, silty clay loam	CL, CH	A-7-6, A-6	0	0	100	100	71-100	59-100	37-102	19-73
	60-66	Sandy clay loam, sandy clay, clay	CH, CL, SC	A-7-6, A-6, A-7	0	0	100	98-100	72-100	39-100	29-100	13-73
	66-72	Sandy clay loam, sandy clay, clay	CH, CL, SC	A-6, A-7-6	0	0	100	98-100	78-100	43-100	29-100	13-73
PdwAv: Pawcatuck, very frequently flooded-----	0-14	Mucky peat	PT	A-8	0	0	77-100	43-100	31-100	7-51	---	---
	14-45	Mucky peat	PT	A-8	0	0	77-100	43-100	31-100	7-51	---	---
	45-50	Loamy sand, sand, stratified gravelly sand to gravelly sandy clay loam	SC-SM, SP-SM, CL	A-1-b, A-2-4, A-7-6	0	0	86-100	51-100	37-100	8-51	0-49	NP-24
	50-90	Sand, stratified gravelly sand to gravelly sandy clay loam, loamy sand	SP-SM, SP, SC	A-1-b, A-2-4, A-7-6	0	0	86-100	51-100	37-100	3-40	0-45	NP-25
Transquaking, very frequently flooded-----	0-14	Peat	PT	A-8	0	0	100	100	84-100	79-100	---	---
	14-48	Mucky peat, muck	PT	A-8	0	0	100	100	84-100	79-100	---	---
	48-57	Muck, mucky peat	PT	A-8	0	0	100	100	84-100	79-100	---	---
	57-72	Silty clay, silty clay loam	OH, CL	A-6, A-7-5	0	0	100	100	84-100	79-100	38-105	19-40
PHG: Pits, sand and gravel-----	---	---	---	---	---	---	---	---	---	---	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
PstAt: Psammaquents, sulfidic substratum, frequently flooded-----	0-12	Coarse sand	SP-SM, SC-SM, SW-SM	A-2-4, A-1-b	0	0-2	100	78-100	35-54	7-20	0-22	NP-6
	12-36	Gravelly sand, sand, coarse sand	SC-SM, SP-SM	A-1-b, A-3, A-2-4	0	0-4	89-100	47-100	36-86	5-20	0-22	NP-6
	36-43	Mucky peat	PT	A-8	0	0	77-100	43-100	31-100	7-51	---	---
	43-80	Mucky peat	PT	A-8	0	0	77-100	43-100	31-100	7-51	---	---
PsvAr: Psamments, wet substratum, rarely flooded-	0-12	Coarse sand	SP-SM, SC-SM, SW-SM	A-1-b, A-2-4	0	0-2	100	78-100	35-54	7-20	0-22	NP-6
	12-36	Gravelly coarse sand, gravelly sand, sand, coarse sand	SP-SM, SW-SM, SC-SM	A-1-b, A-2-4	0	0-4	89-100	47-100	21-54	5-20	0-22	NP-6
	36-80	Sand, coarse sand, sandy loam	SP-SM, SP, SC	A-3, A-2-4, A-2-6	0	0	100	74-100	55-94	4-26	0-30	NP-13
SacA: Sassafras-----	0-12	Sandy loam	SM, SC, SC-SM	A-2-4, A-4	0	0	79-100	78-100	59-83	29-46	18-32	3-10
	12-18	Sandy loam, gravelly sandy loam	SC	A-2-6, A-6	0	0	54-100	52-100	38-81	19-44	27-32	12-13
	18-28	Sandy clay loam, gravelly sandy clay loam	SC, CL	A-2-6, A-7-6, A-6	0	0	53-100	51-100	40-93	23-58	29-43	13-24
	28-40	Loamy sand, sandy loam, gravelly loamy sand, gravelly sandy loam	SM, SC-SM, SC	A-2-4	0	0	55-100	52-100	40-89	11-35	0-28	NP-10
	40-58	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
	58-80	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
In					Pct	Pct					Pct	
SacB: Sassafras-----	0-12	Sandy loam	SM, SC, SC-SM	A-2-4, A-4	0	0	79-100	78-100	59-83	29-46	18-32	3-10
	12-18	Sandy loam, gravelly sandy loam	SC	A-2-6, A-6	0	0	54-100	52-100	38-81	19-44	27-32	12-13
	18-28	Sandy clay loam, gravelly sandy clay loam	SC, CL	A-2-6, A-7-6, A-6	0	0	53-100	51-100	40-93	23-58	29-43	13-24
	28-40	Loamy sand, sandy loam, gravelly loamy sand, gravelly sandy loam	SC, SC-SM, SM	A-2-4	0	0	55-100	52-100	40-89	11-35	0-28	NP-10
	40-58	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SP-SM, SC	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
	58-80	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
SacC: Sassafras-----	0-12	Sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	79-100	78-100	59-83	29-46	18-32	3-10
	12-18	Sandy loam, gravelly sandy loam	SC	A-2-6, A-6	0	0	54-100	52-100	38-81	19-44	27-32	12-13
	18-28	Sandy clay loam, gravelly sandy clay loam	SC, CL	A-2-6, A-7-6, A-6	0	0	53-100	51-100	40-93	23-58	29-43	13-24
	28-40	Loamy sand, sandy loam, gravelly loamy sand, gravelly sandy loam	SC, SC-SM, SM	A-2-4	0	0	55-100	52-100	40-89	11-35	0-28	NP-10
	40-58	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SP-SM, SC	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
	58-80	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
SadA: Sassafras-----	0-12	Gravelly sandy loam	SC, SC-SM	A-6, A-1-b	0	0	69-84	46-84	32-75	14-43	0-35	NP-13
	12-14	Sandy loam, sandy clay loam, loam	SC-SM, SM, CL	A-7-6, A-2-4	0	0	87-100	74-100	51-100	23-65	0-45	NP-25
	14-30	Sandy clay loam, loam, sandy loam	SC, SM, CL	A-1-b, A-6, A-7-6	0	0	87-100	74-100	46-97	19-60	0-44	NP-25
	30-34	Sandy loam, sandy clay loam, loam	SC-SM, SM, CL	A-7-6, A-2-4	0	0	87-100	74-100	51-100	23-65	0-44	NP-25
	34-72	Loamy sand, gravelly sandy loam, sand	SC, SM	A-6, A-2-4	0	0	86-100	50-100	38-94	13-45	0-31	NP-13

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
						Pct	Pct				Pct	
	In											
SadB: Sassafras-----	0-12	Gravelly sandy loam	SC, SC-SM	A-6, A-1-b	0	0	69-84	46-84	32-75	14-43	0-35	NP-13
	12-14	Sandy loam, sandy clay loam, loam	SC-SM, SM, CL	A-7-6, A-2-4	0	0	87-100	74-100	51-100	23-65	0-45	NP-25
	14-30	Sandy clay loam, loam, sandy loam	SC, SM, CL	A-1-b, A-6, A-7-6	0	0	87-100	74-100	46-97	19-60	0-44	NP-25
	30-34	Sandy loam, sandy clay loam, loam	SC-SM, SM, CL	A-7-6, A-2-4	0	0	87-100	74-100	51-100	23-65	0-44	NP-25
	34-72	Loamy sand, gravelly sandy loam, sand	SC, SM	A-6, A-2-4	0	0	86-100	50-100	38-94	13-45	0-31	NP-13
SadC: Sassafras, eroded-----	0-17	Gravelly sandy loam	SC, SC-SM	A-6, A-1-b	0	0	69-84	46-84	32-75	14-43	0-35	NP-13
	17-37	Sandy clay loam, loam, sandy loam	SC, SM, CL	A-1-b, A-6, A-7-6	0	0	87-100	74-100	46-97	19-60	0-44	NP-25
	37-60	Gravelly sandy loam, fine sandy loam, sand	CL, SC-SM	A-6, A-1-b	0	0	86-100	50-100	35-89	16-51	0-30	NP-13
SapB: Sassafras-----	0-12	Sandy loam, loamy sand	SC-SM, SC, SM	A-4	0	0	93-100	92-100	70-84	36-48	0-32	NP-10
	12-18	Sandy loam, gravelly sandy loam	SC	A-2-6, A-6	0	0	54-100	52-100	38-81	19-44	27-32	12-13
	18-28	Sandy clay loam, gravelly sandy clay loam	SC, CL	A-2-6, A-7-6, A-6	0	0	53-100	51-100	40-93	23-58	29-43	13-24
	28-40	Loamy sand, sandy loam, gravelly loamy sand, gravelly sandy loam	SC, SC-SM, SM	A-2-4	0	0	55-100	52-100	40-89	11-35	0-28	NP-10
	40-58	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
	58-80	Sand, loamy sand, sandy loam, gravelly sandy loam, gravelly loamy sand, gravelly sand	SM, SC, SP-SM	A-1-b, A-2-4, A-2-6	0	0	56-100	53-100	41-94	8-32	0-30	NP-12
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
TrkAv: Transquaking, very frequently flooded-----	0-14	Mucky peat	PT	A-8	0	0	100	100	100	100	---	---
	14-30	Mucky peat	PT	A-8	0	0	100	100	100	100	---	---
	30-45	Mucky peat	PT	A-8	0	0	100	100	100	100	---	---
	45-70	Mucky peat	PT	A-8	0	0	100	100	100	100	---	---
	70-90	Muck	PT	A-8	0	0	100	100	100	100	---	---

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
UdrB: Udorthents, refuse substratum-----	0-60	Silt loam	ML, CL-ML	A-4, A-7-6	0	0	100	100	93-100	85-100	28-47	7-18
UR: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---
WoeA: Woodstown-----	0-8	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0	80-100	78-100	58-81	29-44	18-28	2-7
	8-26	Sandy loam	SC, SM	A-2-4, A-4, A-6	0	0	80-100	78-100	53-82	24-46	16-32	2-13
	26-30	Sandy clay loam	SC, CL	A-6, A-2-6, A-7-6	0	0	79-100	77-100	63-96	34-59	31-45	13-24
	30-36	Sandy loam	SC, SM	A-4, A-2-4, A-6	0	0	80-100	78-100	53-82	24-46	16-31	2-13
	36-80	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4	0	0	56-100	52-100	39-86	11-33	0-26	NP-9
WoeB: Woodstown-----	0-8	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	80-100	78-100	58-81	29-44	18-28	2-7
	8-26	Sandy loam	SC, SM	A-2-4, A-4, A-6	0	0	80-100	78-100	53-82	24-46	16-32	2-13
	26-30	Sandy clay loam	SC, CL	A-6, A-7-6, A-2-6	0	0	79-100	77-100	63-96	34-59	31-45	13-24
	30-36	Sandy loam	SC, SM	A-4, A-2-4, A-6	0	0	80-100	78-100	53-82	24-46	16-31	2-13
	36-80	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4	0	0	56-100	52-100	39-86	11-33	0-26	NP-9
WooB: Woodstown-----	0-8	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	80-100	78-100	58-81	29-44	18-28	2-7
	8-26	Sandy loam	SC, SM	A-2-4, A-4, A-6	0	0	80-100	78-100	53-82	24-46	16-32	2-13
	26-30	Sandy clay loam	SC, CL	A-6, A-2-6, A-7-6	0	0	79-100	77-100	63-96	34-59	31-45	13-24
	30-36	Sandy loam	SC, SM	A-4, A-2-4, A-6	0	0	80-100	78-100	53-82	24-46	16-31	2-13
	36-80	Loamy sand, sand, gravelly loamy sand, gravelly sand	SM, SC	A-2-4	0	0	56-100	52-100	39-86	11-33	0-26	NP-9
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---

