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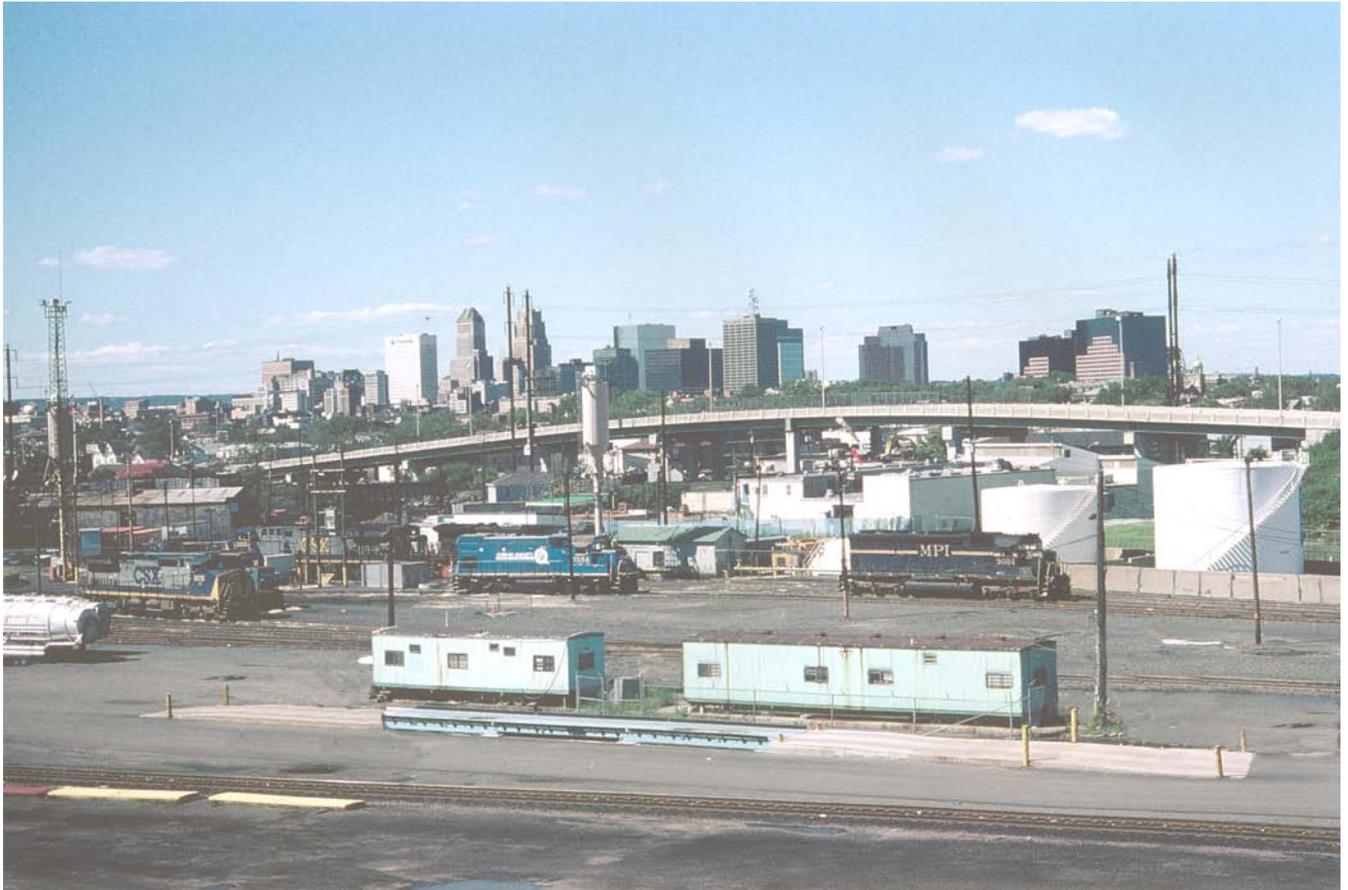


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Natural Resources  
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In cooperation with New  
Jersey Agricultural  
Experiment Station Cook  
College, Rutgers, The  
State University; the New  
Jersey Department of  
Agriculture, State Soil  
Conservation Committee;  
and the Hudson, Essex,  
Passaic Conservation  
District

# Soil Survey of Essex County, New Jersey





# How To Use This Soil Survey

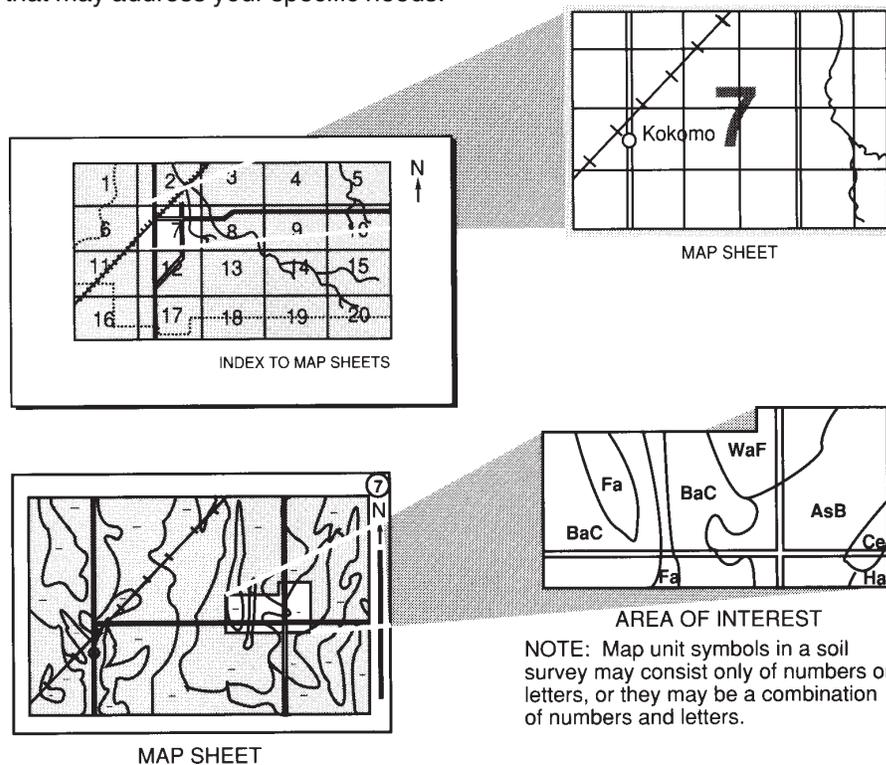
## Detailed Soil Maps

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 click on that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to **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.



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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. This survey was made cooperatively by the Natural Resources Conservation Service, New Jersey Agricultural Experiment Station Cook College, Rutgers, The State University; the New Jersey Department of Agriculture, State Soil Conservation Committee; and the Hudson, Essex, Passaic Conservation District. The survey is part of the technical assistance furnished to the Hudson, Essex, Passaic Conservation District. Partial funding for the survey was provided by the State Soil Conservation Committee, New Jersey Department of Agriculture.

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2002. The most current official data are available through the NRCS Soil Data Mart Website at <http://soildatamart.nrcs.usda.gov>.

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: View of the City of Newark skyline in the red sandstone lowland area. Newark is the most densely populated city in the state of New Jersey.**

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

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

Thomas Drewes  
State Conservationist  
Natural Resources Conservation Service



# Soil Survey of Essex County, New Jersey

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By Edwin Muñiz and Richard K. Shaw, Natural Resources Conservation Service

Fieldwork by Edwin Muñiz and Richard K. Shaw, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with New Jersey Agricultural Experiment Station Cook College, Rutgers, The State University; the New Jersey Department of Agriculture, State Soil Conservation Committee; and the Hudson, Essex, Passaic Conservation District.

## Introduction

Essex County is in the northeast part of New Jersey. The county is bordered by the Passaic River on the west and northwest, Passaic County on the northeast, the Newark Bay on the east, and Union County on the south (fig. 1). The total land area of the county is 83,000 acres.

This soil survey is the first survey of the county using modern soil taxonomy. The previous surveys with information on the Essex County area were the Soil Survey of the Bernardsville Area (1923) and the Soil Survey of the Bergen Area (1925), published by the United States Department of Agriculture. This soil survey provides updated information with modern interpretations and maps showing the soils in detail.

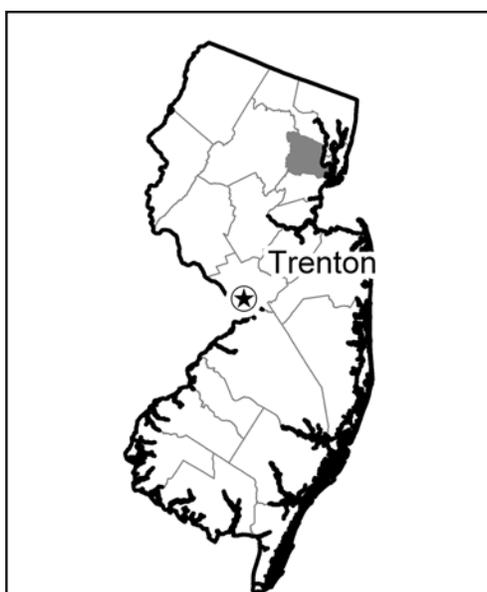


Figure 1. Location of Essex County in New Jersey.

## General Nature of the County

This section provides general information about the survey area. It describes the population, climate, and geology of Essex County.

### Population

In 2000, the population of Essex County at 793,633 was second highest among New Jersey counties. It also ranked as the second most densely populated county in the state with 6,285 people per square mile. Newark had the highest population among New Jersey cities at 273,546.

Land use in Essex County can be characterized as predominantly urban and suburban, with only a small amount remaining in agriculture. Nursery stock and greenhouse crops are among the most important agricultural products.

### Climate

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

The climate tables were created from data gathered at the climate station in Canoe Brook.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order Station, Newark, New Jersey.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Canoe Brook in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperatures are 30.6 degrees F. The average daily minimum temperatures in winter are 20.7 degrees F. The lowest temperatures on record are: -26 degrees F on February 9, 1934.

In summer, the average temperatures are 71.6 degrees F. The average daily maximum temperatures are 83.1 degrees F. The highest temperature ever recorded at Canoe Brook occurred on August 5, 1944, and was 104 degrees F.

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.

Average annual total precipitation is highest in western portions of the county, where Canoe Brook receives about 51.72 inches. Of these amounts, about 26-28 inches, or around 53 percent, usually falls in May through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the periods of record was 8.76 inches on August 28, 1971. Thunderstorms occur on about 26 days each year, and most occur between May and August.

The average seasonal snowfall is around 25 inches over the entire county. The greatest snow depth at any one time during the period of record was 35 inches recorded on February 5, 1961. On average, there are 31 days per year that have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 23.0 inches recorded on February 5, 1961.

The average relative humidity in mid-afternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 65 percent in April and 75 percent in late summer. The sun shines about 62 percent of the time in summer and about 48

percent of the time in winter. The prevailing wind is from the southwest in most months, except from the northwest in the late winter and early spring. Average wind speed is highest, around 12 miles per hour, in March.

## Geology

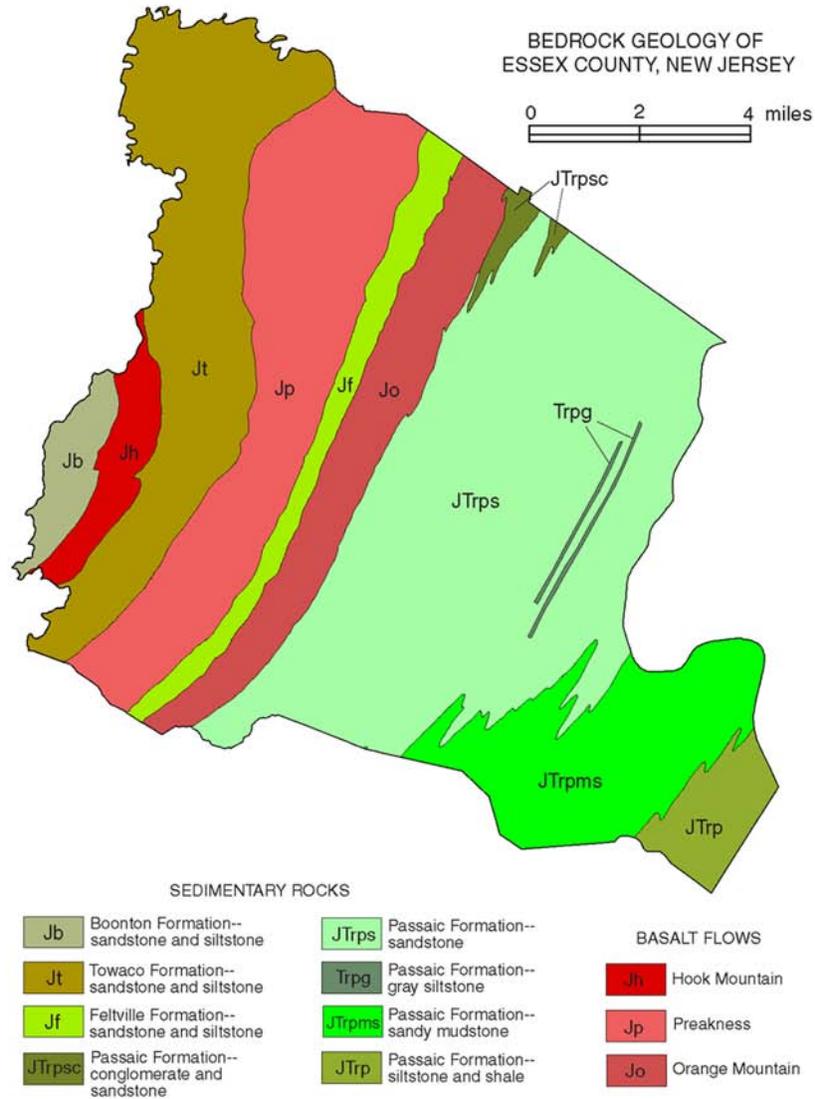
Prepared by Scott Stanford, New Jersey Geological Survey

Essex County is located within the glaciated Newark Basin portion of the Piedmont physiographic province. The Newark Basin is an elongated northeast-southwest-trending rift valley. It is one of a series of such rift basins in eastern North America. These basins formed between 230 and 180 million years ago during the early stages of continental separation, a separation that eventually led to the opening of the Atlantic Ocean basin. In the Newark Basin, gravel, sand, silt, and clay were deposited in floodplains and lakes. During three periods of eruption, extensive basalt flows spread across the lakes and floodplains. With continued subsidence and burial the sediments were hardened into conglomerate, sandstone, siltstone, and shale, and then tilted and faulted. In Essex County, the sedimentary layers and interbedded basalt flows dip westward at between 5 and 15 degrees.

Over the 180 million years since rifting ceased, erosion has slowly exposed these tilted layers of sedimentary rock and basalt and etched the present topography. The basalts are more resistant to erosion than the sedimentary rocks and underlie First and Second Watchung Mountain and Riker Hill. The sedimentary rocks underlie the valleys and lowlands between the basalt ridges. Sandstone and conglomerate are more resistant than shale and siltstone and form the upland between First Watchung Mountain and the Newark Bay salt marshes.

The bedrock is divided into 7 formations. (fig. 2) The oldest sedimentary rocks, of Early Jurassic and Late Triassic age, are included in the Passaic Formation, which underlies the county east of First Watchung Mountain. The Passaic Formation contains shale at the base, in the easternmost part of the county, and passes upward into siltstone, sandstone, and some conglomerate as one proceeds northwest. Atop the Passaic are three consecutive basalt flows that together constitute the Orange Mountain Basalt. This basalt underlies First Watchung Mountain. These rocks, and all overlying rocks in the county, are of Early Jurassic age. A thin sequence of sandstone and siltstone above the Orange Mountain Basalt is known as the Feltville Formation. This formation underlies the valley between First and Second Watchung Mountains. The Preakness Basalt overlies the Feltville and forms Second Watchung Mountain. It consists of at least three major flows. Another sequence of sandstone and siltstone atop the Preakness Basalt is known as the Towaco Formation, which underlies the lowland extending from Fairfield through Livingston to Short Hills. The Hook Mountain Basalt includes two flows atop the Towaco Formation. These flows underlie the small ridge known as Riker Hill in Livingston and Roseland. Sandstone and siltstone atop the Hook Mountain are known as the Boonton Formation and underlie the lowland west of Riker Hill.

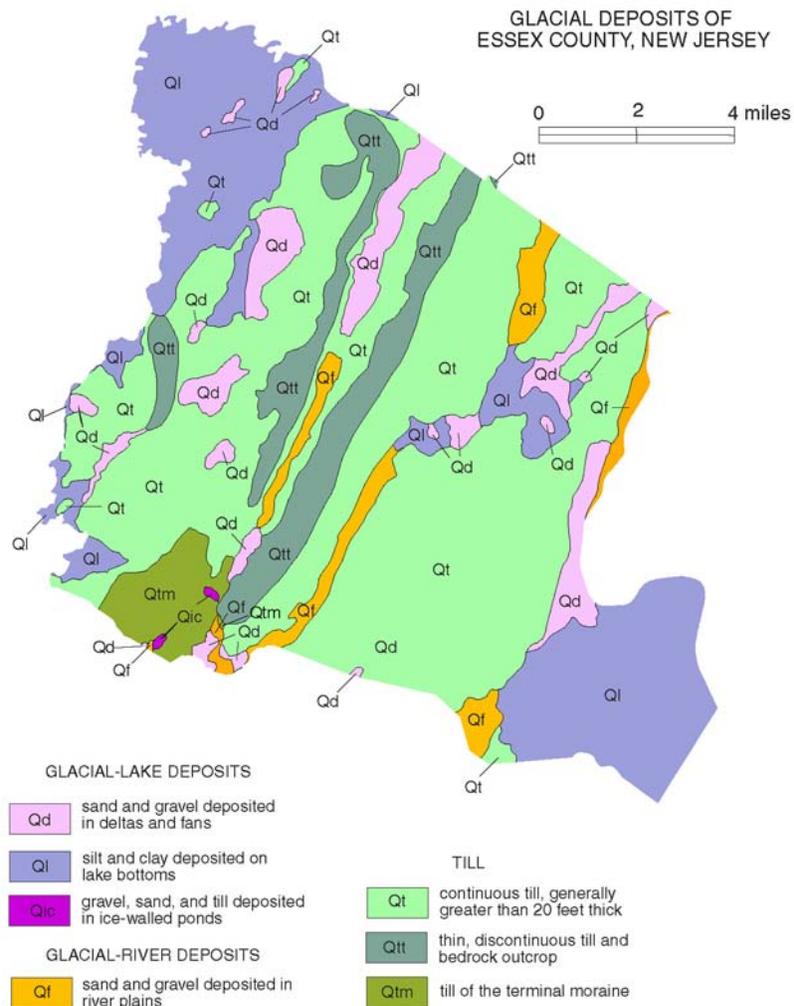
Bedrock is covered by glacial and postglacial deposits, which are as much as 300 feet thick. Essex County has been glaciated at least three times in the past two million years. However, only the deposits of the most-recent glaciation occur in the county. This glaciation, known as the late Wisconsinan, covered the county between about 21,000 and 18,000 years ago. Essex County was on the western side of a large ice lobe that was centered in the Hackensack Valley. Ice flowed southerly to southwesterly, and, in places on the Watchung Mountains, nearly westerly, across the county. Flowing ice eroded the bedrock surface. In the eastern part of Newark,



**Figure 2. Bedrock geology, modified from Drake and others, 1996.**

and in the Passaic Valley in Fairfield, ice eroded troughs as much as 250 feet deep into shale and siltstone bedrock. Elsewhere erosion was not as deep but nevertheless removed most of the pre-advance soil, weathered rock, and older glacial deposits that had mantled the landscape. Only in the southwestern corner of the county, near the limit of the late Wisconsin advance, are older deposits preserved. Here, deposits from the next-to-last glaciation (the Illinoian) are preserved beneath late Wisconsin sediments.

The glacial deposits include till and stratified sediments (fig. 3). Till is an unstratified, poorly sorted sediment deposited directly from glacial ice. Stratified sediments include layered and sorted sand, gravel, silt, and clay deposited by meltwater in glacial lakes and river plains. Till in Essex County is primarily reddish brown silty sand to clayey sandy silt, with some gravel and boulders, derived from erosion of the reddish sedimentary bedrock. It forms a nearly continuous layer



**Figure 3. Glacial deposits, modified from Stanford and others, 1990.**

between 20 and 40 feet thick on the bedrock surface in lowlands, and thickens to as much as 150 feet in the terminal moraine in Short Hills. On the tops and western slopes of the Watchung Mountains and Riker Hill, till is thin and patchy and outcrops of basalt common. Till here is more yellow in color and siltier than in the lowlands due to glacial erosion of the local weathered basalt.

Stratified sediments were laid down in lakes and river plains as the ice margin retreated. Lakes formed in valleys and lowlands that were dammed by the ice front or by earlier deposits. Several such lakes formed in Essex County. The largest, Lake Passaic, covered the entire county west of Second Watchung Mountain and below an elevation of about 370-400 feet. Lake Verona occupied the Peckman River Valley, below an elevation of about 400 feet, between First and Second Watchung Mountains. A series of small lakes formed in the valleys of Second and Third River as the ice front retreated to the northeast. Part of another large lake, Lake Bayonne, filled the Newark Bay lowland below an elevation of about 30 feet. Where meltwater streams entered the lakes, sand and gravel were deposited in deltas and fans. These deposits may be as much as 150 feet thick. Silt and clay settled onto the lowest parts of the lake floor and are as much as 250 feet thick. Because these areas are the

lowest in the landscape, the silt and clay deposits were generally covered by postglacial marsh and floodplain sediments after the lakes drained.

Valleys that sloped away from the ice margin were not dammed and instead conducted meltwater rivers. These rivers deposited plains of sand and gravel. Such deposits were laid down in the West and East Branch valleys of the Rahway River and in the Third River Valley upstream from Bloomfield. They are generally less than 30 feet thick.

After deglaciation, streams reestablished their courses on the drained lake floors and inactive river plains. The glacial deposits were eroded by the streams in places, and floodplains were developed along larger streams. Silt and sand were deposited on these floodplains, and peat was deposited in wetlands away from floodplains. These deposits are generally less than 10 feet thick. Within the past several thousand years, rising sea level flooded the Newark Bay area, creating salt marshes. Peat and organic silt, generally less than 20 feet thick, were deposited in these marshes, which are now mostly covered by fill. On uplands away from main streams there has been little natural landscape change since glacial retreat. Small deposits of talus have accumulated at the base of basalt cliffs on the east slopes of First and Second Watchung Mountain. There has also been some gullying, seepage erosion, and downslope movement of till on steep slopes, particularly in the Watchungs where impermeable basalt at shallow depth creates perched groundwater.

## **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; the kinds of crops and native plants; and the kinds of bedrock. 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.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined where the soils are used for agriculture or forested areas. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined in areas with pavement, buildings or any other areas disturbed by human activities. Boundaries were plotted and verified at wider intervals. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.



## Detailed Soil Map Units

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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**. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, 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, Peckmantown silt loam, 0 to 8 percent slopes, extremely stony is a phase of the Peckmantown series.

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

A **complex** consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Yalesville-Boonton-Holyoke complex, 0 to 8 percent slopes, extremely stony is an example.

This survey includes **miscellaneous areas**. Such areas have little or no soil material and support little or no vegetation. Pits, quarry 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.

## **BhgA—Bigapple loamy sand, 0 to 3 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level

**Anthropogenic Feature:** Built-up areas

**Landform:** Modified landforms

### **Map Unit Composition**

**Bigapple and similar soils:** 80 percent

**Minor components:** 20 percent

### **Major Component Description**

#### **Bigapple and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A	0 to 3 inches; loamy sand
Subsoil layer:	Bw1	3 to 17 inches; gravelly sand
	Bw2	17 to 26 inches; gravelly sand
Substratum:	C1	26 to 38 inches; loamy sand
	C2	38 to 60 inches; gravelly loamy sand

#### **Component Properties and Qualities**

Drainage Class: somewhat excessively drained  
 Parent Material: sandy material derived from dredge spoils  
 Permeability: rapid  
 Available Water Capacity: very low  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: A

**Minor Components**

- Urban land, Bigapple substratum areas with pavement, buildings, or other impervious surfaces
- Loamy fill derived from fine dredge materials with less than 10 percent construction debris

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BhguA—Bigapple-Urban land, Bigapple substratum complex, 0 to 3 percent slopes**

**Map Unit Setting**

**Slope:** Nearly level

**Anthropogenic Feature:** Urban land and built-up areas

**Landform:** Modified landforms

**Map Unit Composition**

**Bigapple and similar soils:** 60 percent

**Urban land, Bigapple substratum:** 30 percent

**Minor components:** 10 percent

**Major Component Descriptions****Bigapple and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 3 inches; loamy sand  
 Subsoil layer: Bw1 3 to 17 inches; gravelly sand  
                   Bw2 17 to 26 inches; gravelly sand  
 Substratum: C1 26 to 38 inches; loamy sand  
                   C2 38 to 60 inches; gravelly loamy sand

**Component Properties and Qualities**

Drainage Class: somewhat excessively drained

Parent Material: sandy material derived from dredge spoils

Permeability: rapid

Available Water Capacity: very low

Reaction: very strongly acid to moderately acid

Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: A

### Urban land, Bigapple substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: H1 0 to 12 inches; impervious material  
 H2 12 to 26 inches; gravelly sand  
 Substratum: 2C1 26 to 38 inches; loamy sand  
 2C2 38 to 60 inches; gravelly loamy sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: rapid beneath the surface layer  
 Available Water Capacity: very low  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Minor Components

- Loamy fill derived from fine dredge material with less than 10 percent construction debris

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BoeBc—Boonton sandy loam, terminal moraine, 0 to 8 percent slopes, extremely stony

#### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Landform:** Terminal moraines  
**Surface Cover:** 3 to 15 percent basalt stones

#### Map Unit Composition

Boonton and similar soils: 80 percent  
 Minor components: 20 percent

#### Major Component Description

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: Oa 0 to 1 inches; highly decomposed plant material  
 A 1 to 2 inches; sandy loam

Subsoil layer: BE 2 to 12 inches; sandy loam  
 Bt 12 to 24 inches; sandy loam  
 Btx 24 to 42 inches; gravelly sandy loam  
 BCtx 42 to 60 inches; fine sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

#### Minor Components

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BoeCc—Boonton sandy loam, terminal moraine, 8 to 15 percent slopes, extremely stony**

#### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Terminal moraines  
**Surface Cover:** 3 to 15 percent basalt stones

#### Map Unit Composition

Boonton and similar soils: 80 percent  
 Minor components: 20 percent

#### Major Component Description

##### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: Oa 0 to 1 inches; highly decomposed plant material  
 A 1 to 2 inches; sandy loam  
 Subsoil layer: BE 2 to 12 inches; sandy loam  
 Bt 12 to 24 inches; sandy loam  
 Btx 24 to 42 inches; gravelly sandy loam  
 BCtx 42 to 60 inches; fine sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

#### Minor Components

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BoeDc—Boonton sandy loam, terminal moraine, 15 to 25 percent slopes, extremely stony**

### Map Unit Setting

**Slope:** Moderately steep to steep  
**Landscape:** Till plain  
**Landform:** Terminal moraines  
**Surface Cover:** 3 to 15 percent basalt stones

### Map Unit Composition

Boonton and similar soils: 80 percent  
 Minor components: 20 percent

### Major Component Description

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 2 inches; sandy loam
Subsoil layer:	BE 2 to 12 inches; sandy loam
	Bt 12 to 24 inches; sandy loam
	Btx 24 to 42 inches; gravelly sandy loam
	BCtx 42 to 60 inches; fine sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt

Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

#### Minor Components

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BogB—Boonton loam, 3 to 8 percent slopes

#### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

#### Map Unit Composition

Boonton and similar soils: 80 percent  
 Minor components: 20 percent

#### Major Component Description

##### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material Oa 1 to 3 inches; highly decomposed plant material A 3 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam BE 8 to 17 inches; silt loam Bt 17 to 30 inches; silt loam Btx1 30 to 40 inches; gravelly fine sandy loam Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand CBt2 58 to 72 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high

Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

#### Minor Components

- Moderately well drained Boonton soils
- Somewhat poorly drained Haledon soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BogBc—Boonton loam, 0 to 8 percent slopes, extremely stony**

#### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines  
**Surface Cover:** 3 to 15 percent basalt stones

#### Map Unit Composition

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

#### Major Component Description

##### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high

Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: C

#### Minor Components

- Moderately well drained Boonton soils
- Somewhat poorly drained Haledon soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BogC—Boonton loam, 8 to 15 percent slopes

#### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

#### Map Unit Composition

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

#### Major Component Description

##### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: C

#### Minor Components

- Moderately well drained Boonton soils
- Somewhat poorly drained Haledon soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BogCc—Boonton loam, 8 to 15 percent slopes, extremely stony**

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent basalt stones

### Map Unit Composition

Boonton and similar soils: 85 percent

Minor components: 15 percent

### Major Component Description

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to moderately acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

**Minor Components**

- Moderately well drained Boonton soils
- Somewhat poorly drained Haledon soils

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BogDc—Boonton loam, 15 to 35 percent slopes, extremely stony**

**Map Unit Setting**

**Slope:** Moderately steep to steep

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent basalt stones

**Map Unit Composition**

Boonton and similar soils: 95 percent

Minor components: 5 percent

**Major Component Descriptions****Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

**Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to moderately acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

#### Minor Components

- Moderately well drained Boonton soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BooB—Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 95 percent

Minor components: 5 percent

### Major Component Description

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone and shale

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

### Minor Components

- Moderately well drained soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BooBc—Boonton silt loam, red sandstone lowland, 0 to 8 percent slopes, extremely stony

### Map Unit Setting

**Slope:** Nearly level to gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent stones

### Map Unit Composition

Boonton and similar soils: 95 percent

Minor components: 5 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone and shale

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### Minor Components

- Moderately well drained soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## BooC—Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 95 percent

Minor components: 5 percent

### Major Component Description

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone and shale

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: C

### Minor Components

- Moderately well drained soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BooCc—Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes, extremely stony**

### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines  
**Surface Cover:** 3 to 15 percent stones

### **Map Unit Composition**

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

### **Major Component Description**

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### **Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from sandstone and shale  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to very strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: C

### **Minor Components**

- Moderately well drained soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BosB—Boonton-Udorthents, Boonton substratum complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### **Map Unit Composition**

Boonton and similar soils: 60 percent

Udorthents, Boonton substratum and similar soils: 40 percent

### **Component Descriptions**

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to moderately acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

#### **Udorthents, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	CBt1 12 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: loamy material transported by human activity

Permeability: moderately rapid  
 Available Water Capacity: high  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

#### Minor Components

- No minor components have significant differences from major components

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BotB—Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes**

#### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

#### Map Unit Composition

Boonton and similar soils: 60 percent  
 Udorthents, Boonton substratum and similar soils: 40 percent

#### Major Component Descriptions

##### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from sandstone and shale  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to very strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
Hydrologic Group: C

### Udorthents, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam  
Substratum: CB 12 to 83 inches; gravelly sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
Parent Material: loamy material transported by human activity  
Permeability: slow to moderately rapid  
Available Water Capacity: moderate  
Reaction: very strongly acid to moderately acid  
Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
Hydrologic Group: D

### Minor Components

- No minor components have significant differences from major components

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BotC—Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes**

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 60 percent  
Udorthents, Boonton substratum and similar soils: 40 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: Oi 0 to 1 inches; slightly decomposed plant material  
A 1 to 3 inches; silt loam

Subsoil layer: BE 3 to 10 inches; loam  
 Bw 10 to 27 inches; gravelly loam  
 Bx1 27 to 40 inches; gravelly fine sandy loam  
 Bx2 40 to 67 inches; gravelly fine sandy loam  
 BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from sandstone and shale  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to very strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: C

#### **Udorthents, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam  
 Substratum: CB 12 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: D

#### **Minor Components**

- No minor components have significant differences from major components

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BouB—Boonton-Urban land, Boonton substratum complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### **Map Unit Composition**

Boonton and similar soils: 50 percent

Urban land, Boonton substratum and similar soils: 40 percent

Minor components: 10 percent

### **Major Component Descriptions**

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### **Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderate to moderately rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Minor Components

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BouC—Boonton-Urban land, Boonton substratum complex, 8 to 15 percent slopes**

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 50 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: C

### Urban land and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderate to moderately rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Minor Components

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BouD—Boonton-Urban land, Boonton substratum complex, 15 to 25 percent slopes**

### **Map Unit Setting**

**Slope:** Moderately steep

**Landscape:** Till plain

**Landform:** Ground moraines

### **Map Unit Composition**

Boonton and similar soils: 60 percent

Urban land, Boonton substratum and similar soils: 30 percent

Minor components: 10 percent

### **Major Component Descriptions**

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to moderately acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderate to moderately rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Minor Components

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BowrB—Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes**

### Map Unit Setting

**Slope:** Nearly level and gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 50 percent  
 Urban land, Boonton substratum and similar soils: 40 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from sandstone and shale

Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to very strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 67 inches; gravelly loam
Substratum:	2CB 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderate beneath the surface layer  
 Available Water Capacity: high  
 Reaction: very strongly acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Boonton red sandstone lowland substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### **BowrC—Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes**

#### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

### Map Unit Composition

Boonton and similar soils: 50 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from sandstone and shale  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to very strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: C

#### Urban land, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 67 inches; gravelly loam
Substratum:	2CB 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderate beneath the surface layer  
 Available Water Capacity: high  
 Reaction: very strongly acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Minor Components

- Udorthents, Boonton red sandstone lowland substratum soils with some type of disturbance resulting from construction such as grading, and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BowtB—Boonton-Urban land, Boonton substratum complex, terminal moraine, 0 to 8 percent slopes**

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Terminal moraines

### Map Unit Composition

Boonton and similar soils: 40 percent

Urban land and similar soils: 30 percent

Minor components: 30 percent

### Major Component Descriptions

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 2 inches; sandy loam
Subsoil layer:	BE 2 to 12 inches; sandy loam
	Bt 12 to 24 inches; sandy loam
	Btx 24 to 42 inches; gravelly sandy loam
	BCtx 42 to 60 inches; fine sandy loam

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: low

Reaction: extremely acid to strongly acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: D

### Urban land and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 42 inches; sandy loam
Substratum:	2CB 42 to 60 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderately rapid beneath the surface layer

Available Water Capacity: low

Reaction: extremely acid to very strongly acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

#### Minor Components

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BowtC—Boonton-Urban land, Boonton substratum complex, terminal moraine, 8 to 15 percent slopes**

#### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Terminal moraines

#### Map Unit Composition

Boonton and similar soils: 40 percent

Urban land and similar soils: 30 percent

Minor components: 30 percent

#### Major Component Descriptions

##### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 2 inches; sandy loam

Subsoil layer:       BE 2 to 12 inches; sandy loam  
                           Bt 12 to 24 inches; sandy loam  
                           Btx 24 to 42 inches; gravelly sandy loam  
                           BCtx 42 to 60 inches; fine sandy loam

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:       H1 0 to 12 inches; impervious material  
                           H2 12 to 42 inches; sandy loam  
 Substratum:        2CB 42 to 60 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and  
                           other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderately rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: extremely acid to very strongly acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **BowtD—Boonton-Urban land, Boonton substratum complex, terminal moraine, 15 to 25 percent slopes**

### **Map Unit Setting**

**Slope:** Moderately steep to steep

**Landscape:** Till plain

**Landform:** Terminal moraines

### **Map Unit Composition**

Boonton and similar soils: 40 percent

Urban land and similar soils: 30 percent

Minor components: 30 percent

### **Major Component Descriptions**

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 2 inches; sandy loam
Subsoil layer:	BE 2 to 12 inches; sandy loam
	Bt 12 to 24 inches; sandy loam
	Btx 24 to 42 inches; gravelly sandy loam
	BCtx 42 to 60 inches; fine sandy loam

#### **Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to strongly acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 42 inches; sandy loam
Substratum:	2CB 42 to 60 inches; gravelly sandy loam

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderately rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: extremely acid to very strongly acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Minor Components

- Till soils without a fragipan
- Soils formed in sandy stratified materials

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## CatcA—Catden muck, 0 to 2 percent slopes

#### Map Unit Setting

**Slope:** Nearly level  
**Landscape:** Outwash plain  
**Landform:** Outwash plains

#### Map Unit Composition

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

#### Major Component Description

##### Catden and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa1 0 to 3 inches; muck
	Oa2 3 to 16 inches; muck
	Oa3 16 to 24 inches; muck
	Oa4 24 to 32 inches; muck
	Oa5 32 to 53 inches; muck
	Oa6 53 to 64 inches; muck
Substratum:	2Cg 64 to 72 inches; sandy loam

#### Component Properties and Qualities

Drainage Class: very poorly drained  
 Parent Material: woody organic material  
 Permeability: moderately rapid  
 Available Water Capacity: very high  
 Reaction: very strongly acid to moderately acid  
 Ponding Depth: 0 to 6 inches above surface  
 Depth to High Water Table: 0 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 5w

Hydrologic Group: B/D

#### Minor Components

- Natchaug soils formed in herbaceous organic material 16 to 51 inches thick and the underlying loamy deposits
- Timakwa soils formed in woody and herbaceous organic materials over sandy deposits

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering and Soil Properties.

## CatnA—Catden-Natchaug complex, 0 to 2 percent slopes

#### Map Unit Setting

**Slope:** Nearly level

**Landscape:** Outwash plain

**Landform:** Outwash plains

#### Map Unit Composition

Catden and similar soils: 80 percent

Natchaug and similar soils: 15 percent

Minor components: 5 percent

#### Major Component Descriptions

##### Catden and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa1	0 to 3 inches; muck
	Oa2	3 to 16 inches; muck
	Oa3	16 to 24 inches; muck
	Oa4	24 to 32 inches; muck
	Oa5	32 to 53 inches; muck
	Oa6	53 to 64 inches; muck
Substratum:	2Cg	64 to 72 inches; sandy loam

##### Component Properties and Qualities

Drainage Class: very poorly drained

Parent Material: woody organic material

Permeability: moderately rapid

Available Water Capacity: very high

Reaction: very strongly acid to moderately acid

Ponding Depth: 0 to 6 inches above surface

Depth to High Water Table: 0 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 5w  
Hydrologic Group: B/D

### **Natchaug and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa1 0 to 5 inches; muck
	Oa2 5 to 18 inches; muck
	Oa3 18 to 40 inches; muck
Substratum:	2Cg 40 to 60 inches; sandy loam

### Component Properties and Qualities

Drainage Class: very poorly drained  
Parent Material: woody organic material  
Permeability: moderately rapid  
Available Water Capacity: very high  
Reaction: strongly acid to slightly acid  
Ponding Depth: 0 to 6 inches above surface  
Depth to High Water Table: 0 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 5w  
Hydrologic Group: B/D

### **Minor Components**

- Timakwa soils formed in woody and herbaceous organic materials over sandy deposits

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **DunB—Dunellen sandy loam, 3 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Gently sloping  
**Landscape:** Outwash plain, delta plain  
**Landform:** Outwash plains

### **Map Unit Composition**

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

## Major Component Description

### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

### Minor Components

- Somewhat excessively drained Tunkhannock soils with a rock fragment content from 15 to 60 percent, by volume, in individual horizons of the B horizon and from 40 to 80 percent in the C horizon
- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## DunC—Dunellen sandy loam, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Outwash plain, delta plain  
**Landform:** Outwash plains

### Map Unit Composition

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

## Major Component Description

### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

### Minor Components

- Somewhat excessively drained Tunkhannock soils with a rock fragment content from 15 to 60 percent, by volume, in individual horizons of the B horizon and from 40 to 80 percent in the C horizon
- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## DunD—Dunellen sandy loam, 15 to 25 percent slopes

### Map Unit Setting

**Slope:** Moderately steep  
**Landscape:** Outwash plain, delta plain  
**Landform:** Outwash plains

### Map Unit Composition

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

## Major Component Descriptions

### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 4e  
 Hydrologic Group: A

### Minor Components

- Somewhat excessively drained Tunkhannock soils with a rock fragment content from 15 to 60 percent, by volume, in individual horizons of the B horizon and from 40 to 80 percent in the C horizon

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## DusB—Dunellen–Udorthents, Dunellen substratum complex, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Outwash plain  
**Landform:** Outwash plains

### Map Unit Composition

Dunellen and similar soils: 60 percent  
 Udorthents and similar soils: 40 percent

## Major Component Descriptions

### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

### Udorthents, Dunellen substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C 12 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

## Minor Components

- No minor components have significant differences from major components

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## DusC—Dunellen-Udorthents, Dunellen substratum complex, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Outwash plain

**Landform:** Outwash plains

### Map Unit Composition

Dunellen and similar soils: 60 percent

Udorthents and similar soils: 40 percent

### Major Component Descriptions

#### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy outwash derived from sandstone

Permeability: moderately rapid to rapid

Available Water Capacity: moderate

Reaction: very strongly acid to moderately acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: A

#### Udorthents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C 12 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

#### Minor Components

- No minor components have significant differences from major components

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## DuuB—Dunellen-Urban land, Dunellen substratum complex, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level and gently sloping  
**Landscape:** Outwash plain  
**Landform:** Outwash plains

### Map Unit Composition

Dunellen and similar soils: 60 percent  
 Urban land, Dunellen substratum and similar soils: 30 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid

Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

#### **Urban land, Dunellen substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; sandy loam
Substratum:	2C 31 to 42 inches; sandy loam
	3C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### **DuuC—Dunellen-Urban land, Dunellen substratum complex, 8 to 15 percent slopes**

#### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Outwash plain  
**Landform:** Outwash plains

#### **Map Unit Composition**

Dunellen and similar soils: 60 percent  
 Urban land, Dunellen substratum and similar soils: 30 percent  
 Minor components: 10 percent

## Major Component Descriptions

### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

### Urban land, Dunellen substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; sandy loam
Substratum:	2C 31 to 42 inches; sandy loam
	3C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

## Minor Components

- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **FmhAt—Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded**

### Map Unit Setting

**Slope:** Nearly level

**Landscape:** River valley

**Landform:** Flood plains

### Map Unit Composition

Fluvaquents and similar soils: 80 percent

Minor components: 20 percent

### Major Component Descriptions

#### Fluvaquents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 5 inches; loam
Subsurface layer:	A2 5 to 12 inches; silt loam
Subsoil layer:	C1 12 to 18 inches; sandy clay loam
	C2 18 to 24 inches; sandy clay loam
Substratum:	C3 24 to 60 inches; sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained  
 Parent Material: recent alluvium  
 Permeability: moderate to rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to neutral  
 Ponding Depth: 0 to 6 inches above surface  
 Depth to High Water Table: 6 to 18 inches  
 Flooding: frequent

#### Interpretative Groups

Land Capability Classification (non-irrigated): 5w  
 Hydrologic Group: B/D

### Minor Components

- Poorly drained Fluvaquents on slightly lower landforms
- Udifluvents are soils on higher landforms

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## GrpA—Great Piece loam, 0 to 3 percent slopes

### Map Unit Setting

**Slope:** Nearly level

**Landscape:** Outwash plain

**Landform:** Outwash plains

### Map Unit Composition

Great Piece and similar soils: 90 percent

Minor components: 10 percent

### Major Component Description

#### Great Piece and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 7 inches; loam
Subsoil layer:	Btg1 7 to 12 inches; sandy clay loam
	Btg2 12 to 20 inches; fine sandy loam
	Bg 20 to 29 inches; loamy fine sand
	BC 29 to 33 inches; loamy fine sand
Substratum:	Cg1 33 to 37 inches; silt loam
	Cg2 37 to 50 inches; very fine sandy loam
	Cg3 50 to 85 inches; silt loam

#### Component Properties and Qualities

Drainage Class: poorly drained

Parent Material: fine-loamy outwash derived from basalt, sandstone, and gneiss

Permeability: moderately slow to moderately rapid

Available Water Capacity: very high

Reaction: extremely acid to slightly alkaline

Ponding Depth: 0 to 4 inches above surface

Depth to High Water Table: 0 to 6 inches

Flooding: rare

#### Interpretative Groups

Land Capability Classification (non-irrigated): 5w

Hydrologic Group: C/D

### Minor Components

- Poorly drained Parsippany soils formed in silty and clayey sediments

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HanB—Haledon silt loam, 3 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Haledon and similar soils: 85 percent

Minor components: 15 percent

### Major Component Description

#### Haledon and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Ap 2 to 8 inches; silt loam
Subsoil layer:	Bt 8 to 15 inches; silt loam
	Btg 15 to 22 inches; silt loam
	2Bt1 22 to 27 inches; loam
	2Bt2 27 to 30 inches; loam
	BCtx 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 24 to 36 inches to fragipan

Depth to High Water Table: 7 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: C

### Minor Components

- Well and moderately well drained Boonton soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HanBc—Haledon silt loam, 0 to 8 percent slopes, extremely stony

### Map Unit Setting

**Slope:** Nearly level to gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent basalt stones

### Map Unit Composition

Haledon and similar soils: 85 percent

Minor components: 15 percent

### Major Component Descriptions

#### Haledon and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Ap 2 to 8 inches; silt loam
Subsoil layer:	Bt 8 to 15 inches; silt loam
	Btg 15 to 22 inches; silt loam
	2Bt1 22 to 27 inches; loam
	2Bt2 27 to 30 inches; loam
	BCtx 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 24 to 36 inches to fragipan

Depth to High Water Table: 7 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### Minor Components

- Moderately well drained Boonton soils
- Poorly drained Hasbrouck soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HanCc—Haledon silt loam, 8 to 15 percent slopes, extremely stony

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent basalt stones

### Map Unit Composition

Haledon and similar soils: 85 percent

Minor components: 15 percent

### Major Component Descriptions

#### Haledon and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Ap 2 to 8 inches; silt loam
Subsoil layer:	Bt 8 to 15 inches; silt loam
	Btg 15 to 22 inches; silt loam
	2Bt1 22 to 27 inches; loam
	2Bt2 27 to 30 inches; loam
	BCtx 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 24 to 36 inches to fragipan

Depth to High Water Table: 7 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### Minor Components

- Moderately well drained Boonton soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HasB—Haledon-Urban land, Haledon substratum complex, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Haledon and similar soils: 60 percent

Urban land, Haledon substratum and similar soils: 30 percent

Minor components: 10 percent

### Major Component Descriptions

#### Haledon and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Ap 2 to 8 inches; silt loam
Subsoil layer:	Bt 8 to 15 inches; silt loam
	Btg 15 to 22 inches; silt loam
	2Bt1 22 to 27 inches; loam
	2Bt2 27 to 30 inches; loam
	BCtx 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: coarse-loamy basal till derived from basalt

Permeability: slow to moderately rapid

Available Water Capacity: moderate

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 24 to 36 inches to fragipan

Depth to High Water Table: 7 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: C

### **Urban land, Haledon substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 30 inches; silt loam
Substratum:	2CB 30 to 60 inches; gravelly fine sandy loam

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderately rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: 7 to 48 inches

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Haledon substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **HasC—Haledon-Urban land, Haledon substratum complex, 8 to 15 percent slopes**

#### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

#### **Map Unit Composition**

Haledon and similar soils: 60 percent  
 Urban land, Haledon substratum and similar soils: 30 percent  
 Minor components: 10 percent

#### **Major Component Descriptions**

##### **Haledon and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Ap 2 to 8 inches; silt loam

Subsoil layer:       Bt 8 to 15 inches; silt loam  
                           Btg 15 to 22 inches; silt loam  
                           2Bt1 22 to 27 inches; loam  
                           2Bt2 27 to 30 inches; loam  
                           BCtx 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to slightly acid  
 Depth to Restrictive Feature: 24 to 36 inches to fragipan  
 Depth to High Water Table: 7 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: C

#### **Urban land, Haledon substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:       H1 0 to 12 inches; impervious material  
                           H2 12 to 30 inches; silt loam  
 Substratum:         2CB 30 to 60 inches; gravelly fine sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderately rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: 7 to 48 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Haledon substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **HctBc—Hasbrouck silt loam, 0 to 8 percent slopes, extremely stony**

### **Map Unit Setting**

**Slope:** Nearly level to gently sloping

**Landscape:** Till plain, outwash plain

**Landform:** Depressions

**Surface Cover:** 3 to 15 percent basalt stones

### **Map Unit Composition**

Hasbrouck and similar soils: 85 percent

Minor components: 15 percent

### **Major Component Description**

#### **Hasbrouck and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 1 inches; moderately decomposed plant material
	Oa 1 to 2 inches; highly decomposed plant material
	A1 2 to 5 inches; silt loam
	A2 5 to 10 inches; gravelly loam
Subsurface layer:	Eg 10 to 17 inches; loam
Subsoil layer:	Btg1 17 to 25 inches; loam
	Btg2 25 to 34 inches; loam
	Btx 34 to 36 inches; gravelly loam
	Btgx 36 to 39 inches; loam
	B'tx 39 to 50 inches; fine sandy loam
Substratum:	CB 50 to 60 inches; fine sandy loam

#### **Component Properties and Qualities**

**Drainage Class:** poorly drained

**Parent Material:** fine-loamy eroded and redeposited glacial material over glacial till

**Permeability:** slow to moderately rapid

**Available Water Capacity:** moderate

**Reaction:** extremely acid to neutral

**Depth to Restrictive Feature:** 16 to 34 inches to fragipan

**Ponding Depth:** 0 to 3 inches above surface

**Depth to High Water Table:** 0 to 6 inches

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 7s

**Hydrologic Group:** D

### Minor Components

- Very poorly drained Natchaug soils formed in herbaceous organic material 16 to 51 inches thick and the underlying loamy deposits
- Somewhat poorly drained Haledon soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HkrnB—Hinckley sandy loam, 3 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping

**Landscape:** Delta plain

**Landform:** Eskers

### Map Unit Composition

Hinckley and similar soils: 90 percent

Minor components: 10 percent

### Major Component Descriptions

#### Hinckley and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 4 inches; sandy loam
	Ap 4 to 10 inches; gravelly sandy loam
Subsoil layer:	Bw1 10 to 15 inches; very gravelly sandy loam
	Bw2 15 to 26 inches; extremely gravelly loamy sand
Substratum:	C 26 to 60 inches; extremely gravelly sand

#### Component Properties and Qualities

Drainage Class: excessively drained

Parent Material: sandy-skeletal soils formed in water sorted sand and gravel derived principally from granite, gneiss, basalt, and red sandstone

Permeability: moderately rapid to rapid

Available Water Capacity: low

Reaction: very strongly acid to moderately acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3s

Hydrologic Group: A

### Minor Components

- Somewhat excessively drained Knickerbocker soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HkrnC—Hinckley sandy loam, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Delta plain

**Landform:** Eskers

### Map Unit Composition

Hinckley and similar soils: 90 percent

Minor components: 10 percent

### Major Component Descriptions

#### Hinckley and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; sandy loam
Subsoil layer:	BA 2 to 5 inches; sandy loam
	Bw1 5 to 7 inches; gravelly sandy loam
	Bw2 7 to 19 inches; very gravelly loamy sand
Substratum:	C 19 to 26 inches; extremely gravelly sand
	2C 26 to 36 inches; gravelly sand
	3C 36 to 60 inches; very gravelly sand

#### Component Properties and Qualities

Drainage Class: excessively drained

Parent Material: sandy-skeletal soils formed in water sorted sand and gravel derived principally from granite, gneiss, basalt, and red sandstone

Permeability: moderately rapid to rapid

Available Water Capacity: low

Reaction: extremely acid to moderately acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3s

Hydrologic Group: A

### Minor Components

- Somewhat excessively drained Knickerbocker soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **HkruB—Hinckley-Urban land, Hinckley substratum complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Landform:** Eskers

### **Map Unit Composition**

Hinckley and similar soils: 55 percent

Urban land, Hinckley substratum and similar soils: 40 percent

Minor components: 5 percent

### **Major Component Descriptions**

#### **Hinckley and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 4 inches; sandy loam
	Ap 4 to 10 inches; gravelly sandy loam
Subsoil layer:	Bw1 10 to 15 inches; very gravelly sandy loam
	Bw2 15 to 26 inches; extremely gravelly loamy sand
Substratum:	C 26 to 60 inches; extremely gravelly sand

#### **Component Properties and Qualities**

**Drainage Class:** excessively drained

**Parent Material:** sandy-skeletal soils formed in water sorted sand and gravel derived principally from granite, gneiss, basalt, and red sandstone

**Permeability:** moderately rapid to rapid

**Available Water Capacity:** low

**Reaction:** very strongly acid to moderately acid

**Depth to High Water Table:** greater than 6 feet

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 3s

**Hydrologic Group:** A

#### **Urban land, Hinckley substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 26 inches; very gravelly sandy loam
Substratum:	2C 26 to 60 inches; extremely gravelly sand

#### **Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

**Permeability:** moderately rapid to rapid beneath the surface layer

Available Water Capacity: very low  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Minor Components

- Udorthents, Hinckley substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HkruC—Hinckley-Urban land, Hinckley substratum complex, 8 to 15 percent slopes

#### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Delta plain  
**Landform:** Eskers

#### Map Unit Composition

Hinckley and similar soils: 50 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 5 percent

#### Major Component Descriptions

##### Hinckley and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; sandy loam
Subsoil layer:	BA 2 to 5 inches; sandy loam
	Bw1 5 to 7 inches; gravelly sandy loam
	Bw2 7 to 19 inches; very gravelly loamy sand
Substratum:	C 19 to 26 inches; extremely gravelly sand
	2C 26 to 36 inches; gravelly sand
	3C 36 to 60 inches; very gravelly sand

#### Component Properties and Qualities

Drainage Class: excessively drained  
 Parent Material: sandy-skeletal soils formed in water sorted sand and gravel derived principally from granite, gneiss, basalt, and red sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3s

Hydrologic Group: A

### Urban land, Hinckley substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 19 inches; gravelly sandy loam
Substratum:	2C 19 to 26 inches; extremely gravelly sand
	3C 26 to 36 inches; gravelly sand
	4C 36 to 60 inches; very gravelly sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderately rapid to rapid beneath the surface layer

Available Water Capacity: very low

Reaction: extremely acid to moderately acid

Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Minor Components

- Udorthents, Hinckley substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HokCh—Holyoke silt loam, 0 to 15 percent slopes, very rocky

### Map Unit Setting

**Slope:** Nearly level to strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines, ridges, and hills

**Surface Cover:** 3 to 15 percent stones

### Map Unit Composition

Holyoke and similar soils: 85 percent

Minor components: 15 percent

## Major Component Descriptions

### Holyoke and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; silt loam
Subsoil layer:	Bw1 5 to 14 inches; silt loam
	Bw2 14 to 18 inches; loam
Substratum:	R 18 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy till derived from basalt  
 Permeability: moderate  
 Available Water Capacity: low  
 Reaction: extremely acid  
 Depth to Restrictive Feature: 10 to 20 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

### Minor Components

- Rock outcrop
- Moderately deep Yalesville soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HomC—Holyoke-Rock outcrop complex, 3 to 15 percent slopes

### Map Unit Setting

**Slope:** Gently sloping to strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines, ridges, and hills

### Map Unit Composition

Holyoke and similar soils: 80 percent  
 Rock outcrop and similar soils: 15 percent  
 Minor components: 5 percent

## Major Component Descriptions

### Holyoke and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	Oa 1 to 3 inches; highly decomposed plant material
	A 3 to 5 inches; silt loam
Subsoil layer:	Bw1 5 to 14 inches; silt loam
	Bw2 14 to 18 inches; loam
Substratum:	R 18 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy till derived from basalt  
 Permeability: moderate  
 Available Water Capacity: low  
 Reaction: extremely acid  
 Depth to Restrictive Feature: 10 to 20 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

### Rock outcrop and similar soils

Description is not available for this component.