Table 19.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (K _{sat})	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
AptAv: Appoquinimink, very frequently flooded-	0-12	10-50	50-80	12-27	0.50-1.20	0.2-2	0.10-0.25	0.0-2.9	3.0-18	.37	.37	5	8	0
	12-30	0-50	40-80	12-40	0.50-1.70	0.2-2	0.15-0.25	0.0-2.9	2.0-12	.43	.43			
	30-80	0-50	0-80	0-35	0.13-0.23	2-6	0.35-0.45	---	70-100	---	---			
Transquaking, very frequently flooded-	0-14	0-20	0-73	0-60	0.13-0.23	2-6	0.30-0.60	---	70-100	---	---	5	8	0
	14-60	0-20	0-73	0-60	0.13-0.23	0.6-2	0.35-0.45	---	70-100	---	---			
	60-90	1-20	40-73	27-60	0.60-1.00	0.06-0.2	0.10-0.20	0.0-2.9	0.5-20	.10	.10			
Mispillion, very frequently flooded-	0-10	0-52	0-73	0-40	0.10-0.80	2-6	0.35-0.45	---	20-90	---	---	5	8	0
	10-26	0-52	0-73	0-40	0.10-0.80	2-6	0.35-0.45	---	30-80	---	---			
	26-90	1-52	28-73	7-40	1.20-1.70	0.2-0.6	0.10-0.20	0.0-2.9	2.0-10	.28	.28			
AtsAr: Atsion, rarely flooded-----	0-2	0-98	0-7	0-7	0.13-0.23	6-20	0.35-0.45	---	70-100	---	---	5	8	0
	2-4	85-96	2-12	2-9	1.10-1.30	6-20	0.05-0.09	0.0-2.9	2.0-4.0	.10	.10			
	4-26	85-96	2-12	2-9	1.60-1.70	6-20	0.03-0.06	0.0-2.9	0.0-0.0	.17	.17			
	26-34	70-96	2-25	2-14	1.55-1.70	6-20	0.03-0.08	0.0-2.9	0.0-0.5	.17	.17			
	34-46	70-96	2-25	2-14	1.40-1.60	6-20	0.03-0.08	0.0-2.9	0.0-0.5	.17	.17			
	46-51	85-96	2-12	2-9	1.40-1.60	6-20	0.03-0.06	0.0-2.9	0.0-0.0	.17	.17			
	51-80	70-96	2-25	3-14	1.40-1.60	6-20	0.02-0.08	0.0-2.9	0.0-0.0	.17	.17			
AucB: Aura-----	0-7	71-89	4-29	3-11	1.55-1.65	2-20	0.05-0.08	0.0-2.9	0.5-2.0	.20	.20	3	2	134
	7-22	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	22-28	55-75	15-40	8-17	1.50-1.60	0.2-0.6	0.05-0.13	0.0-2.9	0.0-0.2	.20	.28			
	28-59	46-79	10-35	20-34	1.45-1.55	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	59-80	75-86	2-40	2-17	1.55-1.80	2-20	0.02-0.13	0.0-2.9	0.0-0.0	.15	.20			
AugA: Aura-----	0-8	55-75	15-40	8-16	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.8-2.5	.24	.28	3	3	86
	8-13	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	13-22	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	22-28	55-75	15-40	8-17	1.60-1.70	0.2-0.6	0.05-0.13	0.0-2.9	0.0-0.2	.20	.28			
	28-44	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	44-59	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	59-80	75-86	2-40	2-17	1.55-1.80	2-20	0.02-0.13	0.0-2.9	0.0-0.0	.15	.20			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
AugB: Aura-----	0-8	55-75	15-40	8-16	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.8-2.5	.24	.28	3	3	86
	8-13	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	13-22	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	22-28	55-75	15-40	8-17	1.60-1.70	0.2-0.6	0.05-0.13	0.0-2.9	0.0-0.2	.20	.28			
	28-44	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	44-59	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	59-80	75-86	2-40	2-17	1.55-1.80	2-20	0.02-0.13	0.0-2.9	0.0-0.0	.15	.20			
AuhB: Aura-----	0-8	43-85	1-49	7-16	1.18-1.60	0.6-6	0.12-0.17	0.0-2.9	0.8-2.5	.28	.28	3	5	56
	8-12	43-85	1-49	7-16	1.18-1.60	0.6-6	0.12-0.17	0.0-2.9	0.4-1.4	.28	.28			
	12-20	45-80	1-27	15-35	1.50-1.70	0.2-6	0.07-0.15	0.0-2.9	0.1-0.3	.28	.32			
	20-36	45-80	1-27	15-35	1.50-1.70	0.2-0.6	0.07-0.15	0.0-2.9	0.1-0.3	.28	.32			
	36-40	85-98	1-14	3-32	1.45-1.65	0.2-20	0.02-0.13	0.0-2.9	0.1-0.3	.15	.17			
	40-72	85-98	1-14	3-32	1.45-1.65	0.2-20	0.02-0.13	0.0-2.9	0.1-0.3	.15	.17			
AvuB: Aura-----	0-8	55-75	15-40	8-16	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.8-2.5	.24	.28	3	3	86
	8-13	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	13-22	55-75	15-40	8-17	1.50-1.60	2-6	0.09-0.13	0.0-2.9	0.0-0.2	.24	.28			
	22-28	55-75	15-40	8-17	1.60-1.70	0.2-0.6	0.05-0.13	0.0-2.9	0.0-0.2	.20	.28			
	28-44	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	44-59	46-79	10-35	20-34	1.55-1.65	0.2-0.6	0.07-0.16	0.0-2.9	0.0-0.2	.20	.32			
	59-80	75-86	2-40	2-17	1.55-1.80	2-20	0.02-0.13	0.0-2.9	0.0-0.0	.15	.20			
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	0-11	85-96	2-12	2-9	1.00-1.30	6-20	0.05-0.08	0.0-2.9	2.0-4.0	.10	.10	5	1	220
	11-19	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.5	.10	.10			
	19-32	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.0	.10	.10			
	32-40	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.5	.05	.10			
	40-44	70-96	2-25	2-14	1.40-1.60	2-20	0.03-0.08	0.0-2.9	0.0-0.0	.10	.10			
	44-80	60-96	0-30	2-15	1.40-1.60	2-20	0.03-0.13	0.0-2.9	0.0-0.0	.17	.17			
Mullica, occasionally flooded-----	0-2	0-80	0-42	0-15	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	2-9	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.20	0.0-2.9	2.0-4.0	.28	.28			
	9-14	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.13	0.0-2.9	1.0-2.0	.28	.28			
	14-28	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.13	0.0-2.9	1.0-2.0	.28	.28			
	28-31	70-96	2-25	2-14	1.55-1.70	6-20	0.02-0.10	0.0-2.9	0.1-0.5	.10	.10			
	31-40	70-96	2-25	2-14	1.55-1.70	6-20	0.02-0.10	0.0-2.9	0.1-0.5	.10	.10			
	40-80	70-96	2-25	2-14	1.55-1.70	6-20	0.02-0.08	0.0-2.9	0.0-0.0	.05	.10			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
BrvAv: Broadkill, very frequently flooded-	0-6	1-50	0-80	0-35	0.10-0.60	2-20	0.30-0.60	---	20-40	---	---	5	8	0
	6-13	1-50	40-80	12-40	1.40-1.70	0.2-2	0.10-0.20	0.0-2.9	2.0-10	.28	.28			
	13-38	1-50	40-80	12-40	1.40-1.70	0.2-2	0.10-0.20	0.0-2.9	2.0-10	.28	.28			
	38-72	1-100	1-73	1-40	1.30-1.70	0.2-20	0.10-0.35	0.0-2.9	0.5-20	.32	.32			
ChsAt: Chicone, frequently flooded-----	0-5	20-50	50-80	12-18	1.45-1.55	0.2-2	0.15-0.30	0.0-2.9	2.0-5.0	.37	.37	5	5	56
	5-20	20-50	50-80	12-18	1.45-1.55	0.2-2	0.10-0.18	0.0-2.9	0.0-2.0	.43	.43			
	20-28	20-52	28-80	7-18	1.45-1.55	0.2-2	0.10-0.18	0.0-2.9	0.0-2.0	.43	.43			
	28-65	0-96	0-25	0-14	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---			
	65-80	70-96	2-25	2-14	1.55-1.70	2-20	0.05-0.10	0.0-2.9	0.0-1.0	.10	.10			
ChtA: Chillum-----	0-10	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43	.43	4	5	56
	10-15	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	15-28	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	28-34	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	34-38	23-52	28-50	7-27	1.20-1.60	0.2-2	0.16-0.22	0.0-2.9	0.0-0.5	.37	.37			
	38-61	43-85	1-50	1-20	1.20-1.50	0.2-2	0.03-0.12	0.0-2.9	0.0-0.5	.17	.24			
	61-66	43-85	1-50	1-20	1.20-1.50	0.2-2	0.03-0.12	0.0-2.9	0.0-0.5	.17	.24			
	66-72	85-98	1-30	1-10	1.40-1.75	0.6-20	0.03-0.15	0.0-2.9	0.0-0.5	.15	.15			
ChtB: Chillum-----	0-10	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.21	0.0-2.9	1.0-3.0	.43	.43	4	5	56
	10-15	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	15-28	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	28-34	5-50	50-80	12-27	1.10-1.30	0.6-2	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37			
	34-38	23-52	28-50	7-27	1.20-1.60	0.2-2	0.16-0.22	0.0-2.9	0.0-0.5	.37	.37			
	38-61	43-85	1-50	1-20	1.20-1.50	0.2-2	0.03-0.12	0.0-2.9	0.0-0.5	.17	.24			
	61-66	43-85	1-50	1-20	1.20-1.50	0.2-2	0.03-0.12	0.0-2.9	0.0-0.5	.17	.24			
	66-72	85-98	1-30	1-10	1.40-1.75	0.6-20	0.03-0.15	0.0-2.9	0.0-0.5	.15	.15			
DocB: Downer-----	0-10	71-89	4-29	3-14	1.55-1.65	6-20	0.06-0.08	0.0-2.9	0.5-2.0	.20	.20	5	2	134
	10-16	71-89	4-29	3-14	1.55-1.65	6-20	0.06-0.08	0.0-2.9	0.0-0.5	.20	.20			
	16-36	55-80	5-42	6-15	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.0-0.2	.28	.28			
	36-48	55-89	4-42	3-15	1.55-1.70	2-20	0.03-0.20	0.0-2.9	0.0-0.0	.15	.20			
	48-80	55-96	1-42	2-15	1.50-1.70	2-20	0.04-0.14	0.0-2.9	0.0-0.0	.15	.20			
DocC: Downer-----	0-10	71-89	4-29	3-14	1.55-1.65	6-20	0.06-0.08	0.0-2.9	0.5-2.0	.20	.20	5	2	134
	10-16	71-89	4-29	3-14	1.55-1.65	6-20	0.06-0.08	0.0-2.9	0.0-0.5	.20	.20			
	16-36	55-80	5-42	6-15	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.0-0.2	.28	.28			
	36-48	55-89	4-42	3-15	1.55-1.70	2-20	0.03-0.20	0.0-2.9	0.0-0.0	.15	.20			
	48-80	55-96	1-42	2-15	1.50-1.70	2-20	0.04-0.14	0.0-2.9	0.0-0.0	.15	.20			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
DoeA: Downer-----	0-10	55-80	5-42	5-12	1.50-1.60	0.6-6	0.10-0.14	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	10-16	55-80	5-42	6-15	1.55-1.65	0.6-6	0.10-0.14	0.0-2.9	0.0-0.2	.28	.28			
	16-36	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.13	0.0-2.9	0.0-0.2	.28	.28			
	36-48	55-89	4-42	3-15	1.55-1.70	2-20	0.03-0.20	0.0-2.9	0.0-0.0	.15	.20			
	48-80	55-96	1-42	2-15	1.50-1.70	2-20	0.04-0.14	0.0-2.9	0.0-0.0	.15	.20			
DoeB: Downer-----	0-10	55-80	5-42	5-12	1.50-1.60	0.6-6	0.10-0.14	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	10-16	55-80	5-42	6-15	1.55-1.65	0.6-6	0.10-0.14	0.0-2.9	0.0-0.2	.28	.28			
	16-36	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.13	0.0-2.9	0.0-0.2	.28	.28			
	36-48	55-89	4-42	3-15	1.55-1.70	2-20	0.03-0.20	0.0-2.9	0.0-0.0	.15	.20			
	48-80	55-96	1-42	2-15	1.50-1.70	2-20	0.04-0.14	0.0-2.9	0.0-0.0	.15	.20			
DouB: Downer-----	0-10	55-89	4-42	3-15	1.55-1.65	2-20	0.10-0.14	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	10-16	55-80	5-42	6-15	1.55-1.65	0.6-6	0.10-0.14	0.0-2.9	0.0-0.2	.28	.28			
	16-36	55-80	5-42	6-15	1.50-1.60	0.6-6	0.10-0.13	0.0-2.9	0.0-0.2	.28	.28			
	36-48	55-89	4-42	3-15	1.55-1.70	2-20	0.03-0.20	0.0-2.9	0.0-0.0	.15	.20			
	48-80	55-96	1-42	2-15	1.50-1.70	2-20	0.04-0.14	0.0-2.9	0.0-0.0	.15	.20			
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	8	0
EveB: Evesboro-----	0-4	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.5-1.5	.10	.10	5	1	220
	4-17	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	17-31	70-96	2-25	2-14	1.55-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	31-80	43-96	2-45	2-15	1.50-1.70	2-20	0.04-0.09	0.0-2.9	0.0-0.0	.17	.17			
EveC: Evesboro-----	0-4	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.5-1.5	.10	.10	5	1	220
	4-17	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	17-31	70-96	2-25	2-14	1.55-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	31-80	43-96	2-45	2-15	1.50-1.70	2-20	0.04-0.09	0.0-2.9	0.0-0.0	.17	.17			
EveD: Evesboro-----	0-5	85-100	1-15	1-10	1.20-1.55	6-20	0.04-0.09	0.0-2.9	0.5-1.0	.17	.17	5	1	220
	5-28	70-100	1-30	1-15	1.30-1.60	6-20	0.04-0.09	0.0-2.9	0.1-0.2	.20	.20			
	28-60	43-96	2-45	2-15	1.50-1.70	2-20	0.04-0.09	0.0-2.9	0.0-0.0	.17	.17			
EvuB: Evesboro-----	0-4	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.5-1.5	.10	.10	5	1	220
	4-17	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	17-31	70-96	2-25	2-14	1.55-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.15	.15			
	31-80	43-96	2-45	2-15	1.50-1.70	2-20	0.04-0.09	0.0-2.9	0.0-0.0	.17	.17			
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
FamA:														
Fallsington-----	0-2	0-80	0-42	0-15	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	2-5	55-80	5-42	6-15	1.50-1.60	0.6-6	0.15-0.20	0.0-2.9	1.0-4.0	.24	.24			
	5-8	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	8-14	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	14-31	23-80	5-50	18-35	1.45-1.55	0.2-2	0.06-0.20	0.0-2.9	0.0-0.5	.15	.20			
	31-62	43-95	4-40	3-18	1.50-1.70	2-20	0.04-0.13	0.0-2.9	0.0-0.5	.10	.10			
	62-80	43-95	4-40	2-18	1.50-1.70	2-20	0.03-0.11	0.0-2.9	0.0-0.5	.05	.10			
FodB:														
Fort Mott-----	0-8	70-90	1-30	1-15	1.25-1.60	6-20	0.05-0.10	0.0-2.9	0.5-2.0	.20	.20	5	2	134
	8-30	70-90	1-30	1-15	1.25-1.60	6-20	0.05-0.10	0.0-2.9	0.5-2.0	.20	.20			
	30-33	43-85	1-50	1-20	1.25-1.80	0.6-6	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	33-49	43-85	1-50	1-20	1.25-1.80	0.6-6	0.12-0.16	0.0-2.9	0.1-0.5	.32	.32			
	49-72	70-90	1-30	1-15	1.30-1.80	6-20	0.03-0.12	0.0-2.9	0.1-0.5	.17	.20			
GamB:														
Galloway-----	0-2	70-90	1-30	2-15	1.00-1.40	6-20	0.06-0.11	0.0-2.9	1.0-3.0	.17	.17	5	2	134
	2-10	70-90	1-30	2-15	1.00-1.40	6-20	0.06-0.11	0.0-2.9	0.0-0.2	.17	.17			
	10-24	70-90	1-30	2-15	1.00-1.40	6-20	0.06-0.11	0.0-2.9	0.1-0.2	.17	.17			
	24-36	70-90	1-30	2-15	1.00-1.40	6-20	0.06-0.11	0.0-2.9	0.1-0.2	.17	.17			
	36-52	85-98	1-15	2-10	1.30-1.50	6-20	0.06-0.08	0.0-2.9	0.1-0.2	.15	.15			
	52-60	85-98	1-15	2-10	1.30-1.50	6-20	0.06-0.08	0.0-2.9	0.1-0.2	.15	.15			
HbmB:														
Hammonton-----	0-8	71-89	4-29	3-14	1.55-1.65	6-20	0.10-0.14	0.0-2.9	1.0-3.0	.20	.20	5	2	134
	8-18	71-89	4-29	3-14	1.55-1.65	2-20	0.10-0.14	0.0-2.9	0.2-0.8	.20	.20			
	18-36	55-80	5-42	6-15	1.50-1.60	2-6	0.10-0.14	0.0-2.9	0.2-0.8	.28	.28			
	36-80	70-96	2-20	2-14	1.55-1.70	6-20	0.08-0.13	0.0-2.9	0.0-0.0	.10	.10			
HboA:														
Hammonton-----	0-8	43-85	1-50	5-20	1.20-1.60	2-6	0.10-0.14	0.0-2.9	1.0-3.0	.32	.32	5	3	86
	8-18	43-85	1-50	5-20	1.20-1.60	2-6	0.10-0.14	0.0-2.9	0.1-0.5	.32	.32			
	18-36	43-85	1-50	5-20	1.45-1.65	2-6	0.08-0.13	0.0-2.9	0.1-0.5	.32	.32			
	36-60	85-98	1-30	2-10	1.40-1.75	0.6-20	0.03-0.15	0.0-2.9	0.1-0.5	.15	.15			
HboB:														
Hammonton-----	0-10	43-85	1-50	1-20	1.20-1.60	2-6	0.10-0.14	0.0-2.9	1.0-3.0	.32	.32	5	3	86
	10-48	43-85	1-50	1-20	1.45-1.65	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.32	.32			
	48-72	85-100	1-30	2-10	1.40-1.75	0.6-20	0.03-0.15	0.0-2.9	0.1-0.5	.15	.15			
HbrB:														
Hammonton-----	0-8	71-89	4-29	3-14	1.55-1.65	6-20	0.10-0.14	0.0-2.9	1.0-3.0	.20	.20	5	2	134
	8-18	71-89	4-29	3-14	1.55-1.65	2-20	0.10-0.14	0.0-2.9	0.2-0.8	.20	.20			
	18-36	55-80	5-42	6-15	1.50-1.60	2-6	0.10-0.14	0.0-2.9	0.2-0.8	.28	.28			
	36-80	70-96	2-20	2-14	1.55-1.70	6-20	0.08-0.13	0.0-2.9	0.0-0.0	.10	.10			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
HbrB: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	8	0
LakB: Lakehurst-----	0-2	0-98	0-7	0-7	0.13-0.23	6-20	0.35-0.45	---	70-100	---	---	5	7	38
	2-4	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	1.0-3.0	.10	.10			
	4-18	85-96	2-12	2-9	1.60-1.70	6-20	0.04-0.09	0.0-2.9	0.0-0.0	.10	.10			
	18-32	70-96	2-25	2-14	1.55-1.65	6-20	0.04-0.10	0.0-2.9	0.5-1.0	.10	.10			
	32-45	70-96	2-25	3-14	1.55-1.70	6-20	0.04-0.10	0.0-2.9	0.0-0.1	.10	.10			
	45-54	45-96	2-35	3-16	1.50-1.70	2-20	0.04-0.10	0.0-2.9	0.0-0.1	.10	.10			
	54-80	45-96	2-35	3-16	1.50-1.70	2-20	0.04-0.10	0.0-2.9	0.0-0.1	.10	.10			
LasB: Lakewood-----	0-3	85-96	2-12	2-9	1.60-1.70	6-20	0.02-0.08	0.0-2.9	1.0-2.0	.10	.10	5	1	220
	3-11	85-96	2-12	2-9	1.60-1.70	6-20	0.01-0.03	0.0-2.9	0.0-0.0	.10	.10			
	11-13	70-90	5-25	3-14	1.55-1.65	6-20	0.01-0.03	0.0-2.9	0.5-1.0	.15	.15			
	13-30	85-96	2-12	2-9	1.60-1.70	6-20	0.01-0.03	0.0-2.9	0.0-0.1	.10	.10			
	30-46	85-96	2-12	2-9	1.60-1.70	6-20	0.01-0.03	0.0-2.9	0.0-0.1	.10	.10			
	46-80	70-96	2-25	2-14	1.55-1.70	6-20	0.01-0.03	0.0-2.9	0.0-0.1	.10	.10			
MakAt: Manahawkin, frequently flooded-	0-13	0-96	0-25	0-14	0.15-0.40	6-20	0.30-0.40	---	30-80	---	---	2	2	134
	13-26	0-96	0-25	0-14	0.15-0.40	6-20	0.30-0.40	---	30-80	---	---			
	26-47	0-96	0-25	0-14	0.15-0.40	6-20	0.30-0.40	---	30-80	---	---			
	47-80	70-96	2-25	2-14	1.10-1.70	2-20	0.04-0.08	0.0-2.9	0.5-1.0	.10	.10			
MbrA: Matapeake-----	0-10	10-50	50-80	12-27	1.00-1.45	0.6-2	0.20-0.28	0.0-2.9	1.0-2.0	.43	.43	5	5	56
	10-25	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	25-33	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	33-50	43-90	1-50	1-20	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			
	50-72	85-98	1-15	1-10	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			
MbrB: Matapeake-----	0-10	10-50	50-80	12-27	1.00-1.45	0.6-2	0.20-0.28	0.0-2.9	1.0-2.0	.43	.43	5	5	56
	10-25	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	25-33	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	33-50	43-90	1-50	1-20	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			
	50-72	85-98	1-15	1-10	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			
MbrC: Matapeake-----	0-10	10-50	50-80	12-27	1.00-1.45	0.6-2	0.20-0.28	0.0-2.9	1.0-2.0	.43	.43	5	5	56
	10-25	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	25-33	10-50	28-80	12-27	1.40-1.65	0.2-2	0.18-0.24	0.0-2.9	0.0-0.5	.49	.49			
	33-50	43-90	1-50	1-20	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			
	50-72	85-98	1-15	1-10	1.65-1.85	0.6-6	0.08-0.18	0.0-2.9	0.0-0.5	.24	.24			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
MbuA:														
Mattapex-----	0-7	10-50	50-80	12-27	1.10-1.45	0.6-2	0.20-0.28	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	7-18	5-50	50-80	12-27	1.25-1.45	0.2-2	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43			
	18-33	1-20	40-73	12-40	1.25-1.45	0.2-2	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43			
	33-40	1-20	40-73	12-40	1.25-1.45	0.2-2	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43			
	40-72	70-90	1-30	1-15	1.50-1.80	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.17	.17			
MbuB:														
Mattapex-----	0-9	10-50	50-80	12-27	1.10-1.45	0.6-2	0.20-0.28	0.0-2.9	0.5-3.0	.43	.43	5	5	56
	9-12	10-50	50-80	12-27	1.10-1.45	0.6-2	0.20-0.28	0.0-2.9	0.5-3.0	.43	.43			
	12-52	5-50	50-80	12-27	1.25-1.45	0.2-2	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43			
	52-56	43-90	1-50	1-15	1.45-1.65	0.6-6	0.14-0.18	0.0-2.9	0.0-0.5	.28	.28			
	56-72	70-98	1-30	1-10	1.50-1.80	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.17	.17			
MmtAv:														
Mispeillon, very frequently flooded-	0-10	0-50	0-80	0-27	0.10-0.80	2-6	0.35-0.45	---	20-90	---	---	5	8	0
	10-26	0-50	0-80	0-27	0.10-0.80	2-6	0.35-0.45	---	30-80	---	---			
	26-90	20-50	28-80	12-27	1.20-1.70	0.2-0.6	0.10-0.20	3.0-5.9	2.0-10	.28	.28			
Transquaking, very frequently flooded-	0-14	0-20	0-73	0-60	0.10-0.50	2-20	0.30-0.60	---	30-80	---	---	5	8	0
	14-22	0-20	0-73	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---			
	22-46	0-20	0-73	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---			