### Component Properties and Qualities

Depth to Restrictive Feature: 0 inches to bedrock (lithic)

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

## Minor Components

- Moderately deep Yalesville soils

## Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## HotA—Horseneck sandy loam, 0 to 3 percent slopes

### Map Unit Setting

**Slope:** Nearly level

**Landscape:** Delta plain

**Landform:** Outwash plains (fig. 4)

### Map Unit Composition

Horseneck and similar soils: 85 percent

Minor components: 15 percent

### Major Component Description

#### Horseneck and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; sandy loam
Subsoil layer:	Bw1 2 to 14 inches; sandy loam
	Bw2 14 to 22 inches; sandy loam
	BC1 22 to 27 inches; loamy sand
	BC2 27 to 44 inches; loamy sand
Substratum:	C 44 to 60 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: moderately well drained

Parent Material: coarse-loamy outwash derived from gneiss, basalt and sandstone

Permeability: moderately rapid to rapid

Available Water Capacity: low

Reaction: very strongly acid to slightly acid

Depth to High Water Table: 18 to 40 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2w

Hydrologic Group: B

### Minor Components

- Somewhat poorly drained Pompton soils
- Well drained Knickerbocker soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.



Figure 4. Horseneck sandy loam, 0 to 3 percent slopes. Horseneck soils are nearly level to gently sloping soils on outwash plains, deltaic deposits, and in glacial lake basins.

## **HotuB—Horseneck-Urban land, Horseneck substratum complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Landform:** Outwash plains

### **Map Unit Composition**

Horseneck and similar soils: 55 percent

Urban land and similar soils: 40 percent

Minor components: 5 percent

### **Major Component Descriptions**

#### **Horseneck and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; sandy loam
Subsoil layer:	Bw1 2 to 14 inches; sandy loam
	Bw2 14 to 22 inches; sandy loam
	BC1 22 to 27 inches; loamy sand
	BC2 27 to 44 inches; loamy sand
Substratum:	C 44 to 60 inches; loamy sand

### Component Properties and Qualities

Drainage Class: moderately well drained  
 Parent Material: coarse-loamy outwash derived from gneiss, basalt and sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: 18 to 40 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 2w  
 Hydrologic Group: B

### Urban land, Horseneck substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 44 inches; sandy loam
Substratum:	2C 44 to 55 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: 18 to 48 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Minor Components

- Udorthents, Horseneck substratum soils with some type of disturbance resulting from construction such as grading, and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **KneA—Knickerbocker fine sandy loam, 0 to 3 percent slopes**

### Map Unit Setting

**Slope:** Nearly level  
**Landscape:** Lake plain, delta plain  
**Landform:** Terraces

### Map Unit Composition

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

### Major Component Description

#### Knickerbocker and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Ap 0 to 8 inches; fine sandy loam
Subsoil layer:	Bw 8 to 23 inches; fine sandy loam
	BC 23 to 34 inches; loamy fine sand
Substratum:	C1 34 to 42 inches; loamy fine sand
	C2 42 to 51 inches; loamy fine sand
	C3 51 to 60 inches; loamy fine sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: sandy outwash  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: 42 to 72 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

### Minor Components

- Moderately well drained Horseneck soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **KneB—Knickerbocker fine sandy loam, 3 to 8 percent slopes**

### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Lake plain, delta plain  
**Landform:** Terraces

### Map Unit Composition

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

### Major Component Description

#### Knickerbocker and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Ap 0 to 8 inches; fine sandy loam
Subsoil layer:	Bw 8 to 23 inches; fine sandy loam
	BC 23 to 34 inches; loamy fine sand
Substratum:	C1 34 to 42 inches; loamy fine sand
	C2 42 to 51 inches; loamy fine sand
	C3 51 to 60 inches; loamy fine sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: sandy outwash  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: 42 to 72 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

#### Minor Components

- Moderately well drained Horseneck soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## KneC—Knickerbocker fine sandy loam, 8 to 15 percent slopes

#### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Lake plain, delta plain  
**Landform:** Terraces

#### Map Unit Composition

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

### Major Component Description

#### Knickerbocker and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Ap 0 to 8 inches; fine sandy loam
Subsoil layer:	Bw 8 to 23 inches; fine sandy loam

Substratum:	BC 23 to 34 inches; loamy fine sand
	C1 34 to 42 inches; loamy fine sand
	C2 42 to 51 inches; loamy fine sand
	C3 51 to 60 inches; loamy fine sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: sandy outwash  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: 42 to 72 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

#### Minor Components

- Moderately well drained Horseneck soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **KnuB—Knickerbocker-Urban land, Knickerbocker substratum complex, 0 to 8 percent slopes**

#### Map Unit Setting

**Slope:** Nearly level and gently sloping  
**Landscape:** Lake plain  
**Landform:** Terraces

#### Map Unit Composition

Knickerbocker and similar soils: 55 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 5 percent

#### Major Component Descriptions

##### **Knickerbocker and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Ap 0 to 8 inches; fine sandy loam
Subsoil layer:	Bw 8 to 23 inches; fine sandy loam
	BC 23 to 34 inches; loamy fine sand
Substratum:	C1 34 to 42 inches; loamy fine sand
	C2 42 to 51 inches; loamy fine sand
	C3 51 to 60 inches; loamy fine sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: sandy outwash  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: 42 to 72 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

### Urban land, Knickerbocker substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 34 inches; fine sandy loam
Substratum:	2C1 34 to 42 inches; loamy fine sand
	2C2 42 to 51 inches; loamy fine sand
	2C3 51 to 60 inches; loamy fine sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: 42 to 72 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Minor Components

- Udorthents, Knickerbocker substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## NazA—Natchaug muck, 0 to 2 percent slopes

### Map Unit Setting

**Slope:** Nearly level  
**Landscape:** Outwash plain  
**Landform:** Outwash plains

### Map Unit Composition

Natchaug and similar soils: 85 percent

Minor components: 15 percent

### Major Component Descriptions

#### Natchaug and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa1 0 to 5 inches; muck
	Oa2 5 to 18 inches; muck
	Oa3 18 to 40 inches; muck
Substratum:	2Cg 40 to 60 inches; sandy loam

#### Component Properties and Qualities

Drainage Class: very poorly drained  
 Parent Material: woody organic material  
 Permeability: moderately rapid  
 Available Water Capacity: very high  
 Reaction: strongly acid to slightly acid  
 Ponding Depth: 0 to 6 inches above surface  
 Depth to High Water Table: 0 to 0 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 5w  
 Hydrologic Group: B/D

### Minor Components

- Very poorly drained Catden soils formed in woody and herbaceous organic materials
- Timakwa soils formed in woody and herbaceous organic materials over sandy deposits

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PbpAt—Parsippany silt loam, 0 to 3 percent slopes, frequently flooded**

### Map Unit Setting

**Slope:** Nearly level

**Landscape:** Outwash plain (fig. 5)

**Landform:** Lake terraces

### Map Unit Composition

Parsippany and similar soils: 90 percent

Minor components: 10 percent

## Major Component Description

### Parsippany and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi	0 to 1 inches; slightly decomposed plant material
	A1	1 to 4 inches; silt loam
	A2	4 to 7 inches; silt loam
Subsoil layer:	BAt	7 to 11 inches; silty clay loam
	Btg1	11 to 17 inches; silty clay loam
	Btg2	17 to 22 inches; silty clay
	Bt1	22 to 32 inches; silty clay
	Bt2	32 to 36 inches; silty clay
	BCg	36 to 41 inches; fine sandy loam
Substratum:	Cg1	41 to 53 inches; loamy fine sand
	Cg2	53 to 64 inches; loamy sand

### Component Properties and Qualities

Drainage Class: poorly drained  
 Parent Material: silty and clayey sediments derived from basalt, shale and granitic gneiss material  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: strongly acid to neutral  
 Ponding Depth: 0 to 4 inches above surface  
 Depth to High Water Table: 0 to 6 inches  
 Flooding: frequent



Figure 5. Parsippany silt loam, 0 to 3 percent slopes, frequently flooded. Parsippany soils are nearly level to gently sloping and generally within large basins.

## Interpretative Groups

Land Capability Classification (non-irrigated): 5w

Hydrologic Group: D

**Minor Components**

- Poorly drained Great Piece soils formed in stratified glaciolacustrine sediments

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**PecmB—Peckmantown silt loam, 3 to 8 percent slopes****Map Unit Setting**

**Slope:** Gently sloping

**Landscape:** Delta plain, till plain (fig. 6)

**Landform:** Outwash plains

**Map Unit Composition**

Peckmantown and similar soils: 90 percent

Minor components: 10 percent

**Major Component Description****Peckmantown and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam
	Ap 2 to 8 inches; loam
Subsoil layer:	BAt 8 to 14 inches; loam
	Bt 14 to 27 inches; silt loam
	Btx1 27 to 37 inches; loam
	Btx2 37 to 40 inches; silt loam
	BCtx 40 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

**Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-silty glaciolacustrine deposits derived from basalt

Permeability: slow to rapid

Available Water Capacity: high

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 20 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet



**Figure 6. Peckmantown silt loam, 3 to 8 percent slopes. Peckmantown soils are on nearly level to moderately steep slopes on deltas and lacustrine fans between the first and second Watchung Mountains in the Moggy Hollow glacial stage of Lake Passaic.**

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

#### Minor Components

- Excessively drained Hinckley soils with rock fragment content in the solum ranging from 5 to 50 percent gravel, 0 to 30 percent cobbles, and 0 to 3 percent stones; 10 to 55 percent gravel, 5 to 25 percent cobbles, and 0 to 5 percent stones in the substratum
- Well drained Boonton soils formed in glacial till

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### **PecmBc—Peckmantown silt loam, 0 to 8 percent slopes, extremely stony**

#### Map Unit Setting

**Slope:** Nearly level to gently sloping

**Landscape:** Delta plain, till plain

**Landform:** Outwash plains

**Surface Cover:** 3 to 15 percent stones

### Map Unit Composition

Peckmantown and similar soils: 90 percent

Minor components: 10 percent

### Major Component Description

#### Peckmantown and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam
	Ap 2 to 8 inches; loam
Subsoil layer:	BAt 8 to 14 inches; loam
	Bt 14 to 27 inches; silt loam
	Btx1 27 to 37 inches; loam
	Btx2 37 to 40 inches; silt loam
	BCtx 40 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-silty glaciolacustrine deposits derived from basalt

Permeability: slow to rapid

Available Water Capacity: high

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 20 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### Minor Components

- Excessively drained Hinckley soils with rock fragment content in the solum ranging from 5 to 50 percent gravel, 0 to 30 percent cobbles, and 0 to 3 percent stones; from 10 to 55 percent gravel, 5 to 25 percent cobbles, and 0 to 5 percent stones in the substratum
- Well drained Boonton soils formed in glacial till

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## PecmC—Peckmantown silt loam, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Delta plain, till plain

**Landform:** Outwash plains

### Map Unit Composition

Peckmantown and similar soils: 90 percent

Minor components: 10 percent

### Major Component Description

#### Peckmantown and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam
	Ap 2 to 8 inches; loam
Subsoil layer:	BAt 8 to 14 inches; loam
	Bt 14 to 27 inches; silt loam
	Btx1 27 to 37 inches; loam
	Btx2 37 to 40 inches; silt loam
	BCtx 40 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-silty glaciolacustrine deposits derived from basalt

Permeability: slow to rapid

Available Water Capacity: high

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 20 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e

Hydrologic Group: C

### Minor Components

- Excessively drained Hinckley soils with rock fragment content in the solum ranging from 5 to 50 percent gravel, 0 to 30 percent cobbles, and 0 to 3 percent stones; and from 10 to 55 percent gravel, 5 to 25 percent cobbles, and 0 to 5 percent stones in the substratum
- Well drained Boonton soils formed in glacial till

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PecmCc—Peckmantown silt loam, 8 to 15 percent slopes, extremely stony**

### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Delta plain, till plain  
**Landform:** Outwash plains  
**Surface Cover:** 3 to 15 percent stones

### **Map Unit Composition**

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

### **Major Component Descriptions**

#### **Peckmantown and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam Ap 2 to 8 inches; loam
Subsoil layer:	BAt 8 to 14 inches; loam Bt 14 to 27 inches; silt loam Btx1 27 to 37 inches; loam Btx2 37 to 40 inches; silt loam BCtx 40 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand 2C2 63 to 74 inches; coarse sand 2C3 74 to 88 inches; coarse sand

#### **Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: coarse-silty glaciolacustrine deposits derived from basalt  
 Permeability: slow to rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to slightly acid  
 Depth to Restrictive Feature: 20 to 40 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: C

### **Minor Components**

- Excessively drained Hinckley soils with rock fragment content in the solum ranging from 5 to 50 percent gravel, 0 to 30 percent cobbles, and 0 to 3 percent stones; from 10 to 55 percent gravel, 5 to 25 percent cobbles, and 0 to 5 percent stones in the substratum
- Well drained Boonton soils formed in glacial till

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PecuuB—Peckmantown-Urban land, Peckmantown substratum complex, 0 to 8 percent slopes**

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Landform:** Outwash plains

### Map Unit Composition

Peckmantown and similar soils: 55 percent

Urban land and similar soils: 40 percent

Minor components: 5 percent

### Major Component Descriptions

Peckmantown and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam
	Ap 2 to 8 inches; loam
Subsoil layer:	BAt 8 to 14 inches; loam
	Bt 14 to 27 inches; silt loam
	Btx1 27 to 37 inches; loam
	Btx2 37 to 40 inches; silt loam
	BCtx 40 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-silty glaciolacustrine deposits derived from basalt

Permeability: slow to rapid

Available Water Capacity: high

Reaction: extremely acid to slightly acid

Depth to Restrictive Feature: 20 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

### **Urban land, Peckmantown substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderate to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Peckmantown substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PecuuC—Peckmantown-Urban land, Peckmantown substratum complex, 8 to 15 percent slopes**

#### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Delta plain  
**Landform:** Outwash plains

#### **Map Unit Composition**

Peckmantown and similar soils: 55 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 5 percent

#### **Major Component Descriptions**

##### **Peckmantown and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 2 inches; silt loam
	Ap 2 to 8 inches; loam

Subsoil layer:      BAt 8 to 14 inches; loam  
                          Bt 14 to 27 inches; silt loam  
                          Btx1 27 to 37 inches; loam  
                          Btx2 37 to 40 inches; silt loam  
                          BCtx 40 to 59 inches; silt loam  
 Substratum:        2C1 59 to 63 inches; gravelly loamy coarse sand  
                          2C2 63 to 74 inches; coarse sand  
                          2C3 74 to 88 inches; coarse sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-silty glaciolacustrine deposits derived from basalt  
 Permeability: slow to rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to slightly acid  
 Depth to Restrictive Feature: 20 to 40 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: C

#### **Urban land, Peckmantown substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:      H1 0 to 12 inches; impervious material  
                          H2 12 to 59 inches; silt loam  
 Substratum:        2C1 59 to 63 inches; gravelly loamy coarse sand  
                          2C2 63 to 74 inches; coarse sand  
                          2C3 74 to 88 inches; coarse sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderate to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Peckmantown substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PHG—Pits, sand and gravel**

### **Map Unit Setting**

**Slope:** Not specified

**Anthropogenic Feature:** Gravel pit

**Landform:** Not specified

### **Map Unit Composition**

Pits, sand and gravel and similar soils: 100 percent

### **Major Component Description**

#### **Pits, sand and gravel and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Pits, sand and gravel generally consists of disturbed areas that result from mining activities. Description is not available for this map unit.

#### **Component Properties and Qualities**

**Drainage Class:** well drained

**Parent Material:** sandy material disturbed by human activity

**Depth to High Water Table:** greater than 6 feet

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 8s

**Hydrologic Group:** A

### **Minor Components**

- No minor components have significant differences from major components

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PohA—Pompton sandy loam, 0 to 3 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level

**Landscape:** Delta plain, outwash plain

**Landform:** Outwash plains

### Map Unit Composition

Pompton and similar soils: 80 percent

Minor components: 20 percent

### Major Component Descriptions

#### Pompton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material
	Oa 2 to 4 inches; highly decomposed plant material
	A 4 to 8 inches; sandy loam
Subsoil layer:	Bw1 8 to 15 inches; sandy loam
	Bw2 15 to 20 inches; sandy loam
	Bw3 20 to 24 inches; loamy sand
	Bw4 24 to 32 inches; sandy loam
	BC 32 to 40 inches; loamy sand
Substratum:	C1 40 to 47 inches; sand
	C2 47 to 60 inches; fine sand

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: coarse-loamy outwash derived from gneiss, sandstone and basalt

Permeability: moderately rapid to very rapid

Available Water Capacity: moderate

Reaction: very strongly acid to strongly acid

Depth to High Water Table: 6 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2w

Hydrologic Group: B/D

### Minor Components

- Moderately well drained Horseneck soils
- Poorly drained Preakness soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PokuB—Pompton-Urban land, Pompton substratum complex, 0 to 8 percent slopes**

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Landform:** Outwash plains

### Map Unit Composition

Pompton and similar soils: 55 percent  
 Urban land and similar soils: 40 percent  
 Minor components: 5 percent

### Major Component Descriptions

#### Pompton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oe 0 to 2 inches; moderately decomposed plant material Oa 2 to 4 inches; highly decomposed plant material A 4 to 8 inches; sandy loam
Subsoil layer:	Bw1 8 to 15 inches; sandy loam Bw2 15 to 20 inches; sandy loam Bw3 20 to 24 inches; loamy sand Bw4 24 to 32 inches; sandy loam BC 32 to 40 inches; loamy sand
Substratum:	C1 40 to 47 inches; sand C2 47 to 60 inches; fine sand

#### Component Properties and Qualities

Drainage Class: somewhat poorly drained  
 Parent Material: coarse-loamy outwash derived from gneiss, sandstone and basalt  
 Permeability: moderately rapid to very rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to strongly acid  
 Depth to High Water Table: 6 to 18 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2w  
 Hydrologic Group: B/D

#### Urban land, Pompton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material H2 12 to 40 inches; sandy loam
Substratum:	2C1 40 to 47 inches; sand 2C2 47 to 60 inches; fine sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to very rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: very strongly acid to strongly acid  
 Depth to High Water Table: 6 to 48 inches

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

#### Minor Components

- Udorthents, Pompton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **PrgA—Preakness muck, very poorly drained, 0 to 3 percent slopes**

### Map Unit Setting

**Slope:** Nearly level

**Landscape:** Outwash plain

**Landform:** Outwash plains

### Map Unit Composition

Preakness and similar soils: 90 percent

Minor components: 10 percent

### Major Component Description

#### Preakness and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa1	0 to 6 inches; muck
	Oa2	6 to 13 inches; muck
	A	13 to 15 inches; sandy loam
Subsoil layer:	Bg1	15 to 24 inches; sandy loam
	Bg2	24 to 32 inches; sandy loam
	BCg1	32 to 39 inches; loamy sand
	BCg2	39 to 43 inches; loamy sand
Substratum:	Cg	43 to 70 inches; sand
	C	70 to 72 inches; sand

#### Component Properties and Qualities

Drainage Class: very poorly drained

Parent Material: coarse-loamy outwash derived from granite and some basalt

Permeability: moderately rapid to very rapid

Available Water Capacity: very high

Reaction: strongly acid to moderately acid

Ponding Depth: 0 to 5 inches above surface

Depth to High Water Table: 0 inches

## Interpretative Groups

Land Capability Classification (non-irrigated): 5w

Hydrologic Group: D

**Minor Components**

- Poorly drained Preakness soils

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**PrkA—Preakness sandy loam, 0 to 3 percent slopes****Map Unit Setting**

**Slope:** Nearly level

**Landscape:** Delta plain, outwash plain

**Landform:** Outwash plains

**Map Unit Composition**

Preakness and similar soils: 90 percent

Minor components: 10 percent

**Major Component Descriptions****Preakness and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 9 inches; sandy loam
Subsoil layer:	Bg1 9 to 11 inches; sandy loam
	Bg2 11 to 24 inches; sandy loam
	BCg1 24 to 28 inches; loamy sand
	BCg2 28 to 33 inches; loamy sand
Substratum:	Cg 33 to 55 inches; sand
	C 55 to 60 inches; sand

**Component Properties and Qualities**

Drainage Class: poorly drained

Parent Material: coarse-loamy outwash derived from granite and some basalt

Permeability: moderately rapid to very rapid

Available Water Capacity: moderate

Reaction: very strongly acid to moderately acid

Depth to High Water Table: 0 to 6 inches

## Interpretative Groups

Land Capability Classification (non-irrigated): 4w

Hydrologic Group: B/D

### Minor Components

- Somewhat poorly drained Pompton soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## QY—Pits, quarry

### Map Unit Setting

**Slope:** Not specified

**Anthropogenic Feature:** Quarry

**Landform:** Not specified

### Map Unit Composition

Pits, quarry and similar soils: 100 percent

### Major Component Description

#### Pits, quarry and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Pits, quarry generally consists of disturbed areas that result from mining activities. Description is not available for this map unit.

#### Component Properties and Qualities

Depth to Restrictive Feature: 0 inches to bedrock (lithic)

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Minor Components

- No minor components have significant differences from major components

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## RkkcA—Rikers loamy sand, 0 to 3 percent slopes

### Map Unit Setting

**Slope:** Nearly level

**Anthropogenic Feature:** Urban land, built-up areas

**Landform:** Modified landforms (fig. 7)



**Figure 7. Rikers loamy sand, 0 to 3 percent slopes. Rikers soils are on nearly level to steep artificially created landforms in coal ash piles, in railroad yards, and fill areas. These soils formed in a mixture of coal slag, unburned coal fragments, and large pieces of coal used as railroad ballast.**

### **Map Unit Composition**

Rikers and similar soils: 90 percent

Minor components: 10 percent

### **Major Component Description**

#### **Rikers and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 6 inches; loamy sand
Substratum:	C1 6 to 11 inches; gravelly sand
	C2 11 to 20 inches; extremely gravelly sand
	C3 20 to 71 inches; extremely gravelly sand

#### **Component Properties and Qualities**

Drainage Class: somewhat excessively drained  
 Parent Material: sandy-skeletal material derived from coal ash  
 Permeability: rapid  
 Available Water Capacity: low  
 Reaction: slightly acid to neutral  
 Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: A

### **Minor Components**

- Urban land, Rikers substratum areas with pavement, buildings or other impervious surface
- Loamy fill derived from fine dredge material with less than 10 percent construction debris

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **RNAAC—Rock outcrop**

### **Map Unit Setting**

**Slope:** Not specified

**Landform:** Ridges (fig. 8)

### **Map Unit Composition**

Rock outcrop and similar soils: 100 percent

### **Major Component Description**

#### **Rock outcrop and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Rock outcrop generally consists of bedrock exposed at the surface. Description is not available for this map unit.

#### **Component Properties and Qualities**

Depth to Restrictive Feature: 0 inches to bedrock (lithic)

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### **Minor Components**

- No minor components have significant differences from major components

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.



Figure 8. Rock outcrop.