	46-65	0-20	0-73	0-60	0.13-0.23	0.6-2	0.35-0.45	---	70-100	---	---			
	65-80	1-20	40-73	27-60	0.60-1.00	0.06-0.2	0.10-0.20	3.0-5.9	0.5-20	.10	.10			
Appoquinimink, very frequently flooded-	0-12	10-50	50-80	12-27	0.50-1.20	0.2-2	0.10-0.25	0.0-2.9	3.0-18	.37	.37	5	8	0
	12-30	1-50	40-80	12-40	0.50-1.70	0.2-2	0.15-0.25	0.0-2.9	2.0-12	.43	.43			
	30-80	0-50	0-80	0-40	0.13-0.23	2-6	0.35-0.45	---	70-100	---	---			
OthA:														
Othello-----	0-5	10-50	50-80	12-27	1.20-1.50	0.6-2	0.16-0.24	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	5-9	0-50	40-80	12-40	1.40-1.70	0.2-0.6	0.12-0.24	0.0-2.9	0.0-0.8	.43	.43			
	9-28	0-50	40-80	12-40	1.40-1.70	0.2-0.6	0.12-0.24	0.0-2.9	0.0-0.5	.43	.43			
	28-38	0-50	40-80	12-40	1.40-1.70	0.2-0.6	0.12-0.24	0.0-2.9	0.0-0.5	.43	.43			
	38-46	71-89	4-29	3-14	1.55-1.65	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.20	.20			
	46-60	85-96	2-12	2-9	1.60-1.70	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.10	.10			
OTKA:														
Othello-----	0-1	0-50	0-80	0-18	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	1-13	20-50	50-80	8-18	1.45-1.55	0.2-2	0.16-0.24	0.0-2.9	1.0-2.0	.37	.37			
	13-32	20-50	50-80	15-27	1.45-1.55	0.2-2	0.12-0.24	0.0-2.9	0.0-0.5	.43	.43			
	32-40	5-19	45-80	27-39	1.45-1.55	0.2-2	0.12-0.24	3.0-5.9	0.0-0.5	.37	.37			
	40-60	71-89	4-29	3-14	1.55-1.65	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.20	.20			
	60-80	85-96	2-12	2-9	1.60-1.70	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.10	.10			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
OTKA: Fallsington-----	0-2	0-52	0-50	0-27	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	2-5	23-52	28-50	7-27	1.45-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-4.0	.28	.28			
	5-8	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	8-14	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	14-31	23-80	5-50	18-35	1.45-1.55	0.2-2	0.06-0.20	0.0-2.9	0.0-0.5	.15	.20			
	31-62	43-95	4-40	3-18	1.50-1.70	2-20	0.04-0.13	0.0-2.9	0.0-0.5	.10	.10			
	62-80	43-95	4-40	2-18	1.50-1.70	2-20	0.03-0.11	0.0-2.9	0.0-0.5	.05	.10			
OTMA: Othello-----	0-1	0-50	0-80	0-18	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	1-13	20-50	50-80	8-18	1.45-1.55	0.2-2	0.16-0.24	0.0-2.9	1.0-2.0	.37	.37			
	13-32	20-50	50-80	15-27	1.45-1.55	0.2-2	0.12-0.24	0.0-2.9	0.0-0.5	.43	.43			
	32-40	5-19	45-80	27-39	1.45-1.55	0.2-2	0.12-0.24	3.0-5.9	0.0-0.5	.37	.37			
	40-60	71-89	4-29	3-14	1.55-1.65	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.20	.20			
	60-80	85-96	2-12	2-9	1.60-1.70	2-20	0.10-0.16	0.0-2.9	0.0-0.5	.10	.10			
Fallsington-----	0-2	0-52	0-50	0-27	0.13-0.23	2-6	0.35-0.65	---	70-100	---	---	5	5	56
	2-5	23-52	28-50	7-27	1.45-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-4.0	.28	.28			
	5-8	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	8-14	43-85	5-55	18-20	1.50-1.60	0.6-6	0.15-0.18	0.0-2.9	0.0-0.5	.28	.28			
	14-31	23-80	5-50	18-35	1.45-1.55	0.2-2	0.06-0.20	0.0-2.9	0.0-0.5	.15	.20			
	31-62	43-95	4-40	3-18	1.50-1.70	2-20	0.04-0.13	0.0-2.9	0.0-0.5	.10	.10			
	62-80	43-95	4-40	2-18	1.50-1.70	2-20	0.03-0.11	0.0-2.9	0.0-0.5	.05	.10			
Trussum-----	0-12	23-52	28-50	7-27	1.20-1.50	0.6-2	0.18-0.24	0.0-2.9	1.0-4.0	.43	.43	5	5	56
	12-25	23-52	28-50	7-27	1.20-1.50	0.6-2	0.18-0.24	0.0-2.9	0.0-0.5	.43	.43			
	25-35	1-45	1-40	27-98	1.35-1.55	0.06-0.2	0.14-0.20	6.0-8.9	0.0-0.5	.37	.37			
	35-60	1-45	1-40	27-98	1.35-1.55	0.06-0.2	0.14-0.20	9.0-11.9	0.0-0.5	.37	.37			
	60-66	45-80	1-28	20-98	1.30-1.50	0.01-0.2	0.12-0.16	0.0-2.9	0.0-0.5	.32	.32			
	66-72	45-80	1-28	20-98	1.30-1.50	0.01-0.2	0.12-0.16	0.0-2.9	0.0-0.5	.32	.32			
PdwAv: Pawcatuck, very frequently flooded-	0-14	45-90	1-28	1-35	0.10-0.70	0.6-20	0.18-0.36	---	20-90	---	---	5	8	0
	14-45	45-90	1-28	1-35	0.20-0.80	0.6-20	0.18-0.36	---	20-90	---	---			
	45-50	45-90	1-28	1-35	1.30-1.65	0.6-20	0.02-0.10	0.0-2.9	1.0-3.0	.28	.32			
	50-90	45-100	1-28	1-35	1.30-1.65	0.6-20	0.02-0.10	0.0-2.9	0.2-1.0	.28	.32			
Transquaking, very frequently flooded-	0-14	0-20	0-73	0-60	0.10-0.50	2-20	0.30-0.60	---	30-80	---	---	5	8	0
	14-48	0-20	0-73	0-60	0.13-0.23	2-6	0.30-0.60	---	70-100	---	---			
	48-57	0-20	0-73	0-60	0.13-0.23	0.6-2	0.35-0.45	---	70-100	---	---			
	57-72	0-20	40-73	27-60	0.60-1.00	0.06-0.2	0.10-0.20	3.0-5.9	0.5-2.0	.10	.10			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
PHG: Pits, sand and gravel-----	---	---	---	---	---	---	---	---	---	---	---	5	8	0
PstAt: Psammaquents, sulfidic substratum, frequently flooded-	0-12	85-100	0-15	0-15	1.00-1.40	42.34-141.14	0.03-0.04	0.0-2.9	0.0-0.0	.20	.20	5	8	0
	12-36	85-100	0-15	0-15	1.00-1.40	42.34-141.14	0.03-0.04	0.0-2.9	0.0-0.0	.20	.24			
	36-44	45-90	1-28	1-35	0.10-0.70	4.23-141.14	0.18-0.36	---	20-90	---	---			
	43-80	45-90	1-28	1-35	0.20-0.80	4.23-141.14	0.18-0.36	---	20-90	---	---			
PsvAr: Psamments, wet substratum, rarely flooded-----	0-12	85-100	0-15	0-10	1.00-1.40	42.34-141.14	0.03-0.04	0.0-2.9	0.0-0.0	.20	.20	5	1	220
	12-36	85-100	0-15	0-10	1.00-1.40	42.34-141.14	0.03-0.04	0.0-2.9	0.0-0.0	.20	.24			
	36-80	43-100	0-50	0-20	1.10-1.40	42.34-141.14	0.03-0.15	0.0-2.9	0.0-0.0	.28	.28			
SacA: Sassafras-----	0-12	55-80	5-42	8-16	1.50-1.60	0.6-6	0.13-0.15	0.0-2.9	0.8-2.5	.28	.28	5	3	86
	12-18	43-85	5-55	15-22	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.1-0.5	.28	.28			
	18-28	46-79	10-35	20-34	1.45-1.55	0.2-2	0.11-0.22	0.0-2.9	0.1-0.5	.32	.32			
	28-40	43-85	5-50	3-16	1.50-1.65	2-20	0.07-0.13	0.0-2.9	0.1-0.5	.20	.20			
	40-58	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
	58-80	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
SacB: Sassafras-----	0-12	55-80	5-42	8-16	1.50-1.60	0.6-6	0.13-0.15	0.0-2.9	0.8-2.5	.28	.28	5	3	86
	12-18	43-85	5-55	15-22	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.1-0.5	.28	.28			
	18-28	46-79	10-35	20-34	1.45-1.55	0.2-2	0.11-0.22	0.0-2.9	0.1-0.5	.32	.32			
	28-40	43-85	5-50	3-16	1.50-1.65	2-20	0.07-0.13	0.0-2.9	0.1-0.5	.20	.20			
	40-58	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
	58-80	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
SacC: Sassafras-----	0-12	55-80	5-42	8-16	1.50-1.60	0.6-6	0.13-0.15	0.0-2.9	0.8-2.5	.28	.28	5	3	86
	12-18	43-85	5-55	15-22	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.1-0.5	.28	.28			
	18-28	46-79	10-35	20-34	1.45-1.55	0.2-2	0.11-0.22	0.0-2.9	0.1-0.5	.32	.32			
	28-40	43-85	5-50	3-16	1.50-1.65	2-20	0.07-0.13	0.0-2.9	0.1-0.5	.20	.20			
	40-58	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
	58-80	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
SadA: Sassafras-----	0-12	43-85	1-50	1-20	1.00-1.40	0.6-6	0.10-0.14	0.0-2.9	0.8-2.5	.20	.28	5	5	56
	12-14	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.8	.37	.37			
	14-30	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.5	.37	.37			
	30-34	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.5	.37	.37			
	34-72	43-100	1-50	1-20	1.35-1.50	0.6-20	0.04-0.12	0.0-2.9	0.0-0.2	.17	.20			
SadB: Sassafras-----	0-12	43-85	1-50	1-20	1.00-1.40	0.6-6	0.10-0.14	0.0-2.9	0.8-2.5	.20	.28	5	5	56
	12-14	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.8	.37	.37			
	14-30	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.5	.37	.37			
	30-34	23-85	1-50	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.5	.37	.37			
	34-72	43-100	1-50	1-20	1.35-1.50	0.6-20	0.04-0.12	0.0-2.9	0.0-0.2	.17	.20			
SadC: Sassafras, eroded---	0-17	43-85	0-50	1-20	1.00-1.40	0.6-6	0.10-0.14	0.0-2.9	0.8-2.5	.24	.28	5	5	56
	17-37	45-80	1-28	1-35	1.35-1.50	0.6-2	0.11-0.22	0.0-2.9	0.0-0.5	.37	.37			
	37-60	43-100	0-50	1-20	1.35-1.50	0.6-20	0.04-0.12	0.0-2.9	0.0-0.0	.17	.24			
SapB: Sassafras-----	0-12	55-89	4-42	8-16	1.55-1.65	2-20	0.07-0.20	0.0-2.9	0.8-2.5	.20	.20	5	3	86
	12-18	43-85	5-55	15-22	1.50-1.60	0.6-6	0.12-0.17	0.0-2.9	0.1-0.5	.28	.28			
	18-28	46-79	10-35	20-34	1.45-1.55	0.2-2	0.11-0.22	0.0-2.9	0.1-0.5	.32	.32			
	28-40	43-85	5-50	3-16	1.50-1.65	2-20	0.07-0.13	0.0-2.9	0.1-0.5	.20	.20			
	40-58	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
	58-80	43-95	4-40	2-18	1.50-1.70	2-20	0.04-0.12	0.0-2.9	0.1-0.5	.15	.15			
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TrkAv: Transquaking, very frequently flooded-	0-14	0-20	0-60	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---	5	8	0
	14-30	0-20	0-60	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---			
	30-45	0-20	0-60	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---			
	45-70	0-20	0-60	0-60	0.10-0.50	2-20	0.30-0.60	---	60-80	---	---			
	70-90	0-20	0-60	0-60	0.13-0.23	0.6-2	0.35-0.45	---	70-100	---	---			
UdrB: Udorthents, refuse substratum-----	0-60	10-50	50-80	12-27	1.20-1.50	0.6-2	0.16-0.24	0.0-2.9	3.0-5.0	.37	.37	5	5	56
UR: Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	8	0

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (K _{sat})	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
WoeA: Woodstown-----	0-8	55-80	5-42	5-12	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	8-26	55-80	5-42	5-20	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	0.1-0.5	.24	.24			
	26-30	46-79	10-35	20-34	1.45-1.55	0.2-2	0.13-0.19	3.0-5.9	0.0-0.2	.20	.20			
	30-36	55-80	5-42	5-20	1.50-1.60	0.6-6	0.11-0.13	0.0-2.9	0.0-0.2	.24	.24			
	36-80	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.2	.15	.15			
WoeB: Woodstown-----	0-8	55-80	5-42	5-12	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	8-26	55-80	5-42	5-20	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	0.1-0.5	.24	.24			
	26-30	46-79	10-35	20-34	1.45-1.55	0.2-2	0.13-0.19	3.0-5.9	0.0-0.2	.20	.20			
	30-36	55-80	5-42	5-20	1.50-1.60	0.6-6	0.11-0.13	0.0-2.9	0.0-0.2	.24	.24			
	36-80	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.2	.15	.15			
WooB: Woodstown-----	0-8	55-80	5-42	5-12	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	8-26	55-80	5-42	5-20	1.50-1.60	0.6-6	0.12-0.15	0.0-2.9	0.1-0.5	.24	.24			
	26-30	46-79	10-35	20-34	1.45-1.55	0.2-2	0.13-0.19	3.0-5.9	0.0-0.2	.20	.20			
	30-36	55-80	5-42	5-20	1.50-1.60	0.6-6	0.11-0.13	0.0-2.9	0.0-0.2	.24	.24			
	36-80	70-96	2-25	2-14	1.55-1.70	2-20	0.03-0.08	0.0-2.9	0.0-0.2	.15	.15			
Urban land-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
AptAv:						
Appoquinimink, very frequently flooded---	0-12	8.2-17	6.2-12	5.6-7.3	16.0-32.0	0
	12-30	6.5-22	4.9-17	5.6-7.3	16.0-32.0	0
	30-80	85-94	32-37	5.6-7.3	8.0-16.0	0
Transquaking, very frequently flooded---	0-14	85-94	32-37	6.1-7.3	8.0-32.0	0
	14-60	100-156	33-38	6.1-7.3	8.0-32.0	0
	60-90	20-40	15-30	6.1-7.3	8.0-32.0	0
Misphillion, very frequently flooded---	0-10	40-90	30-68	5.1-7.8	8.0-16.0	0
	10-26	80-100	60-75	5.1-7.8	8.0-16.0	0
	26-90	8.1-32	6.1-24	5.1-7.8	8.0-16.0	0
AtsAr:						
Atsion, rarely flooded-----	0-2	9.2-14	6.9-10	3.6-4.3	0	0
	2-4	1.5-6.0	1.1-4.5	3.6-5.0	0	0
	4-26	0.1-1.2	0.1-0.9	3.6-5.0	0	0
	26-34	0.3-4.8	0.2-3.6	3.6-5.0	0	0
	34-46	0.3-4.8	0.2-3.6	3.6-5.0	0	0
	46-51	0.3-1.1	0.2-0.8	3.6-5.0	0	0
	51-80	0.4-1.7	0.3-1.3	4.5-5.0	0	0
AucB:						
Aura-----	0-7	1.1-5.2	0.8-3.9	3.6-6.5	0	0
	7-22	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	22-28	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	28-59	5.3-11	4.0-8.2	4.0-5.5	0	0
	59-80	0.5-5.3	0.4-4.0	4.0-5.5	0	0
AugA:						
Aura-----	0-8	2.0-5.3	1.3-3.2	3.6-5.0	0	0
	8-13	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	13-22	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	22-28	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	28-44	5.3-11	4.0-8.2	4.0-5.5	0	0
	44-59	5.3-11	4.0-8.2	4.0-5.5	0	0
	59-80	0.5-5.3	0.4-4.0	4.0-5.5	0	0
AugB:						
Aura-----	0-8	2.0-5.3	1.3-3.2	3.6-5.0	0	0
	8-13	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	13-22	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	22-28	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	28-44	5.3-11	4.0-8.2	4.0-5.5	0	0
	44-59	5.3-11	4.0-8.2	4.0-5.5	0	0
	59-80	0.5-5.3	0.4-4.0	4.0-5.5	0	0
AuhB:						
Aura-----	0-8	1.6-4.0	1.2-3.0	3.6-5.0	0	0
	8-12	1.6-4.1	1.2-3.1	4.0-5.5	0	0
	12-20	3.9-10	2.9-7.6	4.0-5.5	0	0
	20-36	3.9-10	2.9-7.6	4.0-5.5	0	0
	36-40	0.7-9.2	0.5-6.9	4.0-5.5	0	0
	40-72	0.7-9.2	0.5-6.9	4.0-5.5	0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
AvuB:						
Aura-----	0-8	2.0-5.3	1.3-3.2	3.6-5.0	0	0
	8-13	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	13-22	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	22-28	2.0-5.3	1.5-4.0	4.0-5.5	0	0
	28-44	5.3-11	4.0-8.2	4.0-5.5	0	0
	44-59	5.3-11	4.0-8.2	4.0-5.5	0	0
	59-80	0.5-5.3	0.4-4.0	4.0-5.5	0	0
Urban land-----	---	---	---	---	---	---
BEXAS:						
Berryland, occasionally flooded-----	0-11	1.5-6.0	1.1-4.5	3.6-5.5	0	0
	11-19	0.3-4.8	0.2-3.6	3.6-5.5	0	0
	19-32	0.3-1.7	0.2-1.3	3.6-5.5	0	0
	32-40	0.3-4.8	0.2-3.6	3.6-5.5	0	0
	40-44	0.3-1.7	0.2-1.3	3.6-5.5	0	0
	44-80	0.1-1.9	0.1-1.4	3.6-5.5	0	0
Mullica, occasionally flooded-----	0-2	13-100	10-75	3.6-4.3	0	0
	2-9	1.3-3.5	1.0-2.6	3.6-5.0	0	0
	9-14	1.3-3.6	1.0-2.7	3.6-5.0	0	0
	14-28	1.3-3.6	1.0-2.7	3.6-5.0	0	0
	28-31	0.4-3.9	0.3-2.9	3.6-5.0	0	0
	31-40	0.4-3.9	0.3-2.9	3.6-5.0	0	0
	40-80	0.5-4.3	0.4-3.2	4.5-5.0	0	0
BrvAv:						
Broadkill, very frequently flooded---	0-6	85-94	64-70	5.6-7.3	16.0-32.0	0
	6-13	6.5-22	4.9-16	5.6-7.3	16.0-32.0	0
	13-38	6.5-22	4.9-16	5.6-7.3	16.0-32.0	0
	38-72	0.6-22	0.5-17	5.6-7.3	16.0-32.0	0
ChsAt:						
Chicone, frequently flooded-----	0-5	3.6-6.5	2.7-4.9	3.5-5.5	0	0
	5-20	4.1-11	3.1-8.4	3.5-5.5	0	0
	20-28	2.1-11	1.6-8.4	3.5-5.5	0	0
	28-65	45-135	10-75	3.6-4.5	0	0
	65-80	0.5-8.4	0.4-6.3	3.5-5.5	0	0
ChtA:						
Chillum-----	0-10	2.7-6.8	2.0-5.1	4.5-5.5	0	0
	10-15	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	15-28	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	28-34	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	34-38	1.7-8.5	1.3-6.4	3.6-5.5	0	0
	38-61	0.3-6.3	0.2-4.7	4.5-5.5	0	0
	61-66	0.3-6.3	0.2-4.7	4.5-5.5	0	0
	66-72	0.3-3.1	0.2-2.3	4.5-5.5	0	0
ChtB:						
Chillum-----	0-10	2.7-6.8	2.0-5.1	4.5-5.5	0	0
	10-15	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	15-28	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	28-34	3.1-8.5	2.3-6.4	4.5-5.5	0	0
	34-38	1.7-8.5	1.3-6.4	3.6-5.5	0	0
	38-61	0.3-6.3	0.2-4.7	4.5-5.5	0	0
	61-66	0.3-6.3	0.2-4.7	4.5-5.5	0	0
	66-72	0.3-3.1	0.2-2.3	4.5-5.5	0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
DocB:						
Downer-----	0-10	1.1-5.2	0.8-3.9	3.6-7.0	0	0
	10-16	1.1-5.0	0.8-3.8	3.6-6.5	0	0
	16-36	2.1-5.3	1.6-4.0	3.6-6.0	0	0
	36-48	0.8-4.7	0.6-3.5	3.6-5.5	0	0
	48-80	0.5-4.7	0.4-3.5	3.6-5.5	0	0
DocC:						
Downer-----	0-10	1.1-5.2	0.8-3.9	3.6-7.0	0	0
	10-16	1.1-5.0	0.8-3.8	3.6-6.5	0	0
	16-36	2.1-5.3	1.6-4.0	3.6-6.0	0	0
	36-48	0.8-4.7	0.6-3.5	3.6-5.5	0	0
	48-80	0.5-4.7	0.4-3.5	3.6-5.5	0	0
DoeA:						
Downer-----	0-10	1.9-4.5	1.4-3.4	3.6-7.0	0	0
	10-16	2.1-5.3	1.6-4.0	3.6-6.5	0	0
	16-36	2.1-5.3	1.6-4.0	3.6-6.0	0	0
	36-48	0.8-4.7	0.6-3.5	3.6-5.5	0	0
	48-80	0.5-4.7	0.4-3.5	3.6-5.5	0	0
DoeB:						
Downer-----	0-10	1.9-4.5	1.4-3.4	3.6-7.0	0	0
	10-16	2.1-5.3	1.6-4.0	3.6-6.5	0	0
	16-36	2.1-5.3	1.6-4.0	3.6-6.0	0	0
	36-48	0.8-4.7	0.6-3.5	3.6-5.5	0	0
	48-80	0.5-4.7	0.4-3.5	3.6-5.5	0	0
DouB:						
Downer-----	0-10	1.1-5.5	0.8-4.1	4.3-6.5	0	0
	10-16	2.1-5.3	1.6-4.0	3.6-6.5	0	0
	16-36	2.1-5.3	1.6-4.0	3.6-6.0	0	0
	36-48	0.8-4.7	0.6-3.5	3.6-5.5	0	0
	48-80	0.5-4.7	0.4-3.5	3.6-5.5	0	0
Urban land-----	---	---	---	---	---	---
EveB:						
Evesboro-----	0-4	1.1-5.5	0.8-4.1	3.6-5.0	0	0
	4-17	0.3-0.9	0.2-0.7	3.6-5.0	0	0
	17-31	0.3-1.3	0.2-1.0	3.6-5.0	0	0
	31-80	0.3-1.5	0.2-1.1	3.6-5.0	0	0
EveC:						
Evesboro-----	0-4	1.1-5.5	0.8-4.1	3.6-5.0	0	0
	4-17	0.3-0.9	0.2-0.7	3.6-5.0	0	0
	17-31	0.3-1.3	0.2-1.0	3.6-5.0	0	0
	31-80	0.3-1.5	0.2-1.1	3.6-5.0	0	0
EveD:						
Evesboro-----	0-5	0.5-5.1	0.4-3.8	3.6-5.0	0	0
	5-28	0.3-3.7	0.2-2.8	3.6-5.0	0	0
	28-60	0.3-1.5	0.2-1.1	3.6-5.0	0	0
EvuB:						
Evesboro-----	0-4	1.1-5.5	0.8-4.1	3.6-5.0	0	0
	4-17	0.3-0.9	0.2-0.7	3.6-5.0	0	0
	17-31	0.3-1.3	0.2-1.0	3.6-5.0	0	0
	31-80	0.3-1.5	0.2-1.1	3.6-5.0	0	0
Urban land-----	---	---	---	---	---	---