## **RoeBc—Rockaway loam, 0 to 8 percent slopes, extremely stony**

### **Map Unit Setting**

**Slope:** Nearly level to gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent stones

### **Map Unit Composition**

Rockaway and similar soils: 85 percent

Minor components: 15 percent

### **Major Component Description**

#### **Rockaway and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 2 inches; loam
	A2 2 to 4 inches; loam
Subsoil layer:	BA 4 to 8 inches; loam
	BE 8 to 15 inches; sandy loam
	Bt 15 to 24 inches; sandy loam
	Btx1 24 to 31 inches; sandy loam
	Btx2 31 to 36 inches; sandy loam
	Btx3 36 to 60 inches; sandy loam

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from gneiss

Permeability: slow to moderately rapid

Available Water Capacity: low

Reaction: very strongly acid to strongly acid

Depth to Restrictive Feature: 18 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### **Minor Components**

- Moderately well drained Rockaway soils
- Somewhat poorly drained Hibernia soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **RoeCc—Rockaway loam, 8 to 15 percent slopes, extremely stony**

### **Map Unit Setting**

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent stones

### **Map Unit Composition**

Rockaway and similar soils: 85 percent

Minor components: 15 percent

### **Major Component Description**

#### **Rockaway and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 2 inches; loam
	A2 2 to 4 inches; loam
Subsoil layer:	BA 4 to 8 inches; loam
	BE 8 to 15 inches; sandy loam
	Bt 15 to 24 inches; sandy loam
	Btx1 24 to 31 inches; sandy loam
	Btx2 31 to 36 inches; sandy loam
	Btx3 36 to 60 inches; sandy loam

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from gneiss

Permeability: slow to moderately rapid

Available Water Capacity: low

Reaction: very strongly acid to strongly acid

Depth to Restrictive Feature: 18 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: C

### **Minor Components**

- Moderately well drained Rockaway soils
- Somewhat poorly drained Hibernia soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **RonB—Rockaway-Urban land, Rockaway substratum complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### **Map Unit Composition**

Rockaway and similar soils: 55 percent

Urban land and similar soils: 40 percent

Minor components: 5 percent

### **Major Component Descriptions**

#### **Rockaway and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 2 inches; loam
	A2 2 to 4 inches; loam
Subsoil layer:	BA 4 to 8 inches; loam
	BE 8 to 15 inches; sandy loam
	Bt 15 to 24 inches; sandy loam
	Btx1 24 to 31 inches; sandy loam
	Btx2 31 to 36 inches; sandy loam
	Btx3 36 to 60 inches; sandy loam

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from gneiss

Permeability: slow to moderately rapid

Available Water Capacity: low

Reaction: very strongly acid to strongly acid

Depth to Restrictive Feature: 18 to 40 inches to fragipan

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

#### **Urban land, Rockaway substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 36 inches; sandy loam
Substratum:	2C 36 to 60 inches; sandy loam

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderately rapid beneath the surface layer

Available Water Capacity: low

Reaction: very strongly acid to strongly acid

Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

#### Minor Components

- Udorthents, Rockaway substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## RonC—Rockaway-Urban land, Rockaway substratum complex, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Rockaway and similar soils: 55 percent

Urban land and similar soils: 40 percent

Minor components: 5 percent

### Major Component Descriptions

#### Rockaway and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 2 inches; loam
	A2 2 to 4 inches; loam
Subsoil layer:	BA 4 to 8 inches; loam
	BE 8 to 15 inches; sandy loam
	Bt 15 to 24 inches; sandy loam
	Btx1 24 to 31 inches; sandy loam
	Btx2 31 to 36 inches; sandy loam
	Btx3 36 to 60 inches; sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from gneiss  
 Permeability: slow to moderately rapid  
 Available Water Capacity: low  
 Reaction: very strongly acid to strongly acid  
 Depth to Restrictive Feature: 18 to 40 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

### Urban land, Rockaway substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 36 inches; sandy loam
Substratum:	2C 36 to 48 inches; sandy loam

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: slow to moderately rapid beneath the surface layer  
 Available Water Capacity: low  
 Reaction: very strongly acid to strongly acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Minor Components

- Udorthents, Rockaway substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## TunkB—Tunkhannock fine sandy loam, 3 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Delta plain, outwash plain  
**Landform:** Deltas, kames, and outwash terraces

### Map Unit Composition

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

### Major Component Description

#### Tunkhannock and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 3 inches; fine sandy loam
	A2 3 to 7 inches; gravelly fine sandy loam
Subsoil layer:	Bw1 7 to 18 inches; very gravelly fine sandy loam
	Bw2 18 to 28 inches; very gravelly fine sandy loam
Substratum:	CB 28 to 60 inches; extremely gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss  
 Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

### Minor Components

- Well drained Dunellen soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## TunkC—Tunkhannock fine sandy loam, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Delta plain, outwash plain  
**Landform:** Deltas, kames, and outwash terraces

### Map Unit Composition

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

### Major Component Description

#### Tunkhannock and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 3 inches; fine sandy loam
	A2 3 to 7 inches; gravelly fine sandy loam
Subsoil layer:	Bw1 7 to 18 inches; very gravelly fine sandy loam
	Bw2 18 to 28 inches; very gravelly fine sandy loam
Substratum:	CB 28 to 60 inches; extremely gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss  
 Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

#### Minor Components

- Well drained Dunellen soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## TunkD—Tunkhannock fine sandy loam, 15 to 25 percent slopes

#### Map Unit Setting

**Slope:** Moderately steep  
**Landscape:** Delta plain, outwash plain  
**Landform:** Deltas, kames, and outwash terraces

#### Map Unit Composition

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

### Major Component Description

#### Tunkhannock and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 3 inches; fine sandy loam
	A2 3 to 7 inches; gravelly fine sandy loam

Subsoil layer: Bw1 7 to 18 inches; very gravelly fine sandy loam  
 Bw2 18 to 28 inches; very gravelly fine sandy loam  
 Substratum: CB 28 to 60 inches; extremely gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss  
 Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 4e  
 Hydrologic Group: A

#### Minor Components

- Well drained Dunellen soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## TunkE—Tunkhannock fine sandy loam, 25 to 60 percent slopes

#### Map Unit Setting

**Slope:** Steep to very steep  
**Landscape:** Delta plain, outwash plain  
**Landform:** Deltas, kames, and outwash terraces

#### Map Unit Composition

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

#### Major Component Description

##### Tunkhannock and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A1 0 to 3 inches; fine sandy loam  
 A2 3 to 7 inches; gravelly fine sandy loam  
 Subsoil layer: Bw1 7 to 18 inches; very gravelly fine sandy loam  
 Bw2 18 to 28 inches; very gravelly fine sandy loam  
 Substratum: CB 28 to 60 inches; extremely gravelly fine sandy loam

### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss  
 Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 6e  
 Hydrologic Group: A

#### Minor Components

- Well drained Dunellen soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **TunudB—Tunkhannock—Udorthents, Tunkhannock substratum complex, 0 to 8 percent slopes**

### Map Unit Setting

**Slope:** Gently sloping  
**Landscape:** Delta plain, outwash plain  
**Landform:** Deltas, kames, and outwash terraces

### Map Unit Composition

Tunkhannock and similar soils: 60 percent  
 Udorthents and similar soils: 40 percent

### Major Component Descriptions

#### Tunkhannock and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 3 inches; fine sandy loam
	A2 3 to 7 inches; gravelly fine sandy loam
Subsoil layer:	Bw1 7 to 18 inches; very gravelly fine sandy loam
	Bw2 18 to 28 inches; very gravelly fine sandy loam
Substratum:	CB 28 to 60 inches; extremely gravelly fine sandy loam

### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss

Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2s  
 Hydrologic Group: A

#### **Udorthents, Tunkhannock substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam  
 Substratum: CB 12 to 60 inches; extremely gravelly fine sandy loam

#### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid  
 Available Water Capacity: very low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

#### **Minor Components**

- No minor components have significant differences from major components

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### **UcdAt—Udifluents, 0 to 3 percent slopes, frequently flooded**

#### **Map Unit Setting**

**Slope:** Nearly level  
**Landscape:** Alluvial plain  
**Landform:** Flood plains

#### **Map Unit Composition**

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

## Major Component Descriptions

### Udfluvents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 3 inches; loamy sand
Substratum:	C1 3 to 16 inches; loamy sand
	C2 16 to 22 inches; sandy loam
	C3 22 to 27 inches; sandy loam
	C4 27 to 32 inches; sandy loam
	C5 32 to 60 inches; stratified loamy sand

### Component Properties and Qualities

Drainage Class: moderately well drained  
 Parent Material: recent alluvium  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: low  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: 18 to 42 inches  
 Flooding: frequent

### Interpretative Groups

Land Capability Classification (non-irrigated): 2w  
 Hydrologic Group: A/D

### Minor Components

- Poorly and somewhat poorly drained Fluvaquents

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## UdbonB—Udorthents, Boonton substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Anthropogenic Feature:** Leveled land  
**Landform:** Ground moraines

### Map Unit Composition

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

### Major Component Descriptions

#### Udorthents, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam  
 Substratum: CBt1 12 to 58 inches; loamy sand  
 CBt2 58 to 72 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid  
 Available Water Capacity: high  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

#### Minor Components

- Well drained Boonton soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### UdbooB—Udorthents, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland

#### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Anthropogenic Feature:** Leveled land  
**Landform:** Ground moraines

#### Map Unit Composition

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

#### Major Component Description

#### Udorthents, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam  
 Substratum: CB 12 to 83 inches; gravelly sandy loam

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: D

#### Minor Components

- Well drained Boonton red sandstone lowland soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## UddunB—Udorthents, Dunellen substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Outwash plain  
**Anthropogenic Feature:** Leveled land  
**Landform:** Outwash plains

### Map Unit Composition

Udorthents, Dunellen substratum and similar soils: 95 percent  
 Minor components: 5 percent

### Major Component Descriptions

#### Udorthents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C 12 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: A

**Minor Components**

- Well drained Dunellen soils

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**UdhalB—Udorthents, Haledon substratum, 0 to 8 percent slopes****Map Unit Setting**

**Slope:** Nearly level to gently sloping

**Landscape:** Till plain

**Anthropogenic Feature:** Levelled land

**Landform:** Ground moraines

**Map Unit Composition**

Udorthents, Haledon substratum and similar soils: 90 percent

Minor components: 10 percent

**Major Component Descriptions****Udorthents, Haledon substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: A 0 to 12 inches; loam

Substratum: CB 12 to 60 inches; gravelly fine sandy loam

## Component Properties and Qualities

Drainage Class: somewhat poorly drained

Parent Material: loamy material transported by human activity

Permeability: slow to moderately rapid

Available Water Capacity: low

Reaction: very strongly acid to slightly acid

Depth to High Water Table: 7 to 18 inches

## Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

**Minor Components**

- Somewhat poorly drained Haledon soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## UdhorB—Udorthents, Horseneck substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level to gently sloping

**Landscape:** Delta plain

**Anthropogenic Feature:** Leveled land

**Landform:** Outwash plains

### Map Unit Composition

Udorthents, Horseneck substratum and similar soils: 95 percent

Minor components: 5 percent

### Major Component Descriptions

#### Udorthents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C 12 to 60 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: moderately well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: 18 to 40 inches

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

### Minor Components

- Moderately well drained Horseneck soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **UdkttB—Udorthents, loamy fill substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level to gently sloping  
**Landscape:** Upland, outwash plain  
**Anthropogenic Feature:** Leveled land  
**Landform:** Lake terraces

### **Map Unit Composition**

Udorthents, loamy fill substratum and similar soils: 85 percent  
 Minor components: 15 percent

### **Major Component Description**

#### **Udorthents, loamy fill substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C 12 to 60 inches; silty clay

#### **Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: loamy material transported by human activity  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: 48 to 122 inches

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

### **Minor Components**

- Poorly drained Parsippany soils
- Loamy fill material

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **UdpecB—Udorthents, Peckmantown substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level to gently sloping  
**Landscape:** Delta plain

**Anthropogenic Feature:** Leveled land

**Landform:** Outwash plains

### Map Unit Composition

Udorthents, Peckmantown substratum and similar soils: 95 percent

Minor components: 5 percent

### Major Component Description

#### Udorthents, Peckmantown substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	2C1 12 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: loamy material transported by human activity

Permeability: moderately rapid to rapid

Available Water Capacity: low

Reaction: very strongly acid to moderately acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: A

### Minor Components

- Well drained Peckmantown soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## UdrkkB—Udorthents, Rikers substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level to gently sloping

**Anthropogenic Feature:** Leveled land

**Landform:** Tidal flats

### Map Unit Composition

Udorthents, Rikers substratum and similar soils: 95 percent

Minor components: 5 percent

### Major Component Description

#### Udorthents and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	C1 12 to 20 inches; extremely gravelly sand
	C2 20 to 71 inches; extremely gravelly sand

#### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: low  
 Reaction: very strongly acid to slightly acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

### Minor Components

- Well drained Rikers soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## UdtunB—Udorthents, Tunkhannock substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Delta plain, outwash plain  
**Anthropogenic Feature:** Leveled land  
**Landform:** Eskers

### Map Unit Composition

Udorthents, Tunkhannock substratum and similar soils: 90 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Udorthents, Tunkhannock substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 12 inches; loam
Substratum:	CB 12 to 60 inches; extremely gravelly fine sandy loam

### Component Properties and Qualities

Drainage Class: somewhat excessively drained  
 Parent Material: loamy material transported by human activity  
 Permeability: moderately rapid  
 Available Water Capacity: low  
 Reaction: extremely acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: A

#### Minor Components

- Somewhat excessively drained Tunkhannock soils

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## URBHGB—Urban land, Bigapple substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level and gently sloping  
**Anthropogenic Feature:** Urban land  
**Landform:** Tidal flats

### Map Unit Composition

Urban land, Bigapple substratum and similar soils: 90 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Urban land and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 26 inches; gravelly sand
Substratum:	2C1 26 to 38 inches; loamy sand
	2C2 38 to 60 inches; gravelly loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: rapid beneath the surface layer  
 Available Water Capacity: very low  
 Reaction: strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

**Minor Components**

- Well drained Bigapple soils derived from clean sandy dredge material
- Loamy fill derived from fine dredge material with less than 10 percent construction debris

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**URBONB—Urban land, Boonton substratum, 0 to 8 percent slopes****Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Anthropogenic Feature:** Urban land

**Landform:** Ground moraines

**Map Unit Composition**

Urban land, Boonton substratum and similar soils: 90 percent

Minor components: 10 percent

**Major Component Descriptions****Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

**Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

**Permeability:** moderate to moderately rapid beneath the surface layer

**Available Water Capacity:** moderate

**Reaction:** very strongly acid to moderately acid

**Depth to High Water Table:** greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Minor Components

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Well drained Boonton soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## URBOOB—Urban land, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Anthropogenic Feature:** Urban land

**Landform:** Ground moraines

### Map Unit Composition

Urban land, Boonton substratum and similar soils: 90 percent

Minor components: 10 percent

### Major Component Descriptions

#### Urban land, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 67 inches; gravelly loam
Substratum:	2CB 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderate beneath the surface layer

Available Water Capacity: high

Reaction: very strongly acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Minor Components

- Udorthents, Boonton red sandstone lowland substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Well drained Boonton red sandstone lowland soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## URDUNB—Urban land, Dunellen substratum, 0 to 8 percent slopes

### Map Unit Setting

**Slope:** Nearly level and gently sloping

**Landscape:** Outwash plain

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### Map Unit Composition

Urban land, Dunellen substratum and similar soils: 90 percent

Minor components: 10 percent

### Major Component Description

#### Urban land, Dunellen substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; sandy loam
Substratum:	2C 31 to 42 inches; sandy loam
	3C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderately rapid to rapid beneath the surface layer

Available Water Capacity: moderate

Reaction: very strongly acid to moderately acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Minor Components

- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Well drained Dunellen soils

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **URHORB—Urban land, Horseneck substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### **Map Unit Composition**

Urban land, Horseneck substratum and similar soils: 90 percent

Minor components: 10 percent

### **Major Component Description**

#### **Urban land, Horseneck substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 44 inches; sandy loam
Substratum:	2C 44 to 60 inches; loamy sand

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderately rapid to rapid beneath the surface layer

Available Water Capacity: low

Reaction: very strongly acid to slightly acid

Depth to High Water Table: 18 to 40 inches

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### **Minor Components**

- Udorthents, Horseneck substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Moderately well drained Horseneck soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **URKNKB—Urban land, Knickerbocker substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### **Map Unit Composition**

Urban land, Knickerbocker substratum and similar soils: 90 percent

Minor components: 10 percent

### **Major Component Description**

#### **Urban land, Knickerbocker substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 34 inches; fine sandy loam
Substratum:	2C1 34 to 42 inches; loamy fine sand
	2C2 42 to 51 inches; loamy fine sand
	2C3 51 to 60 inches; loamy fine sand

#### **Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures

**Permeability:** moderately rapid to rapid beneath the surface layer

**Available Water Capacity:** low

**Reaction:** strongly acid to moderately acid

**Depth to High Water Table:** 42 to 72 inches

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 8s

**Hydrologic Group:** D

### **Minor Components**

- Udorthents, Knickerbocker substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Somewhat excessively drained Knickerbocker soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **URKTTB—Urban land, loamy fill substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Upland

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### **Map Unit Composition**

Urban land, loamy fill substratum and similar soils: 85 percent

Minor components: 15 percent

### **Major Component Description**

#### **Urban land, loamy fill substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1	0 to 12 inches; impervious material
	H2	12 to 41 inches; clay loam
Substratum:	2C	41 to 60 inches; silty clay

#### **Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

**Permeability:** slow to moderate beneath the surface layer

**Available Water Capacity:** moderate

**Reaction:** extremely acid to strongly acid

**Depth to High Water Table:** 48 to 122 inches

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 8s

**Hydrologic Group:** D

### **Minor Components**

- Udorthents, organic substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Loamy fill material
- Very poorly drained Catden soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **URPECB—Urban land, Peckmantown substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### **Map Unit Composition**

Urban land, Peckmantown substratum and similar soils: 90 percent

Minor components: 10 percent

### **Major Component Description**

#### **Urban land and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 59 inches; silt loam
Substratum:	2C1 59 to 63 inches; gravelly loamy coarse sand
	2C2 63 to 74 inches; coarse sand
	2C3 74 to 88 inches; coarse sand

#### **Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

**Permeability:** moderate to rapid beneath the surface layer

**Available Water Capacity:** moderate

**Reaction:** strongly acid to moderately acid

**Depth to High Water Table:** greater than 6 feet

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 8s

**Hydrologic Group:** D

### **Minor Components**

- Udorthents, Peckmantown substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material.
- Well drained Peckmantown soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **URPOMB—Urban land, Pompton substratum, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Delta plain

**Anthropogenic Feature:** Urban land

**Landform:** Outwash plains

### **Map Unit Composition**

Urban land, Pompton substratum and similar soils: 90 percent

Minor components: 10 percent

### **Major Component Descriptions**

#### **Urban land, Pompton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 40 inches; sandy loam
Substratum:	2C1 40 to 47 inches; sand
	2C2 47 to 53 inches; fine sand

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderately rapid to very rapid beneath the surface layer

Available Water Capacity: low

Reaction: very strongly acid to strongly acid

Depth to High Water Table: 6 to 48 inches

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### **Minor Components**

- Udorthents, Pompton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material
- Somewhat poorly drained Pompton soils

### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **USBONB—Urban land, Boonton substratum-Boonton complex, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Anthropogenic Feature:** Urban land

**Landform:** Ground moraines

### **Map Unit Composition**

Urban land, Boonton substratum and similar soils: 60 percent

Boonton and similar soils: 30 percent

Minor components: 10 percent

### **Major Component Descriptions**

#### **Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

#### **Component Properties and Qualities**

**Parent Material:** surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

**Permeability:** moderate to moderately rapid beneath the surface layer

**Available Water Capacity:** moderate

**Reaction:** very strongly acid to moderately acid

**Depth to High Water Table:** greater than 6 feet

#### **Interpretative Groups**

**Land Capability Classification (non-irrigated):** 8s

**Hydrologic Group:** D

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

#### Minor Components

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **USBONC—Urban land, Boonton substratum-Boonton complex, 8 to 15 percent slopes**

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Anthropogenic Feature:** Urban land  
**Landform:** Ground moraines

### Map Unit Composition

Urban land, Boonton substratum and similar soils: 60 percent  
 Boonton and similar soils: 30 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Urban land, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 47 inches; silt loam
Substratum:	2CBt1 47 to 58 inches; loamy sand
	2CBt2 58 to 72 inches; loamy sand

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderate to moderately rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 5 inches; loam
Subsoil layer:	BA 5 to 8 inches; silt loam
	BE 8 to 17 inches; silt loam
	Bt 17 to 30 inches; silt loam
	Btx1 30 to 40 inches; gravelly fine sandy loam
	Btx2 40 to 47 inches; fine sandy loam
Substratum:	CBt1 47 to 58 inches; loamy sand
	CBt2 58 to 72 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: moderate  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: C

#### **Minor Components**

- Udorthents, Boonton substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **USBOOB—Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 0 to 8 percent slopes**

#### **Map Unit Setting**

**Slope:** Nearly level and gently sloping  
**Landscape:** Till plain

**Anthropogenic Feature:** Urban land

**Landform:** Ground moraines

### Map Unit Composition

Urban land, Boonton substratum and similar soils: 60 percent

Boonton and similar soils: 30 percent

Minor components: 10 percent

### Major Component Descriptions

#### Urban land, Boonton substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 67 inches; gravelly loam
Substratum:	2CB 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderate beneath the surface layer

Available Water Capacity: high

Reaction: very strongly acid

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

#### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone and shale

Permeability: slow to moderately rapid

Available Water Capacity: high

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 36 inches to fragipan

Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: C

**Minor Components**

- Udorthents, Boonton red sandstone lowland substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **USBOOC—Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 8 to 15 percent slopes**

**Map Unit Setting**

**Slope:** Strongly sloping

**Landscape:** Till plain

**Anthropogenic Feature:** Urban land

**Landform:** Ground moraines

**Map Unit Composition**

Urban land, Boonton substratum and similar soils: 60 percent

Boonton and similar soils: 30 percent

Minor components: 10 percent

**Major Component Descriptions****Urban land, Boonton substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 67 inches; gravelly loam
Substratum:	2CB 67 to 83 inches; gravelly sandy loam

**Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: slow to moderate beneath the surface layer

Available Water Capacity: high

Reaction: very strongly acid

Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

### Boonton and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material
	A 1 to 3 inches; silt loam
Subsoil layer:	BE 3 to 10 inches; loam
	Bw 10 to 27 inches; gravelly loam
	Bx1 27 to 40 inches; gravelly fine sandy loam
	Bx2 40 to 67 inches; gravelly fine sandy loam
	BCx 67 to 83 inches; gravelly sandy loam

### Component Properties and Qualities

Drainage Class:	well drained
Parent Material:	coarse-loamy till derived from sandstone and shale
Permeability:	slow to moderately rapid
Available Water Capacity:	high
Reaction:	extremely acid to very strongly acid
Depth to Restrictive Feature:	20 to 36 inches to fragipan
Depth to High Water Table:	greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated):	2e
Hydrologic Group:	C

### Minor Components

- Udorthents, Boonton red sandstone lowland substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## USDUNB—Urban land, Dunellen substratum-Dunellen complex, 0 to 8 percent slopes

### Map Unit Setting

<b>Slope:</b>	Nearly level and gently sloping
<b>Landscape:</b>	Outwash plain
<b>Anthropogenic Feature:</b>	Urban land
<b>Landform:</b>	Outwash plains

### Map Unit Composition

Urban land, Dunellen substratum and similar soils:	60 percent
Dunellen and similar soils:	30 percent
Minor components:	10 percent

### Major Component Descriptions

#### Urban land, Dunellen substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; sandy loam
Substratum:	2C 31 to 42 inches; sandy loam
	3C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam
Substratum:	C 31 to 42 inches; sandy loam
	2C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy outwash derived from sandstone  
 Permeability: moderately rapid to rapid  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: A

### Minor Components

- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## USDUNC—Urban land, Dunellen substratum-Dunellen complex, 8 to 15 percent slopes

### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Outwash plain  
**Anthropogenic Feature:** Urban land  
**Landform:** Outwash plains

### Map Unit Composition

Urban land, Dunellen substratum and similar soils: 60 percent  
 Dunellen and similar soils: 30 percent  
 Minor components: 10 percent

### Major Component Descriptions

#### Urban land, Dunellen substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; sandy loam
Substratum:	2C 31 to 42 inches; sandy loam
	3C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid to rapid beneath the surface layer  
 Available Water Capacity: moderate  
 Reaction: very strongly acid to moderately acid  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### Dunellen and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A1 0 to 8 inches; sandy loam
	A2 8 to 14 inches; sandy loam
Subsoil layer:	BA 14 to 20 inches; sandy loam
	Bt 20 to 31 inches; sandy loam

Substratum: C 31 to 42 inches; sandy loam  
2C 42 to 70 inches; loamy sand

#### Component Properties and Qualities

Drainage Class: well drained  
Parent Material: coarse-loamy outwash derived from sandstone  
Permeability: moderately rapid to rapid  
Available Water Capacity: moderate  
Reaction: very strongly acid to moderately acid  
Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
Hydrologic Group: A

#### Minor Components

- Udorthents, Dunellen substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **USYRRB—Urban land, Yalesville substratum-Yalesville-Rock outcrop complex, 0 to 8 percent slopes**

#### Map Unit Setting

**Slope:** Nearly level and gently sloping  
**Landscape:** Till plain  
**Anthropogenic Feature:** Urban land  
**Landform:** Ground moraines

#### Map Unit Composition

Urban land, Yalesville substratum and similar soils: 50 percent  
Yalesville and similar soils: 30 percent  
Rock outcrop and similar soils: 15 percent  
Minor components: 5 percent

#### Major Component Descriptions

##### **Urban land, Yalesville substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer: H1 0 to 12 inches; impervious material  
H2 12 to 31 inches; fine sandy loam  
Subsoil layer: 2BC 31 to 32 inches; fine sandy loam  
Substratum: 2R 32 inches; bedrock

### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid beneath the surface layer  
 Available Water Capacity: very low  
 Reaction: strongly acid  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

### Rock outcrop and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Rock outcrop generally consists of bedrock exposed at the surface. Description is not available for this map unit.

### Component Properties and Qualities

Depth to Restrictive Feature: 0 inches to bedrock (lithic)

## Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

**Minor Components**

- Udorthents, Yalesville substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **WaakAt—Walkkill mucky silt loam, 0 to 3 percent slopes, frequently flooded**

**Map Unit Setting**

**Slope:** Nearly level

**Landscape:** Alluvial plain

**Landform:** Flood plains

**Map Unit Composition**

Walkkill and similar soils: 90 percent

Minor components: 10 percent

**Major Component Description****Walkkill and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 4 inches; mucky silt loam
Subsoil layer:	Bg 4 to 10 inches; silt loam
Bottom layer:	Ab 10 to 18 inches; clay loam
	2Oa1 18 to 31 inches; muck
	2Oa2 31 to 50 inches; muck
	2Oa3 50 to 63 inches; muck
Substratum:	3Cg 63 to 70 inches; sand

**Component Properties and Qualities**

Drainage Class: very poorly drained

Parent Material: alluvium over organic material

Permeability: moderate to rapid

Available Water Capacity: very high

Reaction: moderately acid to neutral

Ponding Depth: 0 to 6 inches above surface

Depth to High Water Table: 0 inches

Flooding: frequent

### Interpretative Groups

Land Capability Classification (non-irrigated): 5w

Hydrologic Group: D

#### Minor Components

- Very poorly drained Catden soils formed in woody and herbaceous organic materials
- Natchaug soils formed in herbaceous organic material 16 to 51 inches thick and the underlying loamy deposits

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## WATER—Water

#### Map Unit Composition

Water and similar soils: 100 percent

#### Major Component Description

##### Water and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Water generally consists of lakes, ponds, and rivers. Description is not available for this map unit.

#### Minor Components

- No minor components have significant differences from mayor components

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## YamnB—Yalesville loam, 3 to 8 percent slopes

#### Map Unit Setting

**Slope:** Gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

#### Map Unit Composition

Yalesville and similar soils: 85 percent

Minor components: 15 percent

### Major Component Description

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

#### Minor Components

- Shallow Holyoke soils
- Rock outcrops

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### YamnBc—Yalesville loam, 0 to 8 percent slopes, extremely stony

#### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines  
**Surface Cover:** 3 to 15 percent stones

#### Map Unit Composition

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

### Major Component Descriptions

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: B

#### Minor Components

- Shallow Holyoke soils
- Rock outcrops

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### YamnCc—Yalesville loam, 8 to 15 percent slopes, extremely stony

#### Map Unit Setting

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** ground moraines  
**Surface Cover:** 3 to 15 percent stones

#### Map Unit Composition

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

### Major Component Description

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: B

#### Minor Components

- Very deep Boonton soils
- Rock outcrops

#### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### YaobBc—Yalesville-Boonton-Holyoke complex, 0 to 8 percent slopes, extremely stony

#### Map Unit Setting

**Slope:** Nearly level to gently sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines  
**Surface Cover:** 3 to 15 percent stones

#### Map Unit Composition

Yalesville and similar soils: 40 percent  
 Holyoke and similar soils: 30 percent  
 Boonton and similar soils: 30 percent

## Major Component Descriptions

### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

### Holyoke and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material Oa 1 to 3 inches; highly decomposed plant material A 3 to 5 inches; loam
Subsoil layer:	Bw1 5 to 14 inches; loam Bw2 14 to 18 inches; loam
Substratum:	R 18 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy till derived from basalt  
 Permeability: moderate  
 Available Water Capacity: low  
 Reaction: extremely acid  
 Depth to Restrictive Feature: 10 to 20 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
 Hydrologic Group: D

**Boonton and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi	0 to 1 inches; slightly decomposed plant material
	Oa	1 to 3 inches; highly decomposed plant material
	A	3 to 5 inches; loam
Subsoil layer:	BA	5 to 8 inches; gravelly loam
	BE	8 to 17 inches; silt loam
	Bt	17 to 30 inches; silt loam
	Btx1	30 to 40 inches; gravelly fine sandy loam
	Btx2	40 to 47 inches; fine sandy loam
Substratum:	CBt1	47 to 58 inches; loamy sand
	CBt2	58 to 72 inches; loamy sand

**Component Properties and Qualities**

Drainage Class: well drained  
 Parent Material: coarse-loamy basal till derived from basalt  
 Permeability: slow to moderately rapid  
 Available Water Capacity: high  
 Reaction: extremely acid to moderately acid  
 Depth to Restrictive Feature: 20 to 36 inches to fragipan  
 Depth to High Water Table: greater than 6 feet

**Interpretative Groups**

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: C

**Minor Components**

- No minor components have significant differences from major components

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**YaohEh—Yalesville-Holyoke complex, 35 to 60 percent slopes, very rocky****Map Unit Setting**

**Slope:** Steep to very steep  
**Landscape:** Till plain  
**Landform:** Ground moraines  
**Surface Cover:** 3 to 15 percent stones

**Map Unit Composition**

Yalesville and similar soils: 50 percent  
 Holyoke and similar soils: 30 percent  
 Minor components: 20 percent

## Major Component Descriptions

### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: coarse-loamy till derived from basalt  
 Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: B

### Holyoke and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oi 0 to 1 inches; slightly decomposed plant material Oa 1 to 3 inches; highly decomposed plant material A 3 to 5 inches; loam
Subsoil layer:	Bw1 5 to 14 inches; loam Bw2 14 to 18 inches; loam
Substratum:	R 18 inches; bedrock

### Component Properties and Qualities

Drainage Class: well drained  
 Parent Material: loamy till derived from basalt  
 Permeability: moderate  
 Available Water Capacity: low  
 Reaction: extremely acid  
 Depth to Restrictive Feature: 10 to 20 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

### Interpretative Groups

Land Capability Classification (non-irrigated): 7s  
 Hydrologic Group: D

### Minor Components

- Very deep Boonton soils
- Rock outcrops

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## YaorCc—Yalesville-Rock outcrop complex, 8 to 15 percent slopes, extremely stony

### Map Unit Setting

**Slope:** Strongly sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Surface Cover:** 3 to 15 percent stones

### Map Unit Composition

Yalesville and similar soils: 80 percent

Rock outcrop and similar soils: 15 percent

Minor components: 5 percent

### Major Component Description

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam
	Bw2 19 to 31 inches; fine sandy loam
	BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from basalt

Permeability: moderate to moderately rapid

Available Water Capacity: low

Reaction: strongly acid to neutral

Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 7s

Hydrologic Group: B

**Rock outcrop and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Rock outcrop generally consists of bedrock exposed at the surface. Description is not available for this component.