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
FamA:						
Fallsington-----	0-2	9.2-14	6.9-10	3.6-4.3	0	0
	2-5	1.7-5.7	1.3-4.3	3.6-5.5	0	0
	5-8	7.6-13	0.8-11	3.6-5.5	0	0
	8-14	7.6-13	5.7-9.5	3.6-5.5	0	0
	14-31	7.6-24	5.7-18	3.6-5.5	0	0
	31-62	0.9-11	0.7-8.4	3.6-5.5	0	0
	62-80	0.7-11	0.5-8.4	3.6-5.5	0	0
FodB:						
Fort Mott-----	0-8	0.3-3.9	0.2-2.9	3.6-5.5	0	0
	8-30	0.3-16	0.2-12	3.6-5.5	0	0
	30-33	0.3-5.6	0.2-4.2	3.6-5.5	0	0
	33-49	0.3-5.6	0.2-4.2	3.6-5.5	0	0
	49-72	0.3-4.1	0.2-3.1	3.6-5.5	0	0
GamB:						
Galloway-----	0-2	1.3-11	1.0-8.1	3.6-5.0	0	0
	2-10	0.1-6.1	0.1-4.6	3.6-5.0	0	0
	10-24	0.5-3.7	0.4-2.8	3.6-5.0	0	0
	24-36	0.5-3.7	0.4-2.8	3.6-5.0	0	0
	36-52	0.5-2.7	0.4-2.0	3.6-5.0	0	0
	52-60	0.5-2.7	0.4-2.0	3.6-5.0	0	0
HbmB:						
Hammonton-----	0-8	1.1-5.2	0.8-3.9	3.6-6.0	0	0
	8-18	0.8-10	0.6-7.6	3.6-5.5	0	0
	18-36	1.5-4.0	1.1-3.0	3.6-5.5	0	0
	36-80	0.5-4.3	0.4-3.2	3.6-5.5	0	0
HboA:						
Hammonton-----	0-8	1.1-4.9	0.8-3.7	3.6-5.5	0	0
	8-18	0.4-14	0.3-11	3.6-5.5	0	0
	18-36	1.2-5.6	0.9-4.2	4.5-5.5	0	0
	36-60	0.4-2.7	0.3-2.0	4.5-5.5	0	0
HboB:						
Hammonton-----	0-10	6.7-13	5.0-10	3.5-5.5	0	0
	10-48	4.0-6.7	3.0-5.0	4.5-5.5	0	0
	48-72	0.7-3.6	0.5-2.7	4.5-5.5	0	0
HbrB:						
Hammonton-----	0-8	1.1-5.2	0.8-3.9	3.6-6.0	0	0
	8-18	0.8-10	0.6-7.6	3.6-5.5	0	0
	18-36	1.5-4.0	1.1-3.0	3.6-5.5	0	0
	36-80	0.5-4.3	0.4-3.2	3.6-5.5	0	0
Urban land-----	---	---	---	---	---	---
LakB:						
Lakehurst-----	0-2	9.2-14	6.9-10	3.6-4.3	0	0
	2-4	1.3-7.1	1.0-5.3	3.6-5.5	0	0
	4-18	0.3-0.9	0.1-1.0	3.6-5.5	0	0
	18-32	1.1-6.7	0.8-5.0	3.6-5.5	0	0
	32-45	0.4-2.7	0.3-2.0	3.6-5.5	0	0
	45-54	0.4-3.1	0.3-2.3	3.6-5.5	0	0
	54-80	0.4-3.1	0.3-2.3	3.6-5.5	0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
LasB:						
Lakewood-----	0-3	1.3-6.0	1.0-4.5	3.6-5.0	0	0
	3-11	0.3-0.9	0.1-0.9	3.6-5.0	0	0
	11-13	1.5-6.7	1.1-5.0	3.6-5.0	0	0
	13-30	0.3-1.9	0.2-1.4	3.6-5.0	0	0
	30-46	0.3-1.9	0.2-1.4	3.6-5.0	0	0
	46-80	0.3-2.7	0.2-2.0	3.6-5.0	0	0
MakAt:						
Manahawkin, frequently flooded---	0-13	60-160	20-80	3.6-5.5	0.0-2.0	0
	13-26	60-160	20-80	3.6-5.5	0.0-2.0	0
	26-47	60-160	20-80	3.6-5.5	0.0-2.0	0
	47-80	0.0-6.3	0.0-4.7	3.6-5.5	0	0
MbrA:						
Matapeake-----	0-10	2.8-6.8	2.1-5.1	4.5-5.5	0	0
	10-25	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	25-33	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	33-50	0.3-6.3	0.2-4.7	3.6-5.5	0	0
	50-72	0.3-3.1	0.2-2.3	3.6-5.5	0	0
MbrB:						
Matapeake-----	0-10	2.8-6.8	2.1-5.1	4.5-5.5	0	0
	10-25	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	25-33	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	33-50	0.3-6.3	0.2-4.7	3.6-5.5	0	0
	50-72	0.3-3.1	0.2-2.3	3.6-5.5	0	0
MbrC:						
Matapeake-----	0-10	2.8-6.8	2.1-5.1	4.5-5.5	0	0
	10-25	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	25-33	3.1-8.5	2.3-6.4	3.6-5.5	0	0
	33-50	0.3-6.3	0.2-4.7	3.6-5.5	0	0
	50-72	0.3-3.1	0.2-2.3	3.6-5.5	0	0
MbuA:						
Mattapex-----	0-7	3.9-12	2.9-9.1	3.6-5.5	0	0
	7-18	4.8-18	3.6-13	3.6-5.5	0	0
	18-33	4.8-28	3.6-21	3.6-5.5	0	0
	33-40	4.8-28	3.6-21	3.6-5.5	0	0
	40-72	0.3-9.1	0.2-6.8	3.6-5.5	0	0
MbuB:						
Mattapex-----	0-9	3.9-12	2.9-9.1	3.6-5.5	0	0
	9-12	3.9-12	2.9-9.1	3.6-5.5	0	0
	12-52	4.8-18	3.6-13	3.6-5.5	0	0
	52-56	0.3-9.1	0.2-6.8	3.6-5.5	0	0
	56-72	0.3-5.7	0.2-4.3	3.6-5.5	0	0
MmtAv:						
Mispillion, very frequently flooded---	0-10	40-90	30-68	5.1-7.8	8.0-16.0	0
	10-26	80-100	60-75	5.1-7.8	8.0-16.0	0
	26-90	20-40	15-30	5.1-7.8	8.0-16.0	0
Transquaking, very frequently flooded---	0-14	40-90	30-68	6.1-7.3	8.0-32.0	0
	14-22	80-100	60-75	6.1-7.3	8.0-32.0	0
	22-46	80-100	60-75	6.1-7.3	8.0-32.0	0
	46-65	100-156	75-117	6.1-7.3	8.0-32.0	0
	65-80	10-49	7.7-37	6.1-7.3	8.0-32.0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
MmtAv: Appoquinimink, very frequently flooded---	0-12	6.6-15	5.0-11	5.6-7.3	16.0-32.0	0-12
	12-30	6.5-22	4.9-17	5.6-7.3	16.0-32.0	0-10
	30-80	85-94	32-37	5.6-7.3	8.0-16.0	0-6
OthA: Othello-----	0-5	4.4-10	3.3-7.8	4.5-5.5	0	0
	5-9	7.1-18	5.3-14	3.6-5.5	0	0
	9-28	7.1-19	5.3-14	3.6-5.5	0	0
	28-38	7.1-19	5.3-14	3.6-5.5	0	0
	38-46	0.8-4.6	0.6-3.5	3.6-5.5	0	0
	46-60	0.5-3.4	0.4-2.5	3.6-5.5	0	0
OTKA: Othello-----	0-1	9.2-14	6.9-10	3.6-4.5	0	0
	1-13	2.5-7.1	1.9-5.3	3.6-5.5	0	0
	13-32	6.1-18	4.6-13	3.6-5.5	0	0
	32-40	12-27	9.1-20	3.6-5.5	0	0
	40-60	0.9-8.4	0.7-6.3	3.6-5.5	0	0
	60-80	0.7-5.1	0.5-3.8	3.6-5.5	0	0
Fallsington -----	0-2	9.2-14	6.9-10	3.6-4.3	0	0
	2-5	2.0-11	1.5-8.4	3.6-5.5	0	0
	5-8	7.6-13	0.8-11	3.6-5.5	0	0
	8-14	7.6-13	5.7-9.5	3.6-5.5	0	0
	14-31	7.6-24	5.7-18	3.6-5.5	0	0
	31-62	0.9-11	0.7-8.4	3.6-5.5	0	0
	62-80	0.7-11	0.5-8.4	3.6-5.5	0	0
OTMA: Othello-----	0-1	85-94	32-37	3.6-4.5	0	0
	1-13	2.5-7.1	1.9-5.3	3.6-5.5	0	0
	13-32	6.1-18	4.6-13	3.6-5.5	0	0
	32-40	12-27	9.1-20	3.6-5.5	0	0
	40-60	0.9-8.4	0.7-6.3	3.6-5.5	0	0
	60-80	0.7-5.1	0.5-3.8	3.6-5.5	0	0
Fallsington -----	0-2	85-94	32-37	3.6-4.3	0	0
	2-5	2.0-11	1.5-8.4	3.6-5.5	0	0
	5-8	1.1-14	0.8-11	3.6-5.5	0	0
	8-14	7.6-13	5.7-9.5	3.6-5.5	0	0
	14-31	7.6-24	5.7-18	3.6-5.5	0	0
	31-62	0.9-11	0.7-8.4	3.6-5.5	0	0
	62-80	0.7-11	0.5-8.4	3.6-5.5	0	0
Trussum -----	0-12	2.0-11	1.5-8.4	3.5-5.5	0	0
	12-25	2.5-18	1.9-13	3.5-5.5	0	0
	25-35	12-80	9.1-60	3.5-5.5	0	0
	35-60	12-80	9.1-60	3.5-5.5	0	0
	60-66	8.5-80	6.4-60	3.5-5.5	0	0
	66-72	8.5-80	6.4-60	3.5-5.5	0	0
PdwAv: Pawcatuck, very frequently flooded---	0-14	45-211	34-158	5.1-7.8	2.0-32.0	0
	14-45	45-211	34-158	5.1-7.8	2.0-32.0	0
	45-50	2.5-16	1.9-12	3.5-5.0	0	0
	50-90	0.8-11	0.6-8.2	3.5-5.0	0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
PdwAv: Transquaking, very frequently flooded---	0-14	40-90	30-68	6.1-7.3	8.0-32.0	0
	14-48	85-94	32-37	6.1-7.3	8.0-32.0	0
	48-57	100-156	33-38	6.1-7.3	8.0-32.0	0
	57-72	10-49	7.7-37	6.1-7.3	8.0-32.0	0
PHG: Pits, sand and gravel-	---	---	---	---	---	---
PstAt: Psammaquents, sulfidic substratum, frequently flooded---	0-12	0.0-1.1	0.0-0.8	3.6-5.0	0	0
	12-36	0.0-1.1	0.0-0.8	3.6-5.0	0	0
	36-43	45-211	34-158	5.1-7.8	2.0-32.0	0
	43-80	45-211	34-158	5.1-7.8	2.0-32.0	0
PsvAr: Psammments, wet substratum, rarely flooded-----	0-12	0.0-1.1	0.0-0.8	3.6-5.0	0	0
	12-36	0.0-1.1	0.0-0.8	3.6-5.0	0	0
	36-80	0.0-1.9	0.0-1.4	3.6-5.0	0	0
SacA: Sassafras-----	0-12	2.2-5.6	1.7-4.2	3.6-7.0	0	0
	12-18	6.2-7.1	4.7-5.3	3.6-6.5	0	0
	18-28	6.9-12	5.2-9.0	3.6-6.5	0	0
	28-40	1.1-5.7	0.8-4.3	3.6-6.0	0	0
	40-58	0.4-5.1	0.3-3.8	3.6-5.5	0	0
	58-80	0.4-5.1	0.3-3.8	3.6-5.5	0	0
SacB: Sassafras-----	0-12	2.2-5.6	1.7-4.2	3.6-7.0	0	0
	12-18	6.2-7.1	4.7-5.3	3.6-6.5	0	0
	18-28	6.9-12	5.2-9.0	3.6-6.5	0	0
	28-40	1.1-5.7	0.8-4.3	3.6-6.0	0	0
	40-58	0.4-5.1	0.3-3.8	3.6-5.5	0	0
	58-80	0.4-5.1	0.3-3.8	3.6-5.5	0	0
SacC: Sassafras-----	0-12	2.2-5.6	1.7-4.2	3.6-7.0	0	0
	12-18	6.2-7.1	4.7-5.3	3.6-6.5	0	0
	18-28	6.9-12	5.2-9.0	3.6-6.5	0	0
	28-40	1.1-5.7	0.8-4.3	3.6-6.0	0	0
	40-58	0.4-5.1	0.3-3.8	3.6-5.5	0	0
	58-80	0.4-5.1	0.3-3.8	3.6-5.5	0	0
SadA: Sassafras-----	0-12	0.3-5.1	0.2-3.8	3.6-5.5	0	0
	12-14	0.3-9.1	0.2-6.8	3.6-5.5	0	0
	14-30	0.3-9.2	0.2-6.9	3.6-5.5	0	0
	30-34	0.3-9.2	0.2-6.9	3.6-5.5	0	0
	34-72	0.3-5.3	0.2-4.0	3.6-5.5	0	0