**Component Properties and Qualities**

Depth to Restrictive Feature: 0 inches to bedrock (lithic)

**Interpretative Groups**

Land Capability Classification (non-irrigated): 8s  
Hydrologic Group: D

**Minor Components**

- Shallow to bedrock Holyoke soils

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

**YaotuB—Yalesville-Urban land, Yalesville substratum complex, 0 to 8 percent slopes****Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

**Map Unit Composition**

Yalesville and similar soils: 55 percent

Urban land, Yalesville substratum and similar soils: 40 percent

Minor components: 5 percent

**Major Component Descriptions****Yalesville and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material
	A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam
	Bw2 19 to 31 inches; fine sandy loam
	BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

**Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from basalt

Permeability: moderate to moderately rapid  
 Available Water Capacity: low  
 Reaction: strongly acid to neutral  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e  
 Hydrologic Group: B

#### **Urban land, Yalesville substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 31 inches; fine sandy loam
Subsoil layer:	2BC 31 to 32 inches; fine sandy loam
Substratum:	2R 32 inches; bedrock

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
 Permeability: moderately rapid beneath the surface layer  
 Available Water Capacity: very low  
 Reaction: strongly acid  
 Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
 Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
 Hydrologic Group: D

#### **Minor Components**

- Udorthents, Yalesville substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

### **YaotuC—Yalesville-Urban land, Yalesville substratum complex, 8 to 15 percent slopes**

#### **Map Unit Setting**

**Slope:** Strongly sloping  
**Landscape:** Till plain  
**Landform:** Ground moraines

### Map Unit Composition

Yalesville and similar soils: 55 percent

Urban land, Yalesville substratum and similar soils: 40 percent

Minor components: 5 percent

### Major Component Descriptions

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	Oa 0 to 1 inches; highly decomposed plant material A 1 to 5 inches; loam
Subsoil layer:	Bw1 5 to 19 inches; fine sandy loam Bw2 19 to 31 inches; fine sandy loam BC 31 to 32 inches; fine sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained  
Parent Material: coarse-loamy till derived from basalt  
Permeability: moderate to moderately rapid  
Available Water Capacity: low  
Reaction: strongly acid to neutral  
Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 3e  
Hydrologic Group: B

#### Urban land, Yalesville substratum and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material H2 12 to 31 inches; fine sandy loam
Subsoil layer:	2BC 31 to 32 inches; fine sandy loam
Substratum:	2R 32 inches; bedrock

#### Component Properties and Qualities

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material  
Permeability: moderately rapid beneath the surface layer  
Available Water Capacity: very low  
Reaction: strongly acid  
Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 8s

Hydrologic Group: D

**Minor Components**

- Udorthents, Yalesville substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material

**Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **YaouA—Yalesville loam, red sandstone lowland, 0 to 3 percent slopes**

**Map Unit Setting**

**Slope:** Nearly level

**Landscape:** Till plain

**Landform:** Ground moraines

**Map Unit Composition**

Yalesville and similar soils: 95 percent

Minor components: 5 percent

**Major Component Descriptions****Yalesville and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 3 inches; loam
Subsoil layer:	Bw1 3 to 17 inches; loam
	Bw2 17 to 22 inches; loam
	Bw3 22 to 32 inches; sandy loam
Substratum:	R 32 inches; bedrock

**Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone

Permeability: moderate to moderately rapid

Available Water Capacity: low

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)

Depth to High Water Table: greater than 6 feet

## Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: B

### Minor Components

- Rock outcrops

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## YaouB—Yalesville loam, red sandstone lowland, 3 to 8 percent slopes

### Map Unit Setting

**Slope:** Gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### Map Unit Composition

Yalesville and similar soils: 95 percent

Minor components: 5 percent

### Major Component Descriptions

#### Yalesville and similar soils

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 3 inches; loam
Subsoil layer:	Bw1 3 to 17 inches; loam
	Bw2 17 to 22 inches; loam
	Bw3 22 to 32 inches; sandy loam
Substratum:	R 32 inches; bedrock

#### Component Properties and Qualities

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone

Permeability: moderate to moderately rapid

Available Water Capacity: low

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)

Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: B

### Minor Components

- Rock outcrops

### Use and Management

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## **YaovB—Yalesville-Urban land, Yalesville substratum complex, red sandstone lowland, 0 to 8 percent slopes**

### **Map Unit Setting**

**Slope:** Nearly level and gently sloping

**Landscape:** Till plain

**Landform:** Ground moraines

### **Map Unit Composition**

Yalesville and similar soils: 55 percent

Urban land, Yalesville substratum and similar soils: 40 percent

Minor components: 5 percent

### **Major Component Descriptions**

#### **Yalesville and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	A 0 to 3 inches; loam
Subsoil layer:	Bw1 3 to 17 inches; loam
	Bw2 17 to 22 inches; loam
	Bw3 22 to 32 inches; sandy loam
Substratum:	R 32 inches; bedrock

#### **Component Properties and Qualities**

Drainage Class: well drained

Parent Material: coarse-loamy till derived from sandstone

Permeability: moderate to moderately rapid

Available Water Capacity: low

Reaction: extremely acid to very strongly acid

Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)

Depth to High Water Table: greater than 6 feet

#### **Interpretative Groups**

Land Capability Classification (non-irrigated): 2e

Hydrologic Group: B

#### **Urban land, Yalesville substratum and similar soils**

The typical sequence, depth, and composition of the layers of the soil are as follows:

Surface layer:	H1 0 to 12 inches; impervious material
	H2 12 to 22 inches; loam
Subsoil layer:	2BC 22 to 32 inches; sandy loam
Substratum:	2R 32 inches; bedrock

#### **Component Properties and Qualities**

Parent Material: surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Permeability: moderate to moderately rapid beneath the surface layer  
Available Water Capacity: very low  
Reaction: extremely acid  
Depth to Restrictive Feature: 20 to 40 inches to bedrock (lithic)  
Depth to High Water Table: greater than 6 feet

#### Interpretative Groups

Land Capability Classification (non-irrigated): 8s  
Hydrologic Group: D

#### **Minor Components**

- Udorthents, Yalesville substratum soils with some type of disturbance resulting from construction such as grading and/or the addition of fill material.

#### **Use and Management**

For further information about managing this map unit, see the following sections in this publication: Recreation, Wildlife Habitat, Engineering, and Soil Properties.

## Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, 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 2,701 acres, or nearly 3.25 percent of the survey area, meet the requirements for prime farmland. About 368 acres, or nearly 0.44 percent of the survey area, meet the requirements for farmland of statewide importance. About 1,737 acres, or nearly 2.09 percent of the survey area, meet the requirements for farmland of local importance. About 373 acres, or nearly 0.45 percent of the survey area, meet the requirements for farmland of unique importance.

A recent trend in land use in some parts of the survey area 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.

The map units in the survey area that are considered prime or other important farmland are listed in Table 5. This list does not constitute a recommendation for a particular land use. On some soils included in the list, 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".



# Use and Management of the Soils

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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 sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; 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 bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

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

## 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.

## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The 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 rangeland, 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, rangeland, 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, rangeland, 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. (fig. 9)

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, 2e. 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



**Figure 9.** Hasbrouck silt loam, 0 to 8 percent slopes, extremely stony. The Hasbrouck soils are in nearly level or gently sloping depressions, drainageways, and areas adjacent to narrow floodplains of minor streams on uplands. These characteristics make the soil suitable for forestland or wildlife habitat and unsuitable for farming.

soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

**Capability units** are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units".

## Recreation

The soils of the survey area are rated in Tables 6 and 7 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 6 and 7 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, 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, stoniness, and depth to bedrock or 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, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or 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 and stoniness are the main concerns 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, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or 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 and stoniness are the main concerns 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, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or 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 stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer. (fig. 10)



**Figure 10.** Hinckley sandy loam, 3 to 8 percent slopes. Hinckley soils are nearly level to very steep soils on terraces, outwash plains, deltas, kames, and eskers. They are excessively drained, with rapid permeability, very deep to bedrock, and no surface stoniness.

**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 stoniness, 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 bedrock or a fragipan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, 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

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 8, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for

wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

**Grain and seed crops** are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and 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, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are bluegrass, rye grass, 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, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are little bluestem, broom sedge, goldenrod, beggarweed, ragweed, and asters.

**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, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated **good** are grey dogwood, viburnums, and crabapple.

**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 arrow wood viburnum, mapleleaf viburnum, winged sumac, wild azaleas, winter berry, and alders.

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

**Shallow water areas** have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to

bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

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

**Habitat for openland wildlife** consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include cardinal, mockingbird, 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. (fig. 11)

**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, beaver, and various reptiles and amphibians.

## Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

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



**Figure 11. Great Piece loam, 0 to 3 percent slopes. Great Piece soils are located on lower positions on the landscape, have a high water table, and are susceptible to flooding and ponding. These soils support the establishment of hydrophytic vegetation suitable for woodland wildlife habitat.**

ecological wetland plant species. 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 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 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, 1995). These criteria are used to identify a phase of a soil series that normally is 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, 1998) 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 and others, 1998).

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.

Some map units in Table 9 meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. 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 and others, 1998).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Some map units in Table 9, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

## 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 bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, 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 10 and 11 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 bedrock or a fragipan, hardness of bedrock or a fragipan, and the amount and size of rock fragments. (fig. 12)

**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,



Figure 12. Holyoke silt loam, 0 to 15 percent slopes, very rocky. Holyoke soils are nearly level to very steep and are on bedrock controlled hills. The underlying bedrock is primarily basalt but includes red sandstone. These soils are not suitable for dwellings.

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 bedrock or a fragipan, hardness of bedrock or 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 bedrock or a fragipan, hardness of bedrock or a fragipan, depth to a water table, ponding, flooding, the amount of large stones, 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 bedrock or a fragipan, hardness of bedrock or a fragipan, the amount of large stones, 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 bedrock or a fragipan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

## Sanitary Facilities

Tables 12 and 13 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and disposal field. 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 bedrock or a fragipan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a fragipan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock 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 bedrock or a fragipan, flooding, large stones, 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 fractured bedrock is within a depth of 40 inches, 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, bedrock, and fragipans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a fragipan to make land smoothing practical.

**A disposal field** is an area where the sanitary sewage is discharged into the ground to treat the sewage in a manner that will retain most of the suspended solids in a septic tank and to discharge the effluent to the disposal field (NJDEP, 1999). The soil is evaluated from the surface to a depth of 300 centimeters, or approximately 10 feet. The ratings are based on the soil properties that affect absorption of the effluent, construction, and pollution of ground and surface water. Zone of saturation (apparent and perched water table), permeability, cemented horizon and substratum, and the percentage of rock fragments affect the absorption and treatment of the effluent. Fractured and massive bedrock interferes with installation and absorption of the effluent.

Depth to a zone of saturation has a major influence on the suitability of the soil for a septic system because of public health concerns. A high water table restricts the ability of the system to remove pathogens, nutrients, and other waste components.

Massive bedrock and a hydraulically restrictive substratum or horizon can affect excavation and result in lateral seepage of the effluent. The slow permeability impedes effluent infiltration, increasing the risk of surface-water pollution.

Very rapid permeability caused by fractured bedrock and/or an excessively coarse textured substratum or horizon may result in inadequate filtering of the effluent and thus in ground-water contamination.

Following is a description of the soil suitability class codes used in this table.

The term “water table” refers to the upper surface of a zone of saturation. 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 differing 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 a layer of soil or rock material with an upper surface that is the deepest observed in the soil boring or pit. The lower extent of the layer is undetermined; the layer is assumed to extend through the required depth of evaluation (10 feet). The code “Sc” refers to an excessively coarse texture, and the code “Sr” refers to a hydraulically restrictive layer.

## Construction Materials

Tables 14 and 15 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 14, 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 topsoil, reclamation material, and roadfill. 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 topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

**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 bedrock or 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.

**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 sodium, salts, and calcium carbonate; 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 large stones, 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).

## Water Management

Table 16 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.

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).

**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 stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

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

## 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 17 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, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

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. The AASHTO classification for soils tested is given in Table 17.

**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 18 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 18, 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 18, 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 18, 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 18, 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 Table 18 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 19 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.

**Calcium carbonate** equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

**Gypsum** is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

**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.

**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.

## Soil Features

Table 20 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 bedrock, cemented layers, dense layers, and frozen 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 21 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.

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. Table 21 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 21 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.

### Physical and Chemical Analyses of Selected Soils

The results of physical and chemical analysis of several typical pedons in the survey area are available from the NSSC Soil Survey Laboratory Soil Characterization Data (<http://ssldata.nrcs.usda.gov/>). The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the National Soil Survey Center – Soil Survey Laboratory.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1996).

**Coarse materials** = (2-75 mm fraction) weight estimates of the percentages of all material less than 75 mm (3B1).

**Coarse materials** = (2-250 mm fraction) volume estimates of the percentages of all material greater than 2 mm (3B2).

**Sand** = (0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).

**Silt** = (0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

**Clay** = (fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

**Carbonate clay** = (fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1d).

**Water retained** = pressure extraction, percentage of oven-dry weight of less than 2 mm material; 1/3 or 1/10 bar (4B1), 15 bars (4B2).

**Water-retention difference** = between 1/3 bar and 15 bars for whole soil (4C1).

**Water-retention difference** = between 1/10 bar and 15 bars for whole soil (4C2).

**Bulk density** = of less than 2 mm material, saran-coated clods field moist (4A1a), 1/3 bar (4A1d), oven-dry (4A1h).

**Moist bulk density** = of less than 2 mm material, cores (4A3).

**Moist bulk density** = of less than 2 mm material, compliant cavity (4A5).

**Linear extensibility** = change in clod dimension based on whole soil (4D).

**Organic carbon** = wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).

**Organic carbon** = dry combustion (6A2d).

**Total nitrogen** = Kjeldahl (6B3).

**Extractable cations** = ammonium acetate pH 7.0, ICP; calcium (6N2i), magnesium (6O2h), sodium (6P2f), potassium (6Q2f).

**Extractable cations** = ammonium acetate pH 7.0, EDTA-alcohol separation; calcium (6N2a), magnesium (6O2a); flame photometry; sodium (6P2a), potassium (6Q2a).

**Extractable acidity** = barium chloride-triethanolamine IV (6H5a).

**Cation-exchange capacity** = ammonium acetate, pH 7.0, steam distillation (5A8b).

**Cation-exchange capacity** = sum of cations (5A3a).

**Effective cation-exchange capacity** = sum of extractable cations plus aluminum (5A3b).

**Base saturation** = ammonium acetate, pH 7.0 (5C1).

**Base saturation** = sum of cations, TEA, pH 8.2 (5C3).

**Reaction (pH)** = 1:1 water dilution (8C1f).

**Reaction (pH)** = saturated paste (8C1b).

**Reaction (pH)** = potassium chloride (8C1g).

**Reaction (pH)** = sodium fluoride (8C1d).

**Reaction (pH)** = calcium chloride (8C1f).

**Aluminum** = potassium chloride extraction (6G9c).

**Aluminum** = acid oxalate extraction (6G12b).

**Iron** = acid oxalate extraction (6C9b).

**Silica** = acid oxalate extraction (6V2b).

**Sesquioxides** = dithionate-citrate extract; iron (6C2h), aluminum (6G7b), manganese (6D2g).

**Soil resistivity** = saturated paste (8E1).

**Total soluble salts** = estimate from resistivity (8A2).

**Total soluble salts** = estimate from conductivity (8D5).

**Carbonate as calcium carbonate** = (fraction less than 2 mm [80 mesh]) manometric (6E1h).

**Carbonate as calcium carbonate** = (fraction less than 20 mm) manometric (6E4).

**Gypsum** = precipitation in acetone (6F1a).

**Soluble ions** = acid titration, saturated paste; carbonate (6I1b), bicarbonate (6J1b).

**Soluble ions** = anion chromatograph, saturated paste; chloride (6K1f), sulfate (6L1f), nitrate (6M1f); fluoride (6U1d); nitrite (6W1d).

**Electrical conductivity** = saturation extract (8A3a).

**Sodium adsorption ratio** = (5E).

**Extractable phosphorus** = Bray P-1 (6S3).

**Available phosphorus** = (method of reporting laboratory).

## Engineering Index Test Data

The NSSC Soil Survey Laboratory Soil Characterization Data (<http://ssldata.nrcs.usda.gov/>) shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are representative of the series described in the section "Soil Series and Their Morphology". The soil samples were tested by the National Soil Survey Center – Soil Survey Laboratory.

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

The tests and methods are AASHTO classification=M 145 (AASHTO), D 3282 (ASTM); Unified classification=D 2487-00 (ASTM); Mechanical analysis=T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit=T 89 (AASHTO), D 4318 (ASTM); Plasticity index=T 90 (AASHTO), D 4318 (ASTM); Moisture density=T 99 (AASHTO), D 698 (ASTM); Specific gravity=T 100 (AASHTO), D 854 (ASTM); California bearing ratio=T 193 (AASHTO), D 1883 (ASTM); and Shrinkage=T 92 (AASHTO), D 427 (ASTM).

# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). 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 22 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 Alfisols.

**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 Udalfs (**Ud**, meaning humid, plus **alf**, from Alfisols).

**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 Fragiudalfs **Fragi**, meaning the presence of a fragipan with an upper boundary within 100 cm of the mineral soil surface (Soil Survey Staff, 1998), plus **udalf**, the suborder of the Alfisols 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 Fragiudalfs.

**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, mixed, active, mesic Typic Fragiudalfs.

**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 Boonton 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, 1998). 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.

### Bigapple Series

**Local Physiographic Area:** Eastern Lowland

**Geomorphic Setting:** Urban land and built-up areas fill

**Parent Material:** Sandy material derived from dredge spoils

**Drainage Class:** Somewhat excessively drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 8 percent

#### Associated Soils

Loamy fill  
Udorthents  
Urban land

#### Taxonomic Classification

Mixed, mesic Typic Udipsamments

#### Typical Pedon

Bigapple loamy sand in an area of Bigapple loamy sand, 0 to 3 percent slopes, in urban and built-up areas; located Essex County, New Jersey; Port Newark, 1,987 feet southwest of the intersection between Corbin Street and Starboard Street, and 377 feet northeast from channel. USGS Elizabeth quadrangle; Latitude: 40 degrees, 41 minutes, 22.12 seconds N.; Longitude: 74 degrees, 9 minutes, 36.61 seconds W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine subangular blocky structure; very friable; 7 percent nonflat subangular fine gravel; very strongly acid; abrupt wavy boundary.

Bw1—3 to 17 inches; dark yellowish brown (10YR 4/6) gravelly sand; single grain; loose; 15 percent nonflat rounded medium gravel; strongly acid; clear wavy boundary.

Bw2—17 to 26 inches; dark yellowish brown (10YR 4/4) gravelly sand; single grain; loose; 15 percent nonflat rounded medium gravel; strongly acid; abrupt wavy boundary.

C1—26 to 38 inches; very dark grayish brown (10YR 3/2) loamy sand; massive; friable; 9 percent nonflat rounded medium gravel; moderately acid; abrupt wavy boundary.

C2—38 to 60 inches; light olive brown (2.5Y 5/6) gravelly loamy sand; massive; friable; 4 percent nonflat rounded fine gravel and 13 percent nonflat rounded medium gravel; moderately acid.

### Range in Characteristics

**Thickness of solum:** 8 to greater than 60 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 20 percent gravel, by volume. 0 to 10 percent cobbles by volume are present in some pedons.

**Reaction:** very strongly acid to moderately alkaline throughout

**Permeability:** very rapid to rapid

#### A horizon:

Color - hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 to 4

Texture - loamy sand, very fine sand, or coarser and gravelly analogs

Structure - single grain, granular, or subangular blocky

#### E horizon (if it occurs):

Color - hue of 10YR to 2.5Y, value of 2 to 6, and chroma of 1 to 4

Texture - very fine sand or coarser and gravelly analogs

Structure - massive, single grain, granular, or subangular blocky

#### Bw horizon:

Color - hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6

Texture - sand or loamy sand and gravelly analogs

Structure - single grain or massive

#### C horizon:

Color - hue of 10YR to 2.5Y, value of 3 to 7, and chroma of 1 to 6

Texture - sand or loamy sand and gravelly analogs (in the fine earth fraction)

Structure - single grain or massive

## Boonton Series

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Till plain, ground moraine

**Parent Material:** Coarse-loamy basal till derived from basalt

**Drainage Class:** Well drained

**Soil Depth Class:** Moderately deep to a fragipan layer

**Slope:** 0 to 35 percent

### Associated Soils

Haledon

Moderately well drained Boonton

Yalesville

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Typic Fragiudalfs (fig. 13)

### Typical Pedon

Boonton loam in an area of Boonton loam, 15 to 35 percent slopes, extremely stony, in hardwoods; located South Mountain Reservation, Essex County; approximately 850 feet northeast of intersection of Cherry Lane and South Orange Avenue. USGS Caldwell quadrangle; Latitude: 40 degrees, 45 minutes, 17.23 seconds N.; Longitude: 74 degrees, 17 minutes, 17.69 seconds W.

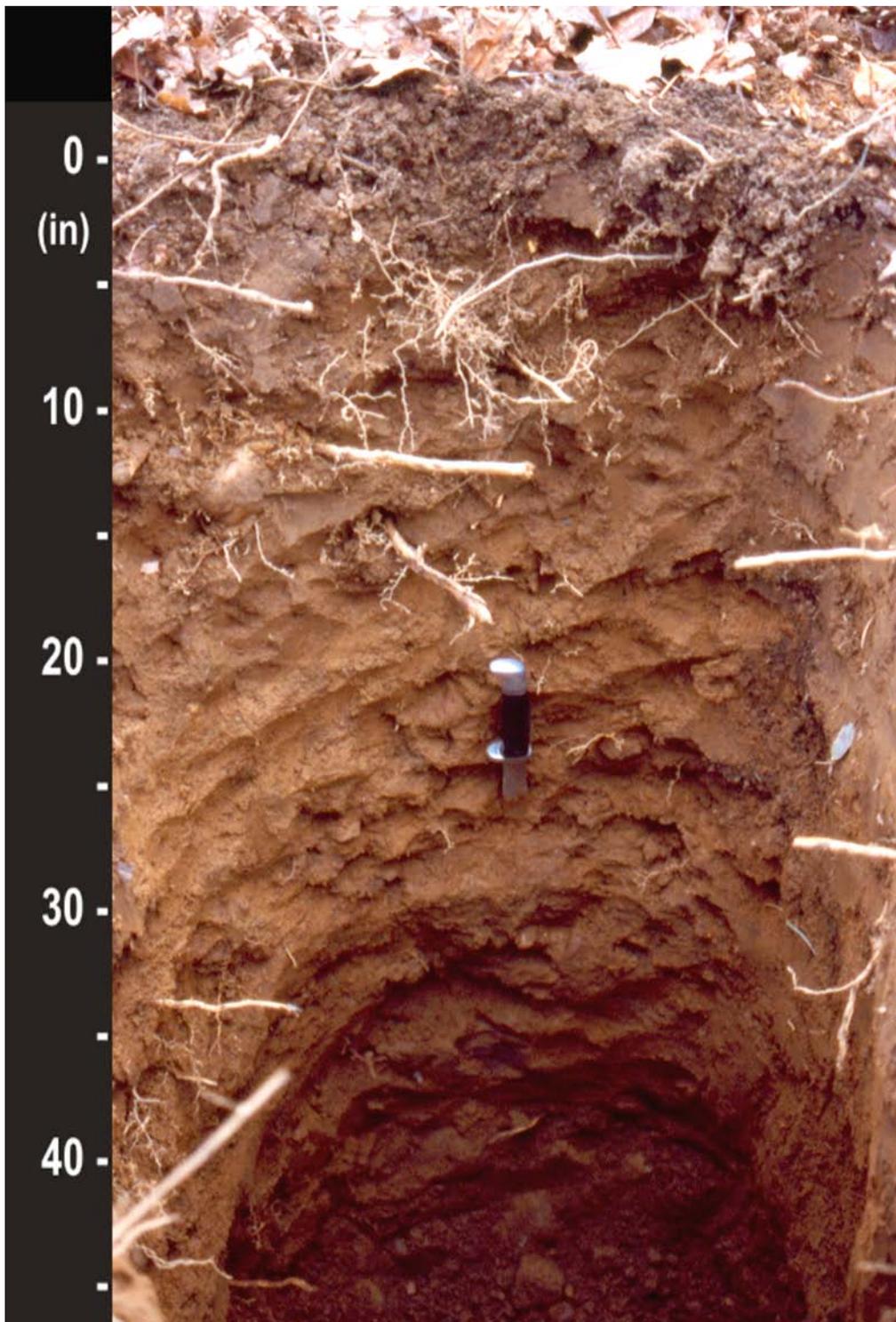


Figure 13. Boonton soil profile. These well drained soils formed in glacial till composed mostly of red to brown shale, sandstone, basalt, and some granitic gneiss. They are moderately deep to a fragipan.

Oi—0 to 1 inches; very dark grayish brown (10YR 3/2) slightly decomposed plant material; extremely acid; abrupt wavy boundary.

- Oa—1 to 3 inches; black (10YR 2/1) highly decomposed plant material; extremely acid; abrupt wavy boundary.
- A—3 to 5 inches; dark brown (10YR 3/3) loam; moderate fine granular structure parting to moderate fine subangular blocky; friable; many fine roots; extremely acid; clear wavy boundary.
- BA—5 to 8 inches; dark yellowish brown (10YR 4/6) silt loam; moderate medium subangular blocky structure parting to weak fine granular; friable; many fine and common medium and coarse roots; 13 percent nonflat subrounded coarse gravel; extremely acid; gradual wavy boundary.
- BE—8 to 17 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; 3 percent nonflat subrounded coarse gravel; very strongly acid; clear wavy boundary.
- Bt—17 to 30 inches; brown (7.5YR 4/4) silt loam; strong medium subangular blocky structure; friable; common fine and medium roots; 55 percent patchy distinct clay films on rock fragments; 2 percent nonflat subrounded coarse gravel; very strongly acid; clear wavy boundary.
- Btx1—30 to 40 inches; reddish brown (5YR 4/3) gravelly fine sandy loam; moderate medium subangular blocky structure parting to weak thick platy; firm; 30 percent patchy distinct clay films on rock fragments; 30 percent fine prominent black (10YR 2/1) manganese coatings; 15 percent nonflat subrounded coarse gravel; very strongly acid; gradual wavy boundary.
- Btx2—40 to 47 inches; reddish brown (5YR 4/4) fine sandy loam; moderate medium subangular blocky structure parting to weak thick platy; firm; 30 percent patchy distinct clay films on rock fragments; 40 percent medium prominent black (10YR 2/1) manganese coatings; 10 percent nonflat subrounded coarse gravel and 2 percent nonflat subangular cobbles; strongly acid; gradual wavy boundary.
- CBt1—47 to 58 inches; reddish brown (5YR 4/4) loamy sand; strong medium subangular blocky structure; friable; 15 percent patchy distinct clay films on rock fragments; 9 percent nonflat subrounded coarse gravel; strongly acid; gradual wavy boundary.
- CBt2—58 to 72 inches; reddish brown (5YR 4/4) loamy sand; strong coarse subangular blocky structure; friable; 15 percent patchy distinct clay films on rock fragments; 10 percent nonflat subrounded coarse gravel and 3 percent nonflat subangular cobbles; moderately acid.

### Range in Characteristics

**Thickness of solum:** 36 to greater than 60 inches

**Depth to bedrock:** greater than 60 inches

**Depth to fragipan:** 20 to 36 inches

**Content and size of rock fragments:** 0 to 35 percent gravel and 0 to 5 percent cobbles, by volume

**Reaction:** extremely acid to strongly acid in the upper part of the solum; strongly acid to slightly acid in the lower part of the solum; strongly acid to moderately acid in the C horizon

**Permeability:** moderate to moderately rapid in the upper part of the solum; slow in the fragipan; moderately rapid in the substratum

**O horizon:**

Color - black

Texture - slightly to moderately decomposed plant material

**A horizon:**

Color - hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4

Texture - fine sandy loam, silt loam, or loam

Structure - moderate to weak, medium to fine granular and subangular blocky

**BA or BE horizon:**

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

Texture - fine sandy loam, silt loam, or loam

Structure - moderate to weak, coarse to fine subangular blocky

**Bt horizon:**

Color - hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 4 to 6

Texture - sandy loam, fine sandy loam, silt loam, or loam

Structure - moderate to weak, coarse to fine subangular blocky

**Btx horizon:**

Color - hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam, fine sandy loam, or loam

Structure - weak or moderate medium subangular blocky to moderate or strong, thin to very thick platy. The Bx horizon is very firm or firm, and brittle.

Redoximorphic features - iron depletions in shades of gray, iron concentrations in shades of red and brown, and black manganese concentrations

**CBt horizon:**

Color - hue of 2.5YR to 10YR. value of 3 to 6, and chroma of 3 to 6

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

Structure - moderate or strong medium or coarse subangular blocky, weak medium to thick platy layers, or is massive, and range from very firm to very friable. In some pedons the C horizon is loose or friable.

## Boonton Taxadjunct

**Local Physiographic Area:** Lowland

**Geomorphic Setting:** Ground moraine, till plain

**Parent Material:** Coarse-loamy till derived from sandstone and shale

**Geology:** Passaic Basin

**Drainage Class:** Well drained

**Soil Depth Class:** Moderately deep to a fragipan layer

**Slope:** 0 to 35 percent

### Associated Soils

Moderately well drained Boonton red sandstone lowland soils

Udorthents

Urban land

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Typic Fragiudepts

### Typical Pedon

Boonton silt loam in an area of Boonton silt loam, red sandstone lowland, 0 to 8 percent slopes, extremely stony, in hardwoods; located Alfonzo F. Bonzal Wildlife Preserve, Essex County; in wooded area approximately 340 feet southwest of Carline Drive. USGS Orange quadrangle; Latitude: 40 degrees, 51 minutes, 3.40 seconds N.; Longitude: 74 degrees, 11 minutes, 17.31 seconds W.

Oi—0 to 1 inches; slightly decomposed plant material; extremely acid; abrupt wavy boundary.

A—1 to 3 inches; very dark brown (7.5YR 2.5/3) silt loam; strong medium granular structure parting to moderate fine subangular blocky structure; friable; many fine roots; very strongly acid; abrupt wavy boundary.

BE—3 to 10 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure; friable; many fine roots; 2 percent nonflat subrounded fine gravel and 5 percent nonflat subrounded medium gravel and 5 percent nonflat subrounded coarse gravel; very strongly acid; abrupt wavy boundary.

Bw—10 to 27 inches; reddish brown (5YR 4/4) gravelly loam; moderate medium subangular blocky structure; friable; common medium roots and common coarse roots; 10 percent patchy faint reddish brown (5YR 4/4) clay films on rock fragments; 6 percent nonflat subrounded fine gravel and 8 percent nonflat subrounded medium gravel and 13 percent nonflat subrounded coarse gravel; very strongly acid; clear wavy boundary.

Bx1—27 to 40 inches; reddish brown (5YR 4/4) gravelly fine sandy loam; moderate medium subangular blocky structure parting to weak thick platy structure; firm; many fine vesicular pores; 60 percent discontinuous prominent reddish brown (5YR 4/3) clay films on rock fragments; 4 percent nonflat subrounded fine gravel and 8 percent nonflat subrounded medium gravel; very strongly acid; gradual wavy boundary.

Bx2—40 to 67 inches; reddish brown (5YR 4/4) gravelly fine sandy loam; moderate thick platy structure parting to moderate medium subangular blocky structure; firm; many medium vesicular pores; 60 percent discontinuous prominent reddish brown (5YR 4/3) clay films on rock fragments; 5 percent nonflat subrounded fine gravel and 14 percent nonflat subrounded medium gravel and 2 percent nonflat subrounded coarse gravel; very strongly acid; gradual wavy boundary.

BCx—67 to 83 inches; reddish brown (5YR 4/4) gravelly sandy loam; moderate thick platy structure; firm; common fine vesicular pores; 60 percent discontinuous prominent dark reddish brown (5YR 3/3) clay films on rock fragments; 8 percent nonflat subrounded fine gravel and 14 percent nonflat subrounded medium gravel; very strongly acid.

### Range in Characteristics

**Thickness of solum:** 36 to greater than 60 inches

**Depth to bedrock:** greater than 60 inches

**Depth to fragipan:** 20 to 40 inches

**Content and size of rock fragments:** 0 to 35 percent gravel by volume in individual horizons. Stones and cobbles range from 0 to 10 percent, by volume in the solum and from 0 to 20 percent, by volume in the substratum.

**Reaction:** extremely acid through very strongly acid to a depth of 60 inches, and very strongly acid below 60 inches

**Permeability:** moderate to moderately rapid in the upper part of the solum; slow in the fragipan

**O horizon:**

Color - black or brown

Texture – slightly to highly decomposed plant material

**A horizon:**

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

Texture - very fine sandy loam, fine sandy loam, silt loam, or loam

Structure - strong to weak, medium to fine granular and subangular blocky

**BA or BE horizon:**

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

Texture - fine sandy loam, silt loam, or loam

Structure - moderate to weak, coarse to fine subangular blocky

**B horizon:**

Color - hue of 2.5YR to 5YR, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam, fine sandy loam, silt loam, or loam

Structure - moderate to weak, coarse to fine subangular blocky

**Bx horizon:**

Color - hue of 2.5YR to 5YR, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam, fine sandy loam, or loam

Structure - weak or moderate medium subangular blocky to moderate or strong, thin to very thick platy. The Bx horizon is very firm or firm, and brittle

**BCx horizon:**

Color - hue of 2.5YR to 5YR, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam, fine sandy loam, or loam

Structure - weak or moderate medium subangular blocky to moderate or strong, thin to very thick platy. The Bx horizon is very firm or firm, and brittle

**Note:** The Boonton red sandstone lowland soil in Essex County is a taxadjunct because it has less translocated clay in the subsoil; a lower pH range; lower base saturation, especially in the substratum; and more rock fragments in the Bx1 and BCx horizons that is typical of the Boonton series. These soils formed in red sandstone material east of the Watchung Mountains in Essex County.

## Catden Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Outwash plain

**Parent Material:** Woody organic material

**Drainage Class:** Very poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 2 percent

### Associated Soils

Natchaug

Timakwa

### Taxonomic Classification

Euic, mesic Typic Haplosaprists

#### Typical Pedon

Catden muck, in an area of Catden muck, 0 to 2 percent slopes, in hardwoods; located West Caldwell, Essex County; approximately 1,540 feet northwest from the intersection of Fairfield Place and Fairfield Circle. USGS Caldwell quadrangle; Latitude: 40 degrees, 51 minutes, 59.48 seconds N.; Longitude: 74 degrees, 17 minutes, 43.74 seconds W.

Oa1—0 to 3 inches; black (N 2.5/) muck; moderate fine granular structure; friable; 0 percent fiber, unrubbed; 0 percent fiber, rubbed; many fine and common coarse roots; moderately acid; gradual wavy boundary.

Oa2—3 to 16 inches; black (N 2.5/) muck; moderate medium subangular blocky structure; friable; 0 percent fiber, unrubbed; 0 percent fiber, rubbed; many fine and coarse roots; moderately acid; clear wavy boundary.

Oa3—16 to 24 inches; 50 percent very dark brown (10YR 2/2) and 50 percent black (10YR 2/1) muck; massive; friable; 15 percent fiber, unrubbed; 0 percent fiber, rubbed; many medium and common coarse roots; strongly acid; gradual wavy boundary.

Oa4—24 to 32 inches; very dark brown (10YR 2/2) muck; massive; very friable; 40 percent fiber, unrubbed; 5 percent fiber, rubbed; 5 percent wood fragments; strongly acid; clear wavy boundary.

Oa5—32 to 53 inches; 50 percent dark brown (10YR 3/3) and 50 percent very dark grayish brown (10YR 3/2) muck; massive; very friable; 85 percent fiber, unrubbed; 10 percent fiber, rubbed; 10 percent wood fragments; slightly acid; clear wavy boundary.

Oa6—53 to 64 inches; 50 percent dark greenish gray (10Y 3/1) and 50 percent dark greenish gray (5GY 4/1) muck; massive; friable; 30 percent fiber, unrubbed; 5 percent fiber, rubbed; 3 percent wood fragments; neutral; gradual wavy boundary.

2Cg—64 to 72 inches; dark greenish gray (5GY 4/1) sandy loam; massive; friable; neutral.

#### Range in Characteristics

**Depth to substratum:** ranges from 60 or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** ranges from 0 to 60 percent gravel, by volume in the C horizon

**Organic materials:** derived primarily from herbaceous plants, but some layers contain as much as 50 percent material of wood origin

**Reaction:** very strongly acid to neutral

**Permeability:** moderate to moderately rapid

#### Oa horizon:

Color - hue of 5YR to 2.5Y, or neutral, value of 1 or 4, and chroma of 0 to 6

Texture - dominantly muck (sapric material), however, some pedons have mucky peat (hemic material). Some pedons have a thin mat, 1 to 4 inches thick, of sphagnum moss on the surface

**Oe Horizon (if it occurs):**

Color - hue of 5YR to 2.5Y, or are neutral, value of 1 or 4, and chroma of 0 to 6  
 Texture - mucky peat (hemic material) are in some pedons. Thin layers, less than 5 inches thick, of peat (fibric material) are in some pedons. In some pedons a sedimentary peat layer 1 to 2 inches thick are present above the C horizon.

**2Cg horizon:**

Color - hue of 5YR to 5Y or neutral, value of 2 to 6, and chroma of 0 to 4  
 Texture - sand, coarse sand, fine sand, loamy sand, or loamy sand and their gravelly or very gravelly analogues. Strata of finer textures occur in some pedons.

**Dunellen Series**

**Local Physiographic Area:** Eastern Lowland

**Geomorphic Setting:** Outwash plain

**Parent Material:** Coarse-loamy outwash derived from sandstone

**Drainage Class:** Well drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 25 percent

**Associated Soils**

Tunkhannock

Udorthents

Urban land

**Taxonomic Classification**

Coarse-loamy, mixed, active, mesic Typic Hapludults

**Typical Pedon**

Dunellen sandy loam in an area of Dunellen sandy loam, 3 to 8 percent slopes, in hardwoods; located on Scotch Plains municipal property, approximately 450 feet southeast of the intersection of Martine Avenue and Raritan Road in Scotch Plain. USGS Perth Amboy quadrangle; Latitude: 40 degrees, 37 minutes, 12.72 seconds N.; Longitude: 74 degrees, 21 minutes, 9.18 seconds W.

A1—0 to 8 inches; brown (7.5YR 4/2) sandy loam; moderate fine granular structure; very friable; many fine roots; 7 percent nonflat subrounded fine gravel and 2 percent nonflat subrounded coarse gravel and 1 percent nonflat subrounded cobbles; very strongly acid; clear smooth boundary.

A2—8 to 14 inches; brown (7.5YR 4/2) sandy loam; moderate fine granular structure; very friable; many fine roots; 7 percent nonflat subrounded fine gravel and 2 percent nonflat subrounded coarse gravel and 1 percent nonflat subrounded cobbles; very strongly acid; clear smooth boundary.

BA—14 to 20 inches; brown (7.5YR 5/4) sandy loam; moderate medium granular structure; very friable; many fine roots; 10 percent nonflat subrounded fine gravel and 2 percent nonflat subrounded coarse gravel and 1 percent nonflat subrounded cobbles; very strongly acid; clear wavy boundary.

Bt—20 to 31 inches; yellowish red (5YR 4/6) sandy loam; moderate coarse subangular blocky structure; friable; common medium and coarse roots; 15 percent distinct clay bridges between sand grains; 10 percent nonflat

subrounded fine gravel and 2 percent nonflat subrounded coarse gravel and 1 percent nonflat subrounded cobbles; very strongly acid; gradual smooth boundary.

C—31 to 42 inches; yellowish red (5YR 4/6) sandy loam; single grain; loose; 10 percent nonflat subrounded fine gravel and 2 percent nonflat subrounded coarse gravel and 1 percent nonflat subrounded cobbles; very strongly acid; clear smooth boundary.

2C—42 to 70 inches; reddish brown (5YR 5/4) loamy sand; single grain; loose; 4 percent nonflat subrounded fine gravel and 8 percent nonflat subrounded coarse and medium gravel and 2 percent nonflat subrounded cobbles; moderately acid.

### Range in Characteristics

**Thickness of solum:** 25 to 40 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 15 percent gravel and 0 to 5 percent cobbles, by volume in the solum; 0 to 35 percent gravel and 0 to 10 percent cobbles, by volume in the substratum

**Reaction:** very strongly acid to strongly acid in the solum; very strongly acid to moderately acid in the substratum

**Permeability:** moderate to moderately rapid in the solum; rapid to moderately rapid in the substratum

**O horizon (if it occurs):**

Color - black to brown

Texture - slightly to moderately decomposed plant material

**A horizon:**

Color - hue of 5YR to 7.5YR, value of 2 to 4, and chroma of 2 to 4

Texture - sandy loam or loam

Structure - weak to moderate granular

**Bt horizon:**

Color - hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 4 to 6

Texture - sandy loam, fine sandy loam, or loam

Structure - weak to moderate subangular blocky

**C and 2C horizon:**

Color - hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam to sand

Structure - massive or single grain

## Fluvaquents

**Local Physiographic Area:** Countywide

**Geomorphic Setting:** River valley, flood plain

**Parent Material:** Recent alluvium

**Drainage Class:** Somewhat poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Udifluvents

## Taxonomic Classification

Fluvaquents

### Typical Pedon

Fluvaquents loam in an area of Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded, in other grass/herbaceous cover; located in Byram Township, approximately 390 feet northwest from the intersection of Waterloo Road and River Road in Lookwood. USGS Stanhope quadrangle; Latitude: 40 degrees, 55 minutes, 19.50 seconds N.; Longitude: 74 degrees, 43 minutes, 50.63 seconds W.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam; moderate fine granular structure; friable; 1 percent fine distinct red (2.5YR 4/6) iron-manganese masses; strongly acid; clear smooth boundary.

A2—5 to 12 inches; dark gray (10YR 4/1) silt loam; moderate fine granular structure; friable; 30 percent fine distinct red (2.5YR 4/6) iron-manganese masses; strongly acid; clear smooth boundary.

C1—12 to 18 inches; grayish brown (2.5Y 5/2) sandy clay loam; massive; friable; 30 percent medium prominent yellowish red (5YR 4/6) iron-manganese masses; strongly acid; clear wavy boundary.

C2—18 to 24 inches; dark yellowish brown (10YR 4/6) sandy clay loam; massive; friable; 30 percent medium distinct strong brown (7.5YR 4/6) iron-manganese masses; 15 percent medium distinct light brownish gray (2.5Y 6/2) iron depletions; strongly acid; gradual wavy boundary.

C3—24 to 60 inches; light brownish gray (2.5Y 6/2) sandy loam; massive; friable; 30 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses; strongly acid.

### Range in Characteristics

**Thickness of solum:** 6 to 30 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 35 percent gravel, by volume throughout the soil

**Reaction:** variable

**Permeability:** variable

#### A horizon:

Color - hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 6

Texture - variable

Structure - weak to moderate granular

Redoximorphic features - iron concentrations in shades of dark red

#### C horizon:

Color - hue of 7.5YR to 2.5Y, value of 3 to 7, and chroma of 2 to 6

Texture - variable

Structure - massive

Redoximorphic features - iron depletions in shades of light brownish gray and iron concentrations in shades of strong brown to yellowish red

## Great Piece Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Outwash plain

**Parent Material:** Fine-loamy outwash derived from basalt, sandstone, and gneiss

**Drainage Class:** Poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Parsippany

### Taxonomic Classification

Fine-loamy, mixed, superactive, mesic Aeric Endoaqualfs

### Typical Pedon

Great Piece loam in an area of Great Piece loam, 0 to 3 percent slopes, in hardwoods; located Essex County, New Jersey; town of Fairfield, in Great Piece Meadows; 300 feet west of the western end of Marginal Road and 300 feet north of Route 80. USGS Pompton Plains quadrangle; Latitude: 40 degrees, 53 minutes, 39.02 seconds N.; Longitude: 74 degrees, 17 minutes, 49.31 seconds W. (fig. 14)

Oi—0 to 1 inches; slightly decomposed plant material; 64 percent fiber, unrubbed; 50 percent fiber, rubbed.

A—1 to 7 inches; black (10YR 2/1) loam; moderate fine granular structure; friable; many fine and common medium and coarse roots throughout; very strongly acid; abrupt smooth boundary.

Btg1—7 to 12 inches; dark gray (10YR 4/1) sandy clay loam; moderate medium subangular blocky structure; friable; many medium and common coarse roots throughout; 5 percent patchy distinct clay films on surfaces along pores and 5 percent patchy distinct clay films on surfaces along root channels; 15 percent medium faint dark grayish brown (10YR 4/2) masses of oxidized iron throughout; 10 percent medium prominent yellowish brown (10YR 5/8) masses of oxidized iron throughout; very strongly acid; clear wavy boundary.

Btg2—12 to 20 inches; gray (10YR 5/1) fine sandy loam; moderate medium subangular blocky structure; friable; common medium roots throughout; 5 percent patchy distinct clay films on surfaces along root channels and 5 percent patchy distinct clay films on surfaces along pores; 10 percent medium distinct yellowish brown (10YR 5/8) masses of oxidized iron throughout; 10 percent medium distinct brown (10YR 4/3) masses of oxidized iron throughout; strongly acid; clear wavy boundary.

Bg—20 to 29 inches; gray (10YR 5/1) loamy fine sand; moderate medium subangular blocky structure; friable; 15 percent coarse prominent dark yellowish brown (10YR 3/4) masses of oxidized iron throughout; 10 percent coarse prominent black (10YR 2/1) manganese masses throughout; moderately acid; clear wavy boundary.

BC—29 to 33 inches; dark yellowish brown (10YR 4/4) loamy fine sand; moderate medium and fine subangular blocky structure; friable; 15 percent medium distinct

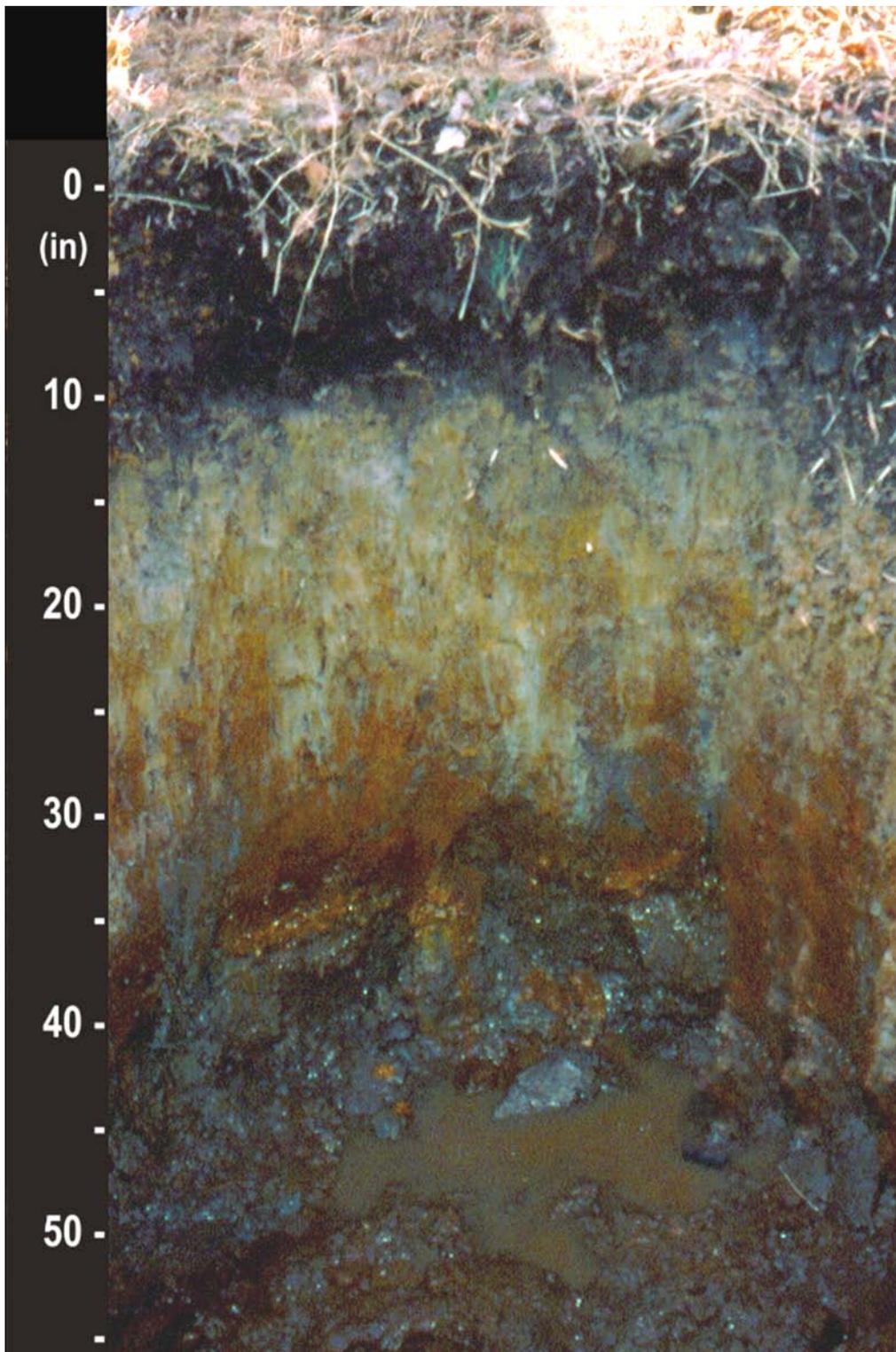


Figure 14. Great Piece soil profile. These poorly drained soils formed in stratified glaciolacustrine sediments. Soil material is derived primarily from granitic gneiss, with some basalt and red sandstone.

greenish gray (10Y 6/1) iron depletions throughout; slightly acid; clear wavy boundary.

Cg1—33 to 37 inches; gray (10YR 5/1) silt loam; massive; friable; 25 percent coarse prominent dark yellowish brown (10YR 4/4) masses of oxidized iron throughout; 1 percent medium prominent greenish gray (5G 5/1) iron depletions throughout; slightly acid; clear wavy boundary.

Cg2—37 to 50 inches; dark grayish brown (10YR 4/2) very fine sandy loam; massive; friable; 15 percent fine prominent strong brown (7.5YR 4/6) masses of oxidized iron throughout; neutral; clear wavy boundary.

Cg3—50 to 85 inches; dark gray (2.5Y 4/1) silt loam; massive; friable; slightly alkaline.

### Range in Characteristics

**Thickness of solum:** 33 to 45 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** generally lacking but can range up to 5 percent gravel in horizon within the solum, and to 15 percent gravel in the C horizon

**Reaction:** very strongly acid or strongly acid near the surface, very strongly acid to moderately acid in the B horizon, and neutral to slightly alkaline in the C horizon

**Permeability:** moderately slow to moderately rapid in the solum; moderate to moderately rapid in the substratum

#### **O horizon:**

Color - black

Texture - slightly to moderately decomposed plant material

#### **A horizon:**

Color - hue of 10YR to 2.5Y, value of 2 to 4, and chroma of 1 to 3

Texture - sandy loam, silt loam, or loam

Structure - fine to medium granular

#### **BA or BE horizon (if it occurs):**

Color - hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 1 to 3

Texture - sandy loam, silt loam, or loam

Structure - fine to medium subangular blocky

Redoximorphic features - iron concentrations in shades of brown, yellowish brown and dark yellowish brown

#### **B horizon:**

Color - hue of 7.5YR to 2.5Y, or neutral, value of 3 to 6, and chroma of 0 to 6

Texture - sandy clay loam, silty clay loam, clay loam, sandy loam, or loam

Structure - medium to coarse subangular blocky

Redoximorphic features - iron depletions in shades of greenish gray and iron concentrations in shades of brown and dark yellowish brown

#### **BC horizon:**

Color - hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 1 to 6

Texture - silt loam to loamy sand

Structure - subangular blocky or massive

Redoximorphic features - iron depletions in shades of greenish gray and iron concentrations in shades of brown and dark yellowish brown

**C horizon:**

Color - hue of 7.5YR to 2.5Y, value of 5 to 6, chroma of 1 to 6

Texture - silt loam to loamy sand

Structure - massive or single grain

Redoximorphic features - iron depletions in shades of greenish gray and iron concentrations in shades of brown and dark yellowish brown

## Haledon Series

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Till plain, ground moraine

**Parent Material:** Coarse-loamy basal till derived from basalt

**Drainage Class:** Somewhat poorly drained

**Soil Depth Class:** Moderately deep to a fragipan layer

**Slope:** 0 to 15 percent

### Associated Soils

Boonton

Hasbrouck

Moderately well drained Boonton

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Aquic Fragiudalfs

### Typical Pedon

Haledon silt loam in an area of Haledon silt loam, 0 to 8 percent slopes, extremely stony, in hardwoods; located Essex County, New Jersey; town of Millburn, in South Mountain Reservation; 247 feet northwest from the intersection of Lackawanna Place and Glen Avenue. USGS Roselle quadrangle; Latitude: 40 degrees, 43 minutes, 38.50 seconds N.; Longitude: 74 degrees, 18 minutes, 18.58 seconds W.

Oe—0 to 2 inches; very dark brown (10YR 2/2) moderately decomposed plant material; many fine and common medium roots; extremely acid; abrupt smooth boundary.

Ap—2 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2), dry; moderate fine subangular blocky structure parting to moderate fine granular; friable; common fine and medium roots; 3 percent nonflat subangular fine gravel and 7 percent nonflat subangular medium and coarse gravel and 3 percent nonflat subangular cobbles; extremely acid; clear wavy boundary.