Soil Survey of Cumberland County, New Jersey

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	mmhos/cm	
SadB:						
Sassafras-----	0-12	0.3-5.1	0.2-3.8	3.6-5.5	0	0
	12-14	0.3-9.1	0.2-6.8	3.6-5.5	0	0
	14-30	0.3-9.2	0.2-6.9	3.6-5.5	0	0
	30-34	0.3-9.2	0.2-6.9	3.6-5.5	0	0
	34-72	0.3-5.3	0.2-4.0	3.6-5.5	0	0
SadC:						
Sassafras, eroded----	0-17	0.3-5.1	0.2-3.8	3.6-5.5	0	0
	17-37	0.3-11	0.2-8.4	3.6-5.5	0	0
	37-60	0.3-6.3	0.2-4.7	3.6-5.5	0	0
SapB:						
Sassafras-----	0-12	1.1-5.6	0.8-4.1	4.3-6.5	0	0
	12-18	6.2-7.1	4.7-5.3	3.6-6.5	0	0
	18-28	6.9-12	5.2-9.0	3.6-6.5	0	0
	28-40	1.1-5.7	0.8-4.3	3.6-6.0	0	0
	40-58	0.4-5.1	0.3-3.8	3.6-5.5	0	0
	58-80	0.4-5.1	0.3-3.8	3.6-5.5	0	0
Urban land-----	---	---	---	---	---	---
TrkAv:						
Transquaking, very frequently flooded---	0-14	135-195	101-146	6.1-7.3	8.0-32.0	0
	14-30	135-195	101-146	6.1-7.3	8.0-32.0	0
	30-45	135-195	101-146	6.1-7.3	8.0-32.0	0
	45-70	135-195	101-146	6.1-7.3	8.0-32.0	0
	70-90	158-240	118-180	6.1-7.3	8.0-32.0	0
UdrB:						
Udorthents, refuse substratum-----	0-60	9.9-21	7.4-16	5.6-7.3	0	0
UR:						
Urban land-----	---	---	---	---	---	---
WoeA:						
Woodstown-----	0-8	2.7-6.5	2.0-4.9	3.6-7.0	0	0
	8-26	2.6-11	2.0-8.0	3.6-6.5	0	0
	26-30	10-18	7.6-13	3.6-6.0	0	0
	30-36	2.6-11	2.0-7.9	3.6-5.8	0	0
	36-80	0.7-8.4	0.5-6.3	3.6-5.5	0	0
WoeB:						
Woodstown-----	0-8	2.7-6.5	2.0-4.9	3.6-7.0	0	0
	8-26	2.6-11	2.0-8.0	3.6-6.5	0	0
	26-30	10-18	7.6-13	3.6-6.0	0	0
	30-36	2.6-11	2.0-7.9	3.6-5.8	0	0
	36-80	0.7-8.4	0.5-6.3	3.6-5.5	0	0
WooB:						
Woodstown-----	0-8	2.7-6.5	2.0-4.9	3.6-7.0	0	0
	8-26	2.6-11	2.0-8.0	3.6-6.5	0	0
	26-30	10-18	7.6-13	3.6-6.0	0	0
	30-36	2.6-11	2.0-7.9	3.6-5.8	0	0
	36-80	0.7-8.4	0.5-6.3	3.6-5.5	0	0
Urban land-----	---	---	---	---	---	---

Table 21.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In			In	In	In		
AptAv: Appoquinimink, very frequently flooded----	---	---	---	---	0-4	4-8	High	High	High
Transquaking, very frequently flooded----	---	---	---	---	15-25	25-35	High	High	High
Mispillion, very frequently flooded----	---	---	---	---	10-20	20-40	Moderate	High	High
AtsAr: Atsion, rarely flooded-	---	---	---	---	0	0	Moderate	Low	High
AucB: Aura-----	Fragipan	15-40	15-40	Noncemented	0	0	Moderate	Low	High
AugA: Aura-----	Fragipan	15-40	15-50	Noncemented	0	0	Moderate	Moderate	High
AugB: Aura-----	Fragipan	15-40	15-50	Noncemented	0	0	Moderate	Moderate	High
AuhB: Aura-----	Fragipan	15-40	15-30	Noncemented	0	0	Moderate	Low	High
AvuB: Aura-----	Fragipan	15-40	15-50	Noncemented	0	0	Moderate	Moderate	High
Urban land-----	---	---	---	---	---	---	---	---	---
BEXAS: Berryland, occasionally flooded-----	---	---	---	---	0	0	Moderate	High	High
Mullica, occasionally flooded-----	---	---	---	---	0	0	High	High	High
BrvAv: Broadkill, very frequently flooded----	---	---	---	---	0-8	8-12	High	High	High

Table 21.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In			In	In	In		
ChsAt: Chicone, frequently flooded-----	---	---	---	---	0	0	High	High	High
ChtA: Chillum-----	---	---	---	---	0	0	High	Moderate	High
ChtB: Chillum-----	---	---	---	---	0	0	High	Moderate	High
DocB: Downer-----	---	---	---	---	0	0	Moderate	Moderate	High
DocC: Downer-----	---	---	---	---	0	0	Moderate	Moderate	High
DoeA: Downer-----	---	---	---	---	0	0	Moderate	Moderate	High
DoeB: Downer-----	---	---	---	---	0	0	Moderate	Moderate	High
DouB: Downer-----	---	---	---	---	0	0	Moderate	Moderate	High
Urban land-----	---	---	---	---	---	---	---	---	---
EveB: Evesboro-----	---	---	---	---	0	0	Low	Low	High
EveC: Evesboro-----	---	---	---	---	0	0	Low	Low	High
EveD: Evesboro-----	---	---	---	---	0	0	Low	Low	High
EvuB: Evesboro-----	---	---	---	---	0	0	Low	Low	High
Urban land-----	---	---	---	---	---	---	---	---	---
FamA: Fallsington-----	---	---	---	---	0	0	High	High	High
FodB: Fort Mott-----	---	---	---	---	0	0	Moderate	Moderate	High

Table 21.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
GamB: Galloway-----	---	---	---	---	0	0	Low	Low	High
HbmB: Hammonton-----	---	---	---	---	0	0	Moderate	Moderate	High
HboA: Hammonton-----	---	---	---	---	0	0	Moderate	Moderate	High
HboB: Hammonton-----	---	---	---	---	0	0	Moderate	Moderate	High
HbrB: Hammonton-----	---	---	---	---	0	0	Moderate	Moderate	High
Urban land-----	---	---	---	---	---	---	---	---	---
LakB: Lakehurst-----	---	---	---	---	0	0	Low	Low	High
LasB: Lakewood-----	---	---	---	---	0	0	Low	Low	High
MakAt: Manahawkin, frequently flooded-----	---	---	---	---	2-5	7-13	Moderate	High	High
MbrA: Matapeake-----	---	---	---	---	0	0	High	Moderate	High
MbrB: Matapeake-----	---	---	---	---	0	0	High	Moderate	High
MbrC: Matapeake-----	---	---	---	---	0	0	High	Moderate	High
MbuA: Mattapex-----	---	---	---	---	0	0	High	High	High
MbuB: Mattapex-----	---	---	---	---	0	0	High	High	High
MmtAv: Mispillion, very frequently flooded----	---	---	---	---	10-20	20-40	Moderate	High	High

Table 21.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
MmtAv: Transquaking, very frequently flooded----	---	---	---	---	15-25	25-35	High	High	High
Appoquinimink, very frequently flooded----	---	---	---	---	0-4	4-8	High	High	High
OthA: Othello-----	---	---	---	---	0	0	High	High	High
OTKA: Othello-----	---	---	---	---	0	0	High	High	High
Fallsington-----	---	---	---	---	0	0	High	High	High
OTMA: Othello-----	---	---	---	---	0	0	High	High	High
Fallsington-----	---	---	---	---	0	0	High	High	High
Trussum-----	---	---	---	---	0	0	High	High	High
PdwAv: Pawcatuck, very frequently flooded----	---	---	---	---	0	0	Low	High	High
Transquaking, very frequently flooded----	---	---	---	---	15-25	25-35	High	High	High
PHG: Pits, sand and gravel--	---	---	---	---	0	0	---	Low	High
PstAt: Psammaquents, sulfidic substratum, frequently flooded----	---	---	---	---	0	0	Low	High	High
PsvAr: Psammets, wet substratum, rarely flooded-----	---	---	---	---	0	0	Low	---	---
SacA: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High

Table 21.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
SacB: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High
SacC: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High
SadA: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High
SadB: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High
SadC: Sassafras, eroded-----	---	---	---	---	0	0	Moderate	Low	High
SapB: Sassafras-----	---	---	---	---	0	0	Moderate	Low	High
Urban land-----	---	---	---	---	---	---	---	---	---
TrkAv: Transquaking, very frequently flooded----	---	---	---	---	15-25	25-35	High	High	High
UdrB: Udorthents, refuse substratum-----	---	---	---	---	0	0	---	---	---
UR: Urban land-----	---	---	---	---	---	---	---	---	---
WoeA: Woodstown-----	---	---	---	---	0	0	High	Moderate	High
WoeB: Woodstown-----	---	---	---	---	0	0	High	Moderate	High
WooB: Woodstown-----	---	---	---	---	0	0	High	Moderate	High
Urban land-----	---	---	---	---	---	---	---	---	---