Bt—8 to 15 inches; brown (10YR 5/3) silt loam; moderate medium subangular blocky structure; friable; common fine roots; 6 percent patchy distinct clay films; 15 percent medium prominent strong brown (7.5YR 5/6) iron-manganese masses; 10 percent medium faint light brownish gray (10YR 6/2) iron depletions; 5 percent medium prominent black (10YR 2/1) iron-manganese nodules; 4 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 5 percent nonflat subangular cobbles; very strongly acid; clear wavy boundary.

Btg—15 to 22 inches; 60 percent light brownish gray (10YR 6/2) and 40 percent strong brown (7.5YR 5/8) silt loam; moderate medium subangular blocky structure; friable; common fine roots; 30 percent patchy distinct clay films; 4 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 5 percent nonflat subangular cobbles; strongly acid; clear wavy boundary.

2Bt1—22 to 27 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure; friable; common fine roots; 15 percent patchy distinct clay films on rock fragments; 15 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses; 15 percent medium prominent pinkish gray (7.5YR 6/2) iron depletions; 5 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 4 percent nonflat subangular cobbles; moderately acid; clear wavy boundary.

2Bt2—27 to 30 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure parting to weak medium platy; friable; common fine roots; 20 percent patchy distinct clay films on rock fragments; 15 percent coarse prominent gray (10YR 5/1) iron depletions; 15 percent coarse prominent strong brown (7.5YR 4/6) iron-manganese masses; 5 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 4 percent nonflat subangular cobbles; moderately acid; clear wavy boundary.

BCtx—30 to 60 inches; dark reddish brown (5YR 3/4) gravelly fine sandy loam; strong very thick platy structure; firm; 30 percent patchy distinct clay films; 15 percent medium prominent grayish brown (2.5Y 5/2) iron depletions; 15 percent coarse prominent black (10YR 2/1) manganese coatings; 11 percent nonflat subangular fine gravel and 7 percent nonflat subangular medium and coarse gravel and 4 percent nonflat subangular cobbles; slightly acid.

### Range in Characteristics

**Thickness of solum:** 36 to greater than 60 inches

**Depth to bedrock:** greater than 60 inches

**Depth to fragipan:** 24 to 36 inches

**Content and size of rock fragments:** 0 to 25 percent gravel and 0 to 5 percent cobbles, by volume in the solum; 0 to 35 percent gravel and 0 to 10 percent cobbles, by volume in the substratum

**Reaction:** very strongly acid to strongly acid in the upper part of the solum; strongly acid to slightly acid in the lower part of the solum; moderately acid to neutral in the C horizon

**Permeability:** moderate to moderately rapid in the upper solum; slow in the fragipan; moderately rapid to rapid in the substratum

#### **O horizon:**

Color - hue of 7.5YR or 10YR, value of 2, and chroma of 1 or 2

Texture - slightly to moderately decomposed plant material

#### **A horizon:**

Color - hue of 7.5YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4

Texture - silt loam or loam

Structure - moderate to weak, medium to fine granular and subangular blocky

#### **BA or BE horizon:**

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

Texture - silt loam or loam

**Bt horizon:**

Color - hue of 5YR to 10YR, value of 4 to 8, and chroma of 1 to 6

Texture - fine sandy loam, silt loam, or loam

Structure - commonly moderate to weak, coarse to fine subangular blocky

**Btx horizon:**

Color - hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6

Texture - sandy loam, fine sandy loam, or loam

Structure - weak or moderate medium subangular blocky to moderate or strong, thin to very thick platy The Bx horizon is very firm or firm, and brittle.

Redoximorphic features - iron depletions in shades of gray, iron concentrations in shades of red and brown, and black manganese concentrations

**C horizon (if it occurs):**

Color - hue of 2.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 6

Texture - sandy loam or loam

Structure - massive but some lenses of weak medium to thick platy-like aggregation may occur in places

**Hasbrouck Series**

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Till plain, depression

**Parent Material:** Fine-loamy eroded and redeposited glacial material over glacial till

**Drainage Class:** Poorly drained

**Soil Depth Class:** Shallow to a fragipan layer

**Slope:** 0 to 8 percent

**Associated Soils**

Haledon

Natchaug

**Taxonomic Classification**

Fine-loamy, mixed, superactive, mesic Typic Fragiaqualfs

**Typical Pedon**

Hasbrouck silt loam in an area of Hasbrouck silt loam, 0 to 8 percent slopes, extremely stony, in hardwoods; located Eagle Rock Reservation, Essex County, approximately 700 feet northeast of stone building and 300 feet northwest of parking lot. USGS Orange quadrangle; Latitude: 40 degrees, 48 minutes, 23.67 seconds N.; Longitude: 74 degrees, 14 minutes, 19.10 seconds W. (fig. 15)

Oe—0 to 1 inches; moderately decomposed plant material; extremely acid.

Oa—1 to 2 inches; highly decomposed plant material; very strongly acid.

A1—2 to 5 inches; grayish brown (10YR 5/2) silt loam, light brownish gray (10YR 6/2), dry; moderate fine granular structure parting to moderate medium subangular blocky; friable; many fine and medium roots throughout; extremely acid; clear wavy boundary.

A2—5 to 10 inches; grayish brown (10YR 5/2) gravelly loam, light brownish gray (10YR 6/2), dry; moderate medium subangular blocky structure; friable; many

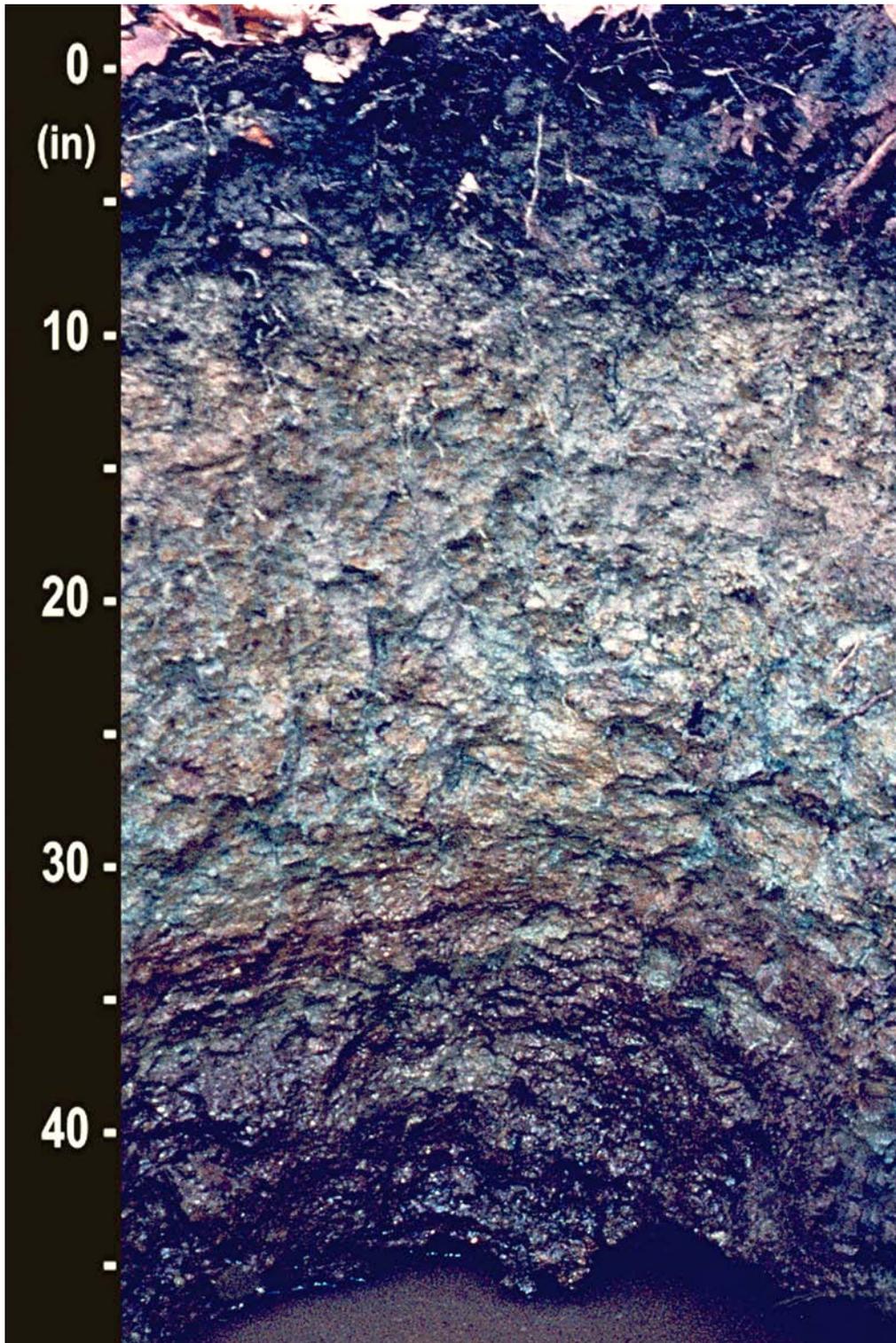


Figure 15. Hasbrouck soil profile. These poorly drained soils typically formed from eroded and redeposited glacial materials overlying till of Wisconsin Age. The till materials are composed primarily of red shales, red sandstone, and basalt.

fine and medium roots throughout; 30 percent fine prominent black (10YR 2/1) iron depletions; 15 percent medium distinct yellowish brown (10YR 5/6) iron-manganese masses; 10 percent nonflat subangular fine gravel and 14 percent nonflat subangular medium gravel; strongly acid; abrupt wavy boundary.

Eg—10 to 17 inches; light brownish gray (10YR 6/2) loam; moderate medium subangular blocky structure; friable; common fine and medium roots throughout; 30 percent medium distinct yellowish brown (10YR 5/6) iron-manganese masses; 12 percent medium prominent irregular weakly cemented black (N 2.5/) iron-manganese nodules throughout; 4 percent nonflat subangular fine gravel and 4 percent nonflat subangular medium gravel and 1 percent nonflat subangular coarse gravel; slightly acid; clear wavy boundary.

Btg1—17 to 25 inches; gray (10YR 5/1) loam; moderate medium subangular blocky structure parting to moderate very coarse prismatic and moderate coarse subangular blocky parting to moderate very coarse prismatic; friable; common fine roots throughout; 30 percent medium distinct spherical yellowish brown (10YR 5/8) iron-manganese masses in matrix; 30 percent coarse faint brown (7.5YR 5/2) iron depletions on faces of peds; slightly acid; gradual wavy boundary.

Btg2—25 to 34 inches; gray (10YR 6/1) loam; strong medium subangular blocky and coarse subangular blocky structure; friable; 30 percent medium distinct spherical yellowish brown (10YR 5/6) iron-manganese masses in matrix; 15 percent medium distinct reddish brown (5YR 4/4) and strong brown (7.5YR 4/6) iron-manganese masses; slightly acid; abrupt wavy boundary.

Btx—34 to 36 inches; reddish brown (5YR 4/4) gravelly loam; strong very thick platy structure; firm; 30 percent coarse prominent spherical strong brown (7.5YR 4/6) iron-manganese masses throughout; 1 percent coarse prominent spherical gray (7.5YR 6/1) iron depletions throughout; 6 percent nonflat subangular fine gravel and 18 percent nonflat subangular medium gravel and 1 percent nonflat subangular coarse gravel; neutral; abrupt wavy boundary.

Btgx—36 to 39 inches; gray (10YR 5/1) loam; moderate coarse subangular blocky structure; friable; 10 percent patchy distinct clay films on faces of peds; 30 percent medium distinct yellowish brown (10YR 5/6) iron-manganese masses; 15 percent coarse prominent spherical reddish brown (5YR 4/3) iron depletions throughout; 15 percent medium prominent spherical strong brown (7.5YR 4/6) iron-manganese masses throughout; 2 percent nonflat subangular cobbles; neutral; abrupt wavy boundary.

B'tx—39 to 50 inches; dark reddish brown (5YR 3/3) fine sandy loam; moderate coarse subangular blocky structure; firm; common fine vesicular pores; 10 percent patchy distinct clay films between sand grains; 30 percent medium distinct spherical strong brown (7.5YR 4/6) iron-manganese masses throughout; 5 percent nonflat subangular fine gravel and 7 percent nonflat subangular medium gravel and 2 percent nonflat subangular cobbles; neutral; clear wavy boundary.

CB—50 to 60 inches; dark reddish brown (5YR 3/3) fine sandy loam; weak coarse subangular blocky structure; friable; 3 percent nonflat subangular fine gravel and

5 percent nonflat subangular medium gravel and 3 percent nonflat subangular coarse gravel; neutral.

### Range in Characteristics

**Thickness of solum:** 36 inches to greater than 50 inches

**Depth to bedrock:** greater than 40 inches

**Depth to fragipan:** 16 to 34 inches

**Content and size of rock fragments:** 0 to 35 percent gravel and 0 to 15 percent cobbles, by volume in the solum; 0 to 50 percent gravel and 0 to 30 percent cobbles, by volume in the substratum

**Reaction:** extremely acid to slightly acid in the upper part of the solum; slightly acid to neutral in the lower part of the solum; moderately acid to neutral in the C horizon

**Permeability:** moderate to moderately rapid in the upper solum; slow in the fragipan; moderate to moderately rapid in the substratum

#### **O horizon:**

Color - black to dark brown

Texture - moderately decomposed plant material to highly decomposed plant material

#### **A or Ap horizon:**

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

Texture - loam or silt loam

Structure - weak or moderate, fine or medium, subangular blocky and granular

#### **E or Eg horizon:**

Color - hue of 2.5YR to 10YR, value of 3 to 6, and chroma of 1 or 2

Texture - sandy loam to silt loam

Structure - moderate or weak, medium or fine, subangular blocky

Redoximorphic features - iron concentrations in shades of red and brown and black manganese concretions

#### **Btg horizon:**

Color - hue of 2.5YR to 10YR, value of 3 to 7, and chroma of 1 or 2

Texture - loam, clay loam, or sandy clay loam

Structure - moderate or weak, medium or coarse, subangular blocky

Redoximorphic features - iron depletions in shades of gray, and iron concentrations in shades of red and brown

#### **Btx horizon:**

Color - hue of 2.5YR to 10YR, value of 3 to 7, and chroma of 1 to 8

Texture - loam, fine sandy loam, or sandy loam

Structure - weak to strong moderate, medium or thick platy, and may be within weak coarse prisms

Redoximorphic features - iron depletions in shades of gray, iron concentrations in shades of red and brown, and black manganese stains

#### **CB horizon:**

Color - hue of 10R to 10YR, value of 3 to 7, and chroma of 0 to 6

Texture - dominantly sandy loam but ranges from loamy sand to loam

Structure - weak or moderate, medium or coarse, subangular blocky

Redoximorphic features - iron depletions in shades of gray, and iron concentration in shades of red and brown

**Note:**

The Hasbrouck soils in Essex County are taxadjuncts because they have a higher cation exchange activity class in the cation-exchange activity class control section. These soils classify as fine-loamy, mixed, superactive, mesic Typic Fragiaqualfs.

**Hinckley Series**

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Delta plain, esker

**Parent Material:** Sandy-skeletal soils formed in water-sorted sand and gravel derived principally from granite, gneiss, basalt, and red sandstone

**Drainage Class:** Excessively drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 15 percent

**Associated Soils**

Knickerbocker

Udorthents

**Taxonomic Classification**

Sandy-skeletal, mixed, mesic Typic Udorthents

**Typical Pedon**

Hinckley sandy loam in an area of Hinckley sandy loam, 3 to 8 percent slopes, in hardwoods; located Essex County, New Jersey; town of Cedar Grove, in the Essex County Hospital Complex; 374 feet southeast of the building number 5 and 63 feet west of local road. USGS Orange quadrangle; Latitude: 40 degrees, 51 minutes, 11.14 seconds N.; Longitude: 74 degrees, 14 minutes, 22.62 seconds W. (fig. 16)

A—0 to 4 inches; very dark brown (10YR 2/2) sandy loam; moderate fine granular and moderate medium granular structure; friable; many fine roots; 1 percent nonflat subrounded fine gravel; moderately acid; clear wavy boundary.

Ap—4 to 10 inches; dark brown (10YR 3/3) gravelly sandy loam; weak medium subangular blocky structure parting to moderate medium granular; friable; many fine roots and common medium roots and common coarse roots; 7 percent nonflat subrounded and 8 percent nonflat subangular coarse gravel; very strongly acid; clear wavy boundary.

Bw1—10 to 15 inches; brown (7.5YR 4/4) very gravelly sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 27 percent nonflat subrounded fine and medium gravel and 3 percent nonflat subangular and 20 percent nonflat subrounded coarse gravel; strongly acid; clear wavy boundary.

Bw2—15 to 26 inches; strong brown (7.5YR 4/6) extremely gravelly loamy sand; weak medium subangular blocky structure; very friable; common fine and medium roots; 60 percent nonflat subrounded fine and medium gravel and 15 percent nonflat subrounded coarse gravel and 5 percent nonflat subangular cobbles; moderately acid; clear wavy boundary.

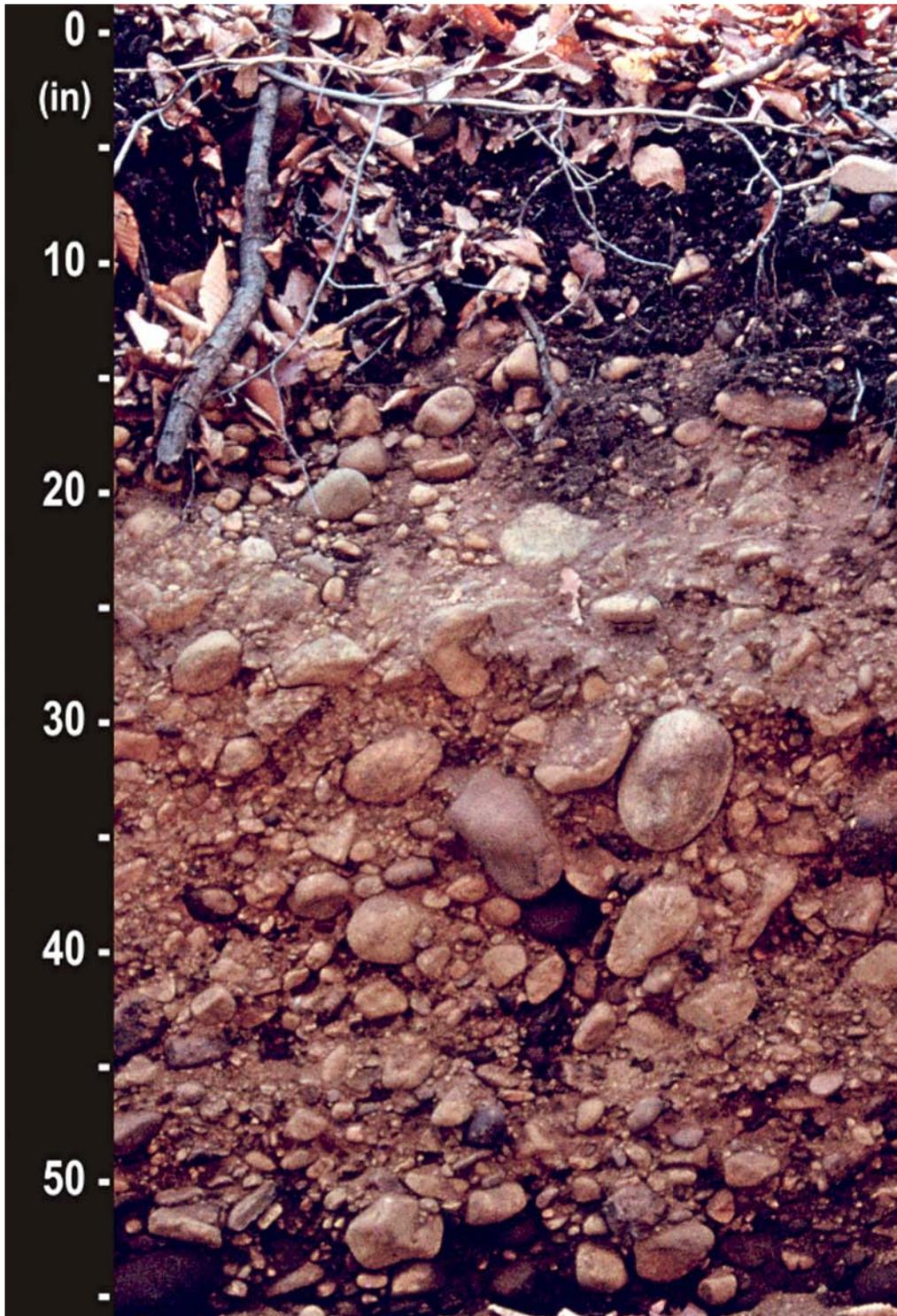


Figure 16. Hinckley soil profile. These excessively drained soils formed in water-sorted sand and gravel derived principally from granite, gneiss, and schist.

C—26 to 60 inches; brown (7.5YR 4/4) extremely gravelly sand; single grain; loose; 30 percent coarse prominent black (10YR 2/1) masses of oxidized iron around rock fragments; 40 percent nonflat subrounded fine and medium gravel and 30 percent nonflat subrounded coarse gravel and 10 percent nonflat subangular cobbles; moderately acid.

### Range in Characteristics

**Thickness of solum:** 12 to 30 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** solum ranges from 5 to 50 percent gravel, 0 to 15 percent cobbles, and 0 to 3 percent stones. Rock fragment content of individual horizons of the substratum ranges from 10 to 50 percent gravel, 5 to 25 percent cobbles, and 0 to 5 percent stones

**Reaction:** extremely acid to moderately acid

**Permeability:** moderate to moderately rapid in the upper part of the solum; moderately rapid to rapid in the lower part of the solum; moderately rapid to rapid in the substratum

#### A horizon:

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

Texture - very fine sandy loam, fine sandy loam, sandy loam, loamy fine sand, loamy sand, or loamy coarse sand

Structure - weak or moderate very fine to coarse granular

#### B horizon:

Color - hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4 to 8

Texture - fine sandy loam, sandy loam, loamy fine sand, loamy sand, or loamy coarse sand

Structure - weak fine and/or medium granular

#### C horizon:

Color - hue of 7.5YR or 5YR, value of 3 to 7, and chroma of 2 to 8

Texture - loamy fine sand, loamy sand, loamy coarse sand, fine sand, sand, or coarse sand

Structure - single grain

## Holyoke Series

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Ground moraine, till plain, hill, ridge

**Parent Material:** Loamy till derived from basalt

**Drainage Class:** Well drained

**Soil Depth Class:** Shallow to a bedrock (lithic) layer

**Slope:** 0 to 60 percent

### Associated Soils

Boonton

Rock outcrops

Yalesville

### Taxonomic Classification

Loamy, mixed, superactive, mesic Lithic Dystrudepts

### Typical Pedon

Holyoke silt loam in an area of Holyoke silt loam, 0 to 15 percent slopes, very rocky, in hardwoods; located Eagle Rock Reservation, Essex County, approximately 1,800 feet north of parking lot and 950 feet northwest of Crest Drive. USGS Orange quadrangle; Latitude: 40 degrees, 48 minutes, 39.08 seconds N.; Longitude: 74 degrees, 14 minutes, 16.45 seconds W. (fig. 17)

Oi—0 to 1 inches; slightly decomposed plant material; 56 percent fiber, unrubbed; 36 percent fiber, rubbed; extremely acid; abrupt smooth boundary.

Oa—1 to 3 inches; highly decomposed plant material; 52 percent fiber, unrubbed; 24 percent fiber, rubbed; extremely acid; abrupt wavy boundary.

A—3 to 5 inches; dark yellowish brown (10YR 3/4) silt loam; weak medium granular structure; friable; common fine and medium roots throughout; 2 percent nonflat subangular fine gravel and 1 percent nonflat subangular medium gravel; extremely acid; clear wavy boundary.

Bw1—5 to 14 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine and medium roots throughout; 3 percent nonflat subangular fine gravel and 4 percent nonflat subangular medium gravel; extremely acid; clear wavy boundary.

Bw2—14 to 18 inches; reddish brown (5YR 4/4) loam; moderate medium subangular blocky structure; friable; common medium roots throughout; 4 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium gravel; extremely acid; very abrupt wavy boundary.

R—18 inches; basalt bedrock.

### Range in Characteristics

**Thickness of solum:** 10 to 20 inches

**Depth to bedrock:** 10 to 20 inches

**Content and size of rock fragments:** 0 to 35 percent gravel by volume

**Reaction:** extremely acid

**Permeability:** moderate to moderately rapid in the solum

**O horizon:**

Color - hue of 7.5YR or 10YR, value of 2, and chroma of 0 to 2

Texture - slightly decomposed plant material to highly decomposed plant material

**A horizon:**

Color - hue of 5YR or 10YR, value of 3 or 4, and chroma of 1 to 4

Texture - silt loam, loam, fine sandy loam, or very fine sandy loam

Structure - weak to strong, medium or fine, granular

**Bw horizon:**

Color - hue of 2.5YR to 7.5YR, value of 3 to 6, and chroma of 4 to 6

Texture - silt loam, fine sandy loam, or very fine sandy loam

Structure - weak granular or subangular blocky, or the horizon is massive

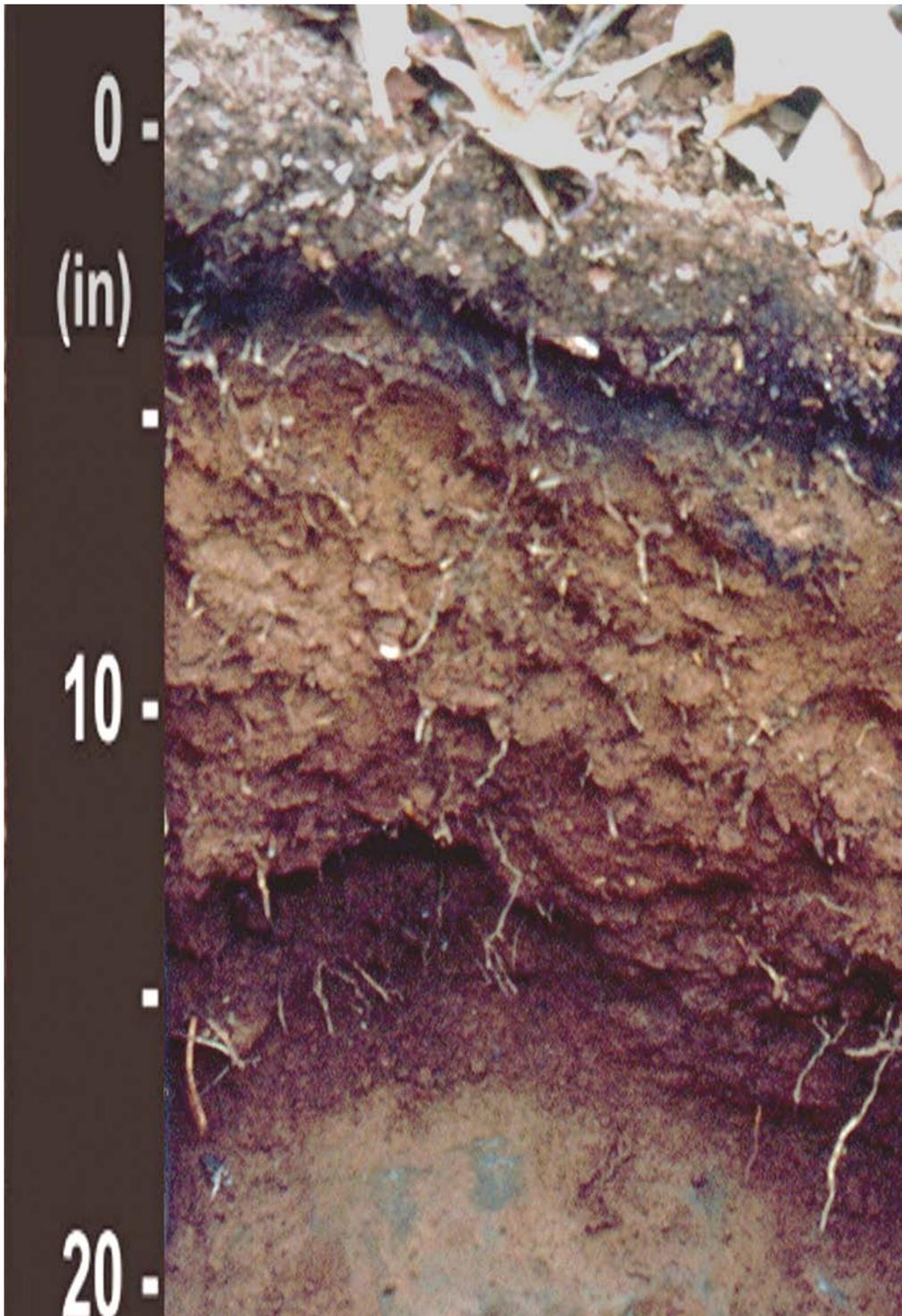


Figure 17. Holyoke soil profile. These shallow, well drained and somewhat excessively drained soils formed in a thin mantle of glacial till over bedrock. Some pedons have been modified by silty windblown deposits. The underlying bedrock is primarily basalt but includes red sandstone, conglomerate, or shale. Rock outcrops range from few to many.