Table 22.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
AptAv:										
Appoquinimink-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
Transquaking-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
Mispillion-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
AtsAr:										
Atsion-----	A/D	Negligible	Jan-Apr	0.0-1.0	>6.0	0.2-0.5	Long	Rare	Brief	Rare
			May	1.0-1.5	>6.0	0.2-0.5	Long	Rare	Brief	Rare
			Jun	1.0-1.5	>6.0	---	---	---	---	---
			Jul-Sep	1.5-3.5	>6.0	---	---	---	---	---
			Oct-Dec	1.0-1.5	>6.0	0.2-0.5	Long	Rare	Brief	Rare
AucB:										
Aura-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
AugA:										
Aura-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
AugB:										
Aura-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
AuhB:										
Aura-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
AvuB:										
Aura-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None
BEXAS:										
Berryland-----	B/D	Negligible	Jan-Apr	0.0-0.5	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional
			May-Jun	0.2-1.0	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional
			Jul-Sep	1.0-1.5	>6.0	0.0-0.5	Very brief	Rare	Very brief	Rare
			Oct-Dec	0.2-1.0	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional
Mullica-----	D	Negligible	Jan-Apr	0.0-0.5	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional
			May-Jun	0.2-1.0	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional
			Jul-Sep	1.0-1.5	>6.0	0.0-0.5	Very brief	Rare	Very brief	Rare
			Oct-Dec	0.2-1.0	>6.0	0.0-1.0	Brief	Occasional	Brief	Occasional

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
BrvAv: Broadkill-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
ChsAt: Chicone-----	D	Negligible	Jan-Apr	0.0-0.5	>6.0	0.0-1.0	Brief	Frequent	Brief	Frequent
			May-Jun	0.2-1.0	>6.0	0.0-1.0	Brief	Frequent	Brief	Frequent
			Jul-Sep	1.0-1.5	>6.0	0.0-0.5	Brief	Occasional	Brief	Occasional
			Oct	0.2-1.0	>6.0	0.0-0.5	Brief	Occasional	Brief	Occasional
			Nov-Dec	0.2-1.0	>6.0	0.0-1.0	Brief	Frequent	Brief	Frequent
ChtA: Chillum-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
ChtB: Chillum-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
DocB: Downer-----	B	Very low	Jan-Dec	---	---	---	---	None	---	None
DocC: Downer-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
DoeA: Downer-----	B	Very low	Jan-Dec	---	---	---	---	None	---	None
DoeB: Downer-----	B	Very low	Jan-Dec	---	---	---	---	None	---	None
DouB: Downer-----	B	Very low	Jan-Dec	---	---	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None
EveB: Evesboro-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
EveC: Evesboro-----	A	Low	Jan-Dec	---	---	---	---	None	---	None
EveD: Evesboro-----	A	Low	Jan-Dec	---	---	---	---	None	---	None
EvuB: Evesboro-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
FamA: Fallsington-----	B/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
FodB: Fort Mott-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
GamB: Galloway-----	A/D	Very low	Jan-Apr	1.0-1.5	>6.0	---	---	None	---	None
			May-Jun	1.5-3.5	>6.0	---	---	None	---	None
			Jul-Sep	3.5-6.0	>6.0	---	---	None	---	None
			Oct-Dec	1.5-3.5	>6.0	---	---	None	---	None
HbmB: Hammonton-----	B	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
HboA: Hammonton-----	B	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
HboB: Hammonton-----	B	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
HbrB: Hammonton-----	B	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None
LakB: Lakehurst-----	A	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
LasB: Lakewood-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
MakAt: Manahawkin-----	D	Negligible	Jan-Apr	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			May-Jun	0.2-1.0	>6.0	0.0-0.5	Brief	Occasional	Brief	Occasional
			Jul-Sep	1.0-1.5	>6.0	0.0-0.5	Brief	Occasional	Brief	Occasional
			Oct	0.2-1.0	>6.0	0.0-0.5	Brief	Occasional	Brief	Occasional
			Nov-Dec	0.2-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
MbrA: Matapeake-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
MbrB: Matapeake-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
MbrC: Matapeake-----	B	Medium	Jan-Dec	---	---	---	---	None	---	None
MbuA: Mattapex-----	C	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
MbuB: Mattapex-----	C	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
MmtAv: Mispillion-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
Transquaking-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
Appoquinimink-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
OthA: Othello-----	C/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
OTKA:										
Othello-----	C/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
Fallsington-----	B/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
OTMA:										
Othello-----	C/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
Fallsington-----	B/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
Trussum-----	C/D	Very high	Jan-Apr	0.0-1.0	>6.0	---	---	None	---	None
			May-Jun	1.0-1.5	>6.0	---	---	None	---	None
			Jul-Sep	1.5-3.5	>6.0	---	---	None	---	None
			Oct-Dec	1.0-1.5	>6.0	---	---	None	---	None
PdwAv:										
Pawcatuck-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very long	Frequent	Very brief	Very frequent
Transquaking-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
PHG:										
Pits, sand and gravel-----	---	---	Jan-Dec	---	---	---	---	None	---	None
PstAt:										
Psammaquents-----	A	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Frequent
PsvAr:										
Psammets-----	A	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	Rare
			May-Jun	3.5-6.0	>6.0	---	---	None	---	Rare
			Jul-Sep	---	---	---	---	None	---	Rare
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	Rare
SacA:										
Sassafras-----	B	Low	Jan-Dec	---	---	---	---	None	---	None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
SacB: Sassafras-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
SacC: Sassafras-----	B	Medium	Jan-Dec	---	---	---	---	None	---	None
SadA: Sassafras-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
SadB: Sassafras-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
SadC: Sassafras-----	B	Medium	Jan-Dec	---	---	---	---	None	---	None
SapB: Sassafras-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None
TrkAv: Transquaking-----	D	Negligible	Jan-Dec	0	>6.0	0.0-1.0	Very brief	Frequent	Very brief	Very frequent
UdrB: Udorthents-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
UR: Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None
WoeA: Woodstown-----	C	Very high	Jan-Apr May-Jun Jul-Sep Oct-Dec	1.5-3.5 3.5-6.0 --- 3.5-6.0	>6.0 >6.0 --- >6.0	--- --- --- ---	--- --- --- ---	None None None None	--- --- --- ---	None None None None
WoeB: Woodstown-----	C	Very high	Jan-Apr May-Jun Jul-Sep Oct-Dec	1.5-3.5 3.5-6.0 --- 3.5-6.0	>6.0 >6.0 --- >6.0	--- --- --- ---	--- --- --- ---	None None None None	--- --- --- ---	None None None None

Table 22.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
WooB: Woodstown-----	C	Very high	Jan-Apr	1.5-3.5	>6.0	---	---	None	---	None
			May-Jun	3.5-6.0	>6.0	---	---	None	---	None
			Jul-Sep	---	---	---	---	None	---	None
			Oct-Dec	3.5-6.0	>6.0	---	---	None	---	None
Urban land-----	---	---	Jan-Dec	---	---	---	---	None	---	None

Soil Survey of Cumberland County, New Jersey

Table 23.--Classification of the Soils

Soil name	Family or higher taxonomic class
Appoquinimink-----	Fine-silty, mixed, active, nonacid, mesic Thapto-Histic Sulfaquents
Atsion-----	Sandy, siliceous, mesic Aeric Alaquods
Aura-----	Coarse-loamy, siliceous, semiactive, mesic Typic Fragiudults
Berryland-----	Sandy, siliceous, mesic Typic Alaquods
Broadkill-----	Fine-silty, mixed, active, nonacid, mesic Typic Sulfaquents
Chicone-----	Coarse-silty, mixed, active, acid, mesic Thapto-Histic Fluvaquents
Chillum-----	Fine-silty, mixed, semiactive, mesic Typic Hapludults
Downer-----	Coarse-loamy, siliceous, semiactive, mesic Typic Hapludults
Evesboro-----	Mesic, coated Typic Quartzipsamments
Fallsington-----	Fine-loamy, mixed, active, mesic Typic Endoaquults
Fort Mott-----	Loamy, siliceous, semiactive, mesic Arenic Hapludults
Galloway-----	Mesic, coated Aquic Quartzipsamments
Hammonton-----	Coarse-loamy, siliceous, semiactive, mesic Aquic Hapludults
Lakehurst-----	Mesic, coated Aquodic Quartzipsamments
Lakewood-----	Mesic, coated Spodic Quartzipsamments
Manahawkin-----	Sandy or sandy-skeletal, siliceous, dysic, mesic Terric Haplosaprists
Matapeake-----	Fine-silty, mixed, semiactive, mesic Typic Hapludults
Mattapex-----	Fine-silty, mixed, active, mesic Aquic Hapludults
Mispillion-----	Loamy, mixed, euic, mesic Terric Sulfihemists
Mullica-----	Coarse-loamy, siliceous, semiactive, acid, mesic Typic Humaquepts
Othello-----	Fine-silty, mixed, active, mesic Typic Endoaquults
Pawcatuck-----	Sandy or sandy-skeletal, mixed, euic, mesic Terric Sulfihemists
Psammaquents-----	Psammaquents
Psamments-----	Psamments
Sassafras-----	Fine-loamy, siliceous, semiactive, mesic Typic Hapludults
Transquaking-----	Euic, mesic Typic Sulfihemists
Trussum-----	Fine, mixed, active, mesic Typic Paleaquults
Udorthents-----	Udorthents
Woodstown-----	Fine-loamy, mixed, active, mesic Aquic Hapludults

Table 24.--Relationship Between Major Landforms, Soil Characteristics, and Drainage of Soils

Soil characteristics	Excessively drained and somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
MINERAL SOILS ON UPLANDS AND LOWLANDS; NOT SUBJECT TO FREQUENT FLOODING						
SANDY SUBSOIL						
Do not have spodic or spodic-like materials	Evesboro		Galloway			
Spodic or spodic-like materials below a bleached layer	Lakewood		Lakehurst		Atsion	Berryland
Texture varies throughout but dominantly recent sandy deposits from human activity			Psammets			
LOAMY SUBSOIL						
Dominantly sandy loam subsoil						
Without fragipan		Downer Fort Mott	Hammonton			Mullica
With fragipan		Aura				
Dominantly sandy clay loam subsoil		Sassafras	Woodstown		Fallsington	
Dominantly silt loam or silty clay loam subsoil						
Without dense firm layer in the substratum		Matapeake	Mattapex		Othello	
With dense firm layer in the substratum		Chillum				
Texture varies throughout but dominantly recent loamy deposits from human activity		Udorthents	Udorthents			
CLAYEY SUBSOIL						
Argillic horizon extends to a depth of more than 60 inches					Trussum	

Table 24.--Relationship Between Major Landforms, Soil Characteristics, and Drainage of Soils--Continued

Soil characteristics	Excessively drained and somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
SOILS ON FLOOD PLAINS AND LOWLANDS; SUBJECT TO FREQUENT FLOODING						
ALLUVIAL SEDIMENTS OR ORGANIC MATERIALS						
Dominantly sandy materials from dredging rivers and filling of tidal marshes						Psammaquents
Silty textured recent alluvial sediments underlain by organic layers 16 to 45 inches thick						Chicone
Organic layers 16 to 51 inches thick underlain by sandy marine sediments						Manahawkin
SOILS ON TIDALLY INFLUENCED ESTUARINE MARSHES; SUBJECT TO DAILY FLOODING						
BRACKISH ESTUARINE TIDAL MARSHES						
Organic layers 16 to 51 inches thick						
Underlain by loamy or sandy deposits						Pawcatuck
Underlain by loamy or silty mineral sediments						Mispillion
Organic layers more than 51 inches thick underlain by silty or clayey mineral sediments						Transquaking
Silty fluvial sediments underlain by organic materials						
Silty sediments 16 to 40 inches thick						Appoquinimink
Silty sediments more than 40 inches thick						Broadkill

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