## Horseneck Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Delta plain, outwash plain

**Parent Material:** Coarse-loamy outwash derived from gneiss, basalt, and sandstone

**Drainage Class:** Moderately well drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 8 percent

### Associated Soils

Knickerbocker

Pompton

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts

### Typical Pedon

Horseneck sandy loam in an area of Horseneck sandy loam, 0 to 3 percent slopes, in hardwoods; located Essex County, New Jersey; town of West Caldwell, Hatfield Swamp; 3,100 feet southwest of the intersection of Passaic Avenue and Bloomfield Avenue 2,400 feet south on power line access road. USGS Caldwell quadrangle; Latitude: 40 degrees, 50 minutes, 44.00 seconds N.; Longitude: 74 degrees, 18 minutes, 23.00 seconds W.

A—0 to 2 inches; very dark brown (10YR 2/2) sandy loam; weak fine granular structure; very friable; very strongly acid; clear wavy boundary.

Bw1—2 to 14 inches; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; clear wavy boundary.

Bw2—14 to 22 inches; light olive brown (2.5Y 5/4) sandy loam; moderate medium subangular blocky structure; friable; slightly acid; clear wavy boundary.

BC1—22 to 27 inches; light olive brown (2.5Y 5/4) loamy sand; weak medium subangular blocky structure; very friable; 1 percent fine prominent irregular strong brown (7.5YR 4/6) masses of oxidized iron throughout; 1 percent coarse distinct irregular light yellowish brown (2.5Y 6/3) iron depletions throughout; slightly acid; clear wavy boundary.

BC2—27 to 44 inches; light olive brown (2.5Y 5/3) loamy sand; massive; friable; 1 percent medium distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron throughout; slightly acid; clear wavy boundary.

C—44 to 60 inches; strong brown (7.5YR 4/6) loamy sand; massive; friable; 1 percent medium prominent irregular light olive brown (2.5Y 5/3) iron depletions throughout; slightly acid.

### Range in Characteristics

**Thickness of solum:** 30 to 48 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 15 percent gravel by volume

**Reaction:** very strongly acid to slightly acid

**Permeability:** moderate to moderately rapid in the solum; moderately rapid to rapid in the substratum

**O horizon (if it occurs):**

Color - black to brown

Texture - slightly to moderately decomposed plant material

**A horizon:**

Color - hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 6

Texture - loam, fine sandy loam, or sandy loam

Structure - weak to moderate granular

**B horizon:**

Color - hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6

Texture - sandy loam to loamy sand

Structure - weak to moderate subangular blocky

Redoximorphic features - iron depletions in shades of light gray and iron concentrations in shades of yellowish red to dark yellowish brown

**BC horizon:**

Color - hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6

Texture - loamy sand or sand

Structure - weak subangular blocky or massive

Redoximorphic features - iron depletions in shades of light gray and iron concentrations in shades of yellowish red to dark yellowish brown

**C horizon:**

Color - hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 6

Texture - loamy sand or sand

Structure - massive or single grain

Redoximorphic features - iron depletions in shades of light gray and iron concentrations in shades of yellowish red to dark yellowish brown

**Knickerbocker Series**

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Terrace, lake plain

**Parent Material:** Sandy outwash

**Drainage Class:** Well drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 15 percent

**Associated Soils**

Horseneck

Udorthents

**Taxonomic Classification**

Sandy, mixed, mesic Typic Dystrudepts

**Typical Pedon**

Knickerbocker fine sandy loam in an area of Knickerbocker fine sandy loam, 0 to 3 percent slopes, in cropland; located town of Fairfield, Essex County; approximately 488 feet west from the intersection of Old Sand Road and Passaic Avenue and 336 feet northeast from Dale Drive. Pompton Plains quadrangle; Latitude: 40 degrees, 53 minutes, 25.37 seconds N.; Longitude: 74 degrees, 16 minutes, 32.56 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium subangular blocky structure parting to moderate fine granular; very friable; common fine roots; strongly acid; clear smooth boundary.

- Bw—8 to 23 inches; strong brown (7.5YR 4/6) fine sandy loam; moderate medium subangular blocky structure; friable; common fine roots; strongly acid; gradual wavy boundary.
- BC—23 to 34 inches; dark yellowish brown (10YR 4/6) loamy fine sand; moderate medium subangular blocky structure; friable; common fine roots; moderately acid; gradual wavy boundary.
- C1—34 to 42 inches; dark yellowish brown (10YR 4/6) loamy fine sand; single grain; loose; common fine roots; moderately acid; gradual wavy boundary.
- C2—42 to 51 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; 6 percent medium prominent red (2.5YR 4/6) iron-manganese masses; 1 percent medium faint pale brown (10YR 6/3) iron depletions; moderately acid; gradual wavy boundary.
- C3—51 to 60 inches; dark yellowish brown (10YR 4/4) loamy fine sand; single grain; loose; 30 percent coarse distinct pale brown (10YR 6/3) iron depletions; 30 percent medium distinct brown (7.5YR 4/4) iron-manganese masses; moderately acid.

### Range in Characteristics

**Thickness of solum:** 14 to 40 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 15 percent gravel, by volume

**Reaction:** strongly acid to moderately acid

**Permeability:** moderately rapid in the upper part of the solum and moderately rapid to very rapid in the lower part of the solum and substratum

**O horizon (if it occurs):**

Color - black to brown

Texture - slightly to moderately decomposed plant material

**A horizon:**

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

Texture - fine sandy loam or sandy loam

Structure - weak to strong granular and/or moderate subangular blocky

**B horizon:**

Color - hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 to 6

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

Structure - weak or moderate subangular blocky or single grain

**C horizon:**

Color - hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4

Texture - loamy fine sand, sand, fine sand, or very fine sand

Structure - single grain or massive

Redoximorphic features - iron depletions in shades of pale brown and iron concentrations in shades of red or brown

## Natchaug Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Outwash plain

**Parent Material:** Woody organic material

**Drainage Class:** Very poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 2 percent

### Associated Soils

Catden

Timakwa

### Taxonomic Classification

Loamy, mixed, euic, mesic Terric Haplosaprists

### Typical Pedon

Natchaug muck in an area of Natchaug muck, 0 to 2 percent slopes, in hardwoods; located West Caldwell, Essex County; approximately 1,596 feet northwest from the intersection of Fairfield Place and Fairfield Circle. USGS Caldwell quadrangle; Latitude: 40 degrees, 52 minutes, 0.65 seconds N.; Longitude: 74 degrees, 17 minutes, 44.47 seconds W.

Oa1—0 to 5 inches; black (N 2.5/) muck; moderate fine granular structure; friable; 15 percent fiber, unrubbed; 2 percent fiber, rubbed; common medium and coarse roots; moderately acid; gradual wavy boundary.

Oa2—5 to 18 inches; black (N 2.5/) muck; moderate medium subangular blocky structure; friable; 15 percent fiber, unrubbed; 2 percent fiber, rubbed; many fine and common medium roots; moderately acid; clear wavy boundary.

Oa3—18 to 40 inches; very dark brown (10YR 2/2) muck; massive; very friable; 70 percent fiber, unrubbed; 5 percent fiber, rubbed; common medium and coarse roots; 15 percent wood fragments; strongly acid; clear wavy boundary.

2Cg—40 to 60 inches; dark greenish gray (5GY 4/1) sandy loam; massive; very friable; slightly acid.

### Range in Characteristics

**Depth to substratum:** ranges from 16 to 51 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** ranges from 0 to 20 percent gravel to stones, by volume in the C horizon

**Organic materials:** derived primarily from herbaceous plants, but some layers contain as much as 50 percent material of wood origin

**Reaction:** strongly acid to moderately acid in the organic material; slightly acid in the substratum

**Permeability:** moderate to very rapid in the organic layers and moderate or moderately slow in the loamy material

#### Oa horizon:

Color - hue of 10YR to 5YR, or neutral, value of 2 or 3, and chroma of 0 to 4

Texture - dominantly muck (sapric material), however, some pedons have mucky peat (hemic material). Some pedons have a thin mat, 1 to 4 inches thick, of sphagnum moss on the surface.

#### Oe Horizon (if it occurs):

Color - hue of 10YR to 5YR, or neutral, value of 2 to 4, and chroma of 0 to 6

Texture - mucky peat (hemic material) in some pedons. Thin layers, less than 5 inches thick, of peat (fibric material) are found in some pedons. In some pedons a sedimentary peat layer 1 to 2 inches thick is present above the C horizon.

**2Cg horizon:**

Color - hue of 10YR to 5GY, or neutral, value of 4 to 6, and chroma of 1 to 6

Texture - loamy very fine sand, very fine sandy loam, sandy loam, fine sandy loam, loam, silt loam, or gravelly analogues. Strata of finer textures occur in some pedons.

## Parsippany Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Lake terraces, outwash plains

**Parent Material:** Silty and clayey sediments derived from basalt, shale, and granitic gneiss material

**Drainage Class:** Poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Great Piece

### Taxonomic Classification

Fine, mixed, active, mesic Aeric Endoaqualfs

### Typical Pedon

Parsippany silt loam in an area of Parsippany silt loam, 0 to 3 percent slopes, frequently flooded, in other grass/herbaceous cover; located Essex County, New Jersey; town of Fairfield, at the Great Piece Meadows; 628 feet southwest from the intersection of Route 80 and Horseneck Road and 1,069 feet southeast from the intersection of Horseneck Road and Park Avenue. USGS Pompton Plains; Latitude: 40 degrees, 52 minutes, 37.47 seconds N.; Longitude: 74 degrees, 19 minutes, 45.27 seconds W.

Oi—0 to 1 inches; very dark brown (10YR 2/2) slightly decomposed plant material; strongly acid; clear wavy boundary.

A1—1 to 4 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2), dry; strong fine granular structure; loose; common fine roots; strongly acid; clear wavy boundary.

A2—4 to 7 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2), dry; moderate medium subangular blocky structure parting to strong fine granular; friable; many fine roots; 15 percent fine prominent dark red (2.5YR 3/6) iron- manganese masses; strongly acid; clear wavy boundary.

BAt—7 to 11 inches; very dark gray (10YR 3/1) silty clay loam; strong fine subangular blocky structure; friable, slightly sticky, very plastic; common fine roots; 25 percent patchy faint clay films on faces of peds; 15 percent fine distinct

dark yellowish brown (10YR 3/4) iron-manganese masses; moderately acid; clear wavy boundary.

Btg1—11 to 17 inches; dark gray (10YR 4/1) silty clay loam; moderate coarse subangular blocky structure; friable, very sticky, very plastic; common fine roots; 90 percent continuous prominent clay films on vertical faces of peds; 20 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses; moderately acid; gradual wavy boundary.

Btg2—17 to 22 inches; dark gray (10YR 4/1) silty clay; moderate coarse subangular blocky structure; friable, very sticky, very plastic; common fine roots; 90 percent continuous prominent clay films on vertical faces of peds; 30 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses; moderately acid; gradual wavy boundary.

Bt1—22 to 32 inches; 50 percent strong brown (7.5YR 5/8) and 47 percent dark gray (10YR 4/1) silty clay; moderate coarse subangular blocky structure; friable, very sticky, very plastic; common fine roots; common very fine vesicular pores; 90 percent continuous prominent clay films on faces of peds; 3 percent medium prominent yellowish red (5YR 5/8) iron-manganese masses; moderately acid; clear wavy boundary.

Bt2—32 to 36 inches; pale olive (5Y 6/3) silty clay; moderate medium subangular blocky structure; friable, very sticky, very plastic; common fine roots; 50 percent patchy distinct clay films on faces of peds; 10 percent medium prominent yellowish brown (10YR 5/6) iron-manganese masses; 4 percent fine prominent strong brown (7.5YR 4/6) iron-manganese masses; 3 percent medium prominent grayish green (5G 5/2) iron depletions; slightly acid; clear wavy boundary.

BCg—36 to 41 inches; dark gray (2.5Y 4/1) fine sandy loam; moderate medium subangular blocky structure; friable; 5 percent coarse distinct light yellowish brown (2.5Y 6/4) iron-manganese masses; slightly acid; gradual wavy boundary.

Cg1—41 to 53 inches; very dark gray (10YR 3/1) loamy fine sand; massive; friable; slightly acid; gradual wavy boundary.

Cg2—53 to 64 inches; very dark gray (10YR 3/1) loamy sand; massive; friable; slightly acid wavy boundary.

### Range in Characteristics

**Thickness of solum:** 30 to 60 inches or more

**Depth to bedrock:** greater than 60 inches

**Reaction:** strongly acid to neutral

**Permeability:** moderate in the surface horizons, slow or very slow in the subsoil, and moderately rapid to very slow in the substratum

#### O horizon:

Color - hue of 7.5YR or 10YR, value of 2, and chroma of 1 or 2

Texture - slightly to highly decomposed plant material

#### A horizon:

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

Texture - silt loam or silty clay loam

Structure - moderate or strong granular or subangular blocky  
 Redoximorphic features - iron concentrations in shades of dark red

**Ap horizon (if it occurs):**

Color - hue of 5YR to 10YR, value of 3 to 5 moist and 6 or 7 dry, and chroma of 1 or 2

Texture - silt loam or silty clay loam

Structure - moderate or strong granular or subangular blocky

Redoximorphic features - iron concentrations in shades of dark red

**BA horizon:**

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

Texture - silt loam or silty clay loam

Structure - moderate or strong subangular blocky

Redoximorphic features - iron concentrations in shades of dark yellowish brown

**Btg horizon:**

Color – hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 to 6

Texture - silt loam, silty clay loam, or silty loam

Structure - moderate or strong granular or subangular blocky

Redoximorphic features - iron concentrations in shades of strong brown

**Bt horizon:**

Color – hue of 5YR to 10YR, value of 4 to 6, and chroma of 1 to 6

Texture - silt loam, silty clay loam, or silty clay

Structure - moderate or strong subangular blocky or massive

Redoximorphic features - iron concentrations in shades of yellowish red, strong brown, and yellowish brown; iron depletions in shades of grayish green

**BCg horizon:**

Color - hue of 5YR to 5Y, value of 2 to 4, and chroma of 1 to 3

Texture - fine sandy loam, very fine sandy loam, silt loam, or silty clay loam

Structure - moderate or strong subangular blocky or massive

Redoximorphic features - iron concentrations in shades of light yellowish brown

**Cg horizon:**

Color - hue of 5YR to 5Y, value of 2 to 4, and chroma of 1 to 3

Texture - loamy fine sand, loamy sand, fine sand, or loam

Structure - massive or single grain

## Peckmantown Series

**Local Physiographic Area:** Peckman River Valley

**Geomorphic Setting:** Delta plain, outwash plain

**Parent Material:** Coarse-silty glaciolacustrine deposits derived from basalt

**Drainage Class:** Well drained

**Soil Depth Class:** Moderately deep to a fragipan layer

**Slope:** 0 to 15 percent

### Associated Soils

Boonton

Hinckley

### Taxonomic Classification

Coarse-silty, mixed, semiactive, mesic Typic Fragiudalfs

### Typical Pedon

Peckmantown silt loam in an area of Peckmantown silt loam, 3 to 8 percent slopes, in intermixed conifers and hardwoods; located Essex County, New Jersey; town of Cedar Grove, in the Essex County Hospital Center; 500 feet east of the parking lot in Fairview Avenue and 1,000 feet southwest of Winding Way. USGS Orange quadrangle; Latitude: 40 degrees, 51 minutes, 16.69 seconds N.; Longitude: 74 degrees, 14 minutes, 24.88 seconds W. (fig. 18)

A—0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine granular structure; friable; few fine roots; extremely acid; abrupt wavy boundary.

Ap—2 to 8 inches; brown (10YR 4/3) loam; moderate fine granular structure; friable; few fine, medium, and coarse roots; 1 percent nonflat subrounded fine gravel; extremely acid; abrupt wavy boundary.

BAt—8 to 14 inches; brown (10YR 4/3) loam; moderate medium subangular blocky structure; friable; few fine, medium, and coarse roots; 6 percent patchy faint brown (10YR 4/3) clay films on vertical faces of peds; 1 percent nonflat subrounded medium gravel; strongly acid; very abrupt smooth boundary.

Bt—14 to 27 inches; strong brown (7.5YR 5/6) silt loam; moderate medium subangular blocky and moderate fine subangular blocky structure; friable; few fine, medium, and coarse roots; 30 percent patchy distinct strong brown (7.5YR 5/6) clay films on vertical faces of peds and 30 percent continuous distinct dark grayish brown (10YR 4/2) clay films on surfaces along root channels; strongly acid; gradual wavy boundary.

Btx1—27 to 37 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular blocky structure parting to moderate thick platy; firm; few coarse roots; common fine vesicular pores; 30 percent continuous prominent brown (7.5YR 4/4) clay films on vertical faces of peds; 1 percent fine prominent black (N 2/) manganese coatings in matrix; strongly acid; clear wavy boundary.

Btx2—37 to 40 inches; 60 percent strong brown (7.5YR 5/6) and 40 percent pale brown (10YR 6/3) silt loam; moderate medium subangular blocky structure parting to weak thick platy and moderate fine subangular blocky parting to weak thick platy; firm; few fine roots; common fine vesicular pores; 30 percent continuous prominent brown (7.5YR 4/4) clay films on vertical faces of peds; 1 percent fine prominent black (N 2/) manganese coatings in matrix; moderately acid; abrupt wavy boundary.

BCtx—40 to 59 inches; 35 percent yellowish brown (10YR 5/6) and 35 percent light yellowish brown (2.5Y 6/3) and 30 percent strong brown (7.5YR 5/6) silt loam; weak thick platy structure; firm; few fine roots; common fine vesicular pores; 10 percent continuous faint clay films on vertical faces of peds; 1 percent fine prominent black (N 2/) manganese coatings in matrix; moderately acid; clear wavy boundary.

2C1—59 to 63 inches; strong brown (7.5YR 5/8) gravelly loamy coarse sand; single grain; loose; few fine roots; 1 percent prominent black (N 2/) iron-manganese masses around rock fragments; 5 percent nonflat well rounded fine gravel, 10 percent nonflat well rounded medium gravel, and 1 percent nonflat well rounded coarse gravel; moderately acid; abrupt wavy boundary.

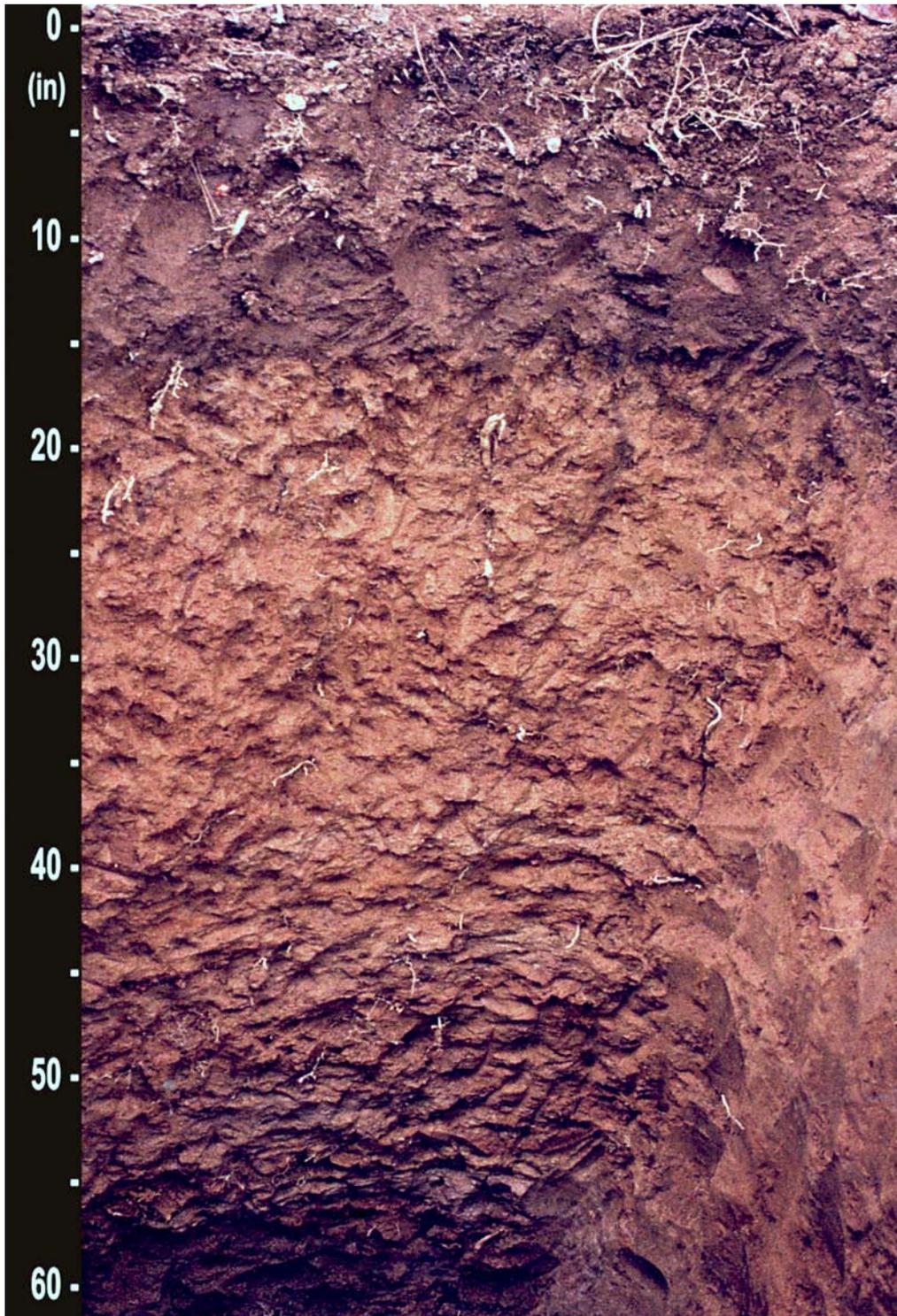


Figure 18. Peckmantown soil profile. These well drained soils formed in glaciolacustrine materials overlying glacial outwash derived mostly from basalt, red sandstone, and granitic gneiss.

2C2—63 to 74 inches; brown (7.5YR 4/3) coarse sand; single grain; loose; 3 percent nonflat well rounded fine gravel and 3 percent nonflat well rounded medium gravel; moderately acid; clear wavy boundary.

2C3—74 to 88 inches; brown (7.5YR 4/3) coarse sand; single grain; loose; 7 percent nonflat well rounded fine gravel and 5 percent nonflat well rounded medium gravel; moderately acid.

### Range in Characteristics

**Thickness of the solum:** 30 to 60 inches

**Depth to bedrock:** more than 60 inches

**Depth to the fragipan:** 20 to 40 inches

**Content and size of rock fragments:** commonly lacking but can range up to 15 percent gravel, by volume in the solum and up to 35 percent gravel, by volume in the 2C or C horizon.

**Reaction:** unless limed extremely acid to moderately acid

**Permeability:** moderate to moderately rapid in the upper part of the solum, slow in the fragipan; rapid in the substratum

#### **O horizon (if it occurs):**

Color - black to dark brown

Texture - moderately decomposed plant material to highly decomposed plant material

#### **A or Ap horizon:**

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

Texture - silt, silt loam, loam, or very fine sandy loam

Structure - very fine to medium granular and subangular blocky

#### **BAt horizon:**

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

Texture - silt, silt loam, loam, or very fine sandy loam

Structure - fine or medium subangular blocky

#### **Bt horizon:**

Color - hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6

Texture - silt loam, loam, or very fine sandy loam

Structure - fine and medium subangular blocky

#### **Btx horizon:**

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

Texture - sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam

Structure - thin to thick platy and fine to medium subangular blocky

#### **BCtx horizon:**

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

Texture - sandy loam, fine sandy loam, very fine sandy loam, loamy fine sand, or fine sand

Structure - thin or thick platy

#### **2C or C horizon:**

Color - hue of 5YR or 10YR, value of 4 or 5, and chroma of 3 to 8

Texture - fine sand, sand, coarse sand, loamy sand, or sandy loam

Structure - massive to single grain

## Pompton Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Delta plain, outwash plain

**Parent Material:** Coarse-loamy outwash derived from gneiss, sandstone, and basalt

**Drainage Class:** Somewhat poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 8 percent

### Associated Soils

Horseneck

Preakness

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Aquic Dystrudepts

#### Typical Pedon

Pompton sandy loam in an area of Pompton sandy loam, 0 to 3 percent slopes, in hardwoods; located Essex County, township of Fairfield; at Frankcavella farm in Big Piece Road. USGS Pompton Plains quadrangle; Latitude: 40 degrees, 53 minutes, 12.45 seconds N.; Longitude: 74 degrees, 18 minutes, 45.15 seconds W. (fig. 19)

Oe—0 to 2 inches; moderately decomposed plant material; strongly acid.

Oa—2 to 4 inches; highly decomposed plant material; strongly acid.

A—4 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; common fine roots throughout; very strongly acid; clear wavy boundary.

Bw1—8 to 15 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate fine subangular blocky structure parting to moderate medium subangular blocky; friable; many fine and common medium roots throughout; strongly acid; clear wavy boundary.

Bw2—15 to 20 inches; light olive brown (2.5Y 5/4) sandy loam; moderate medium subangular blocky structure; very friable; common fine roots throughout; 10 percent medium distinct light gray (2.5Y 7/2) iron depletions throughout; 10 percent medium prominent yellowish brown (10YR 5/6) iron-manganese masses throughout; strongly acid; clear wavy boundary.

Bw3—20 to 24 inches; light yellowish brown (2.5Y 6/3) loamy sand; moderate medium subangular blocky structure; friable; 30 percent medium prominent yellowish brown (10YR 5/6) iron-manganese masses throughout; 10 percent medium distinct light gray (2.5Y 7/1) iron depletions throughout; strongly acid; clear wavy boundary.

Bw4—24 to 32 inches; light olive brown (2.5Y 5/3) sandy loam; moderate medium subangular blocky structure; friable; 20 percent medium distinct light gray (2.5Y 7/1) iron depletions throughout; 20 percent coarse prominent brown (7.5YR 4/4) iron-manganese masses throughout; strongly acid; clear wavy boundary.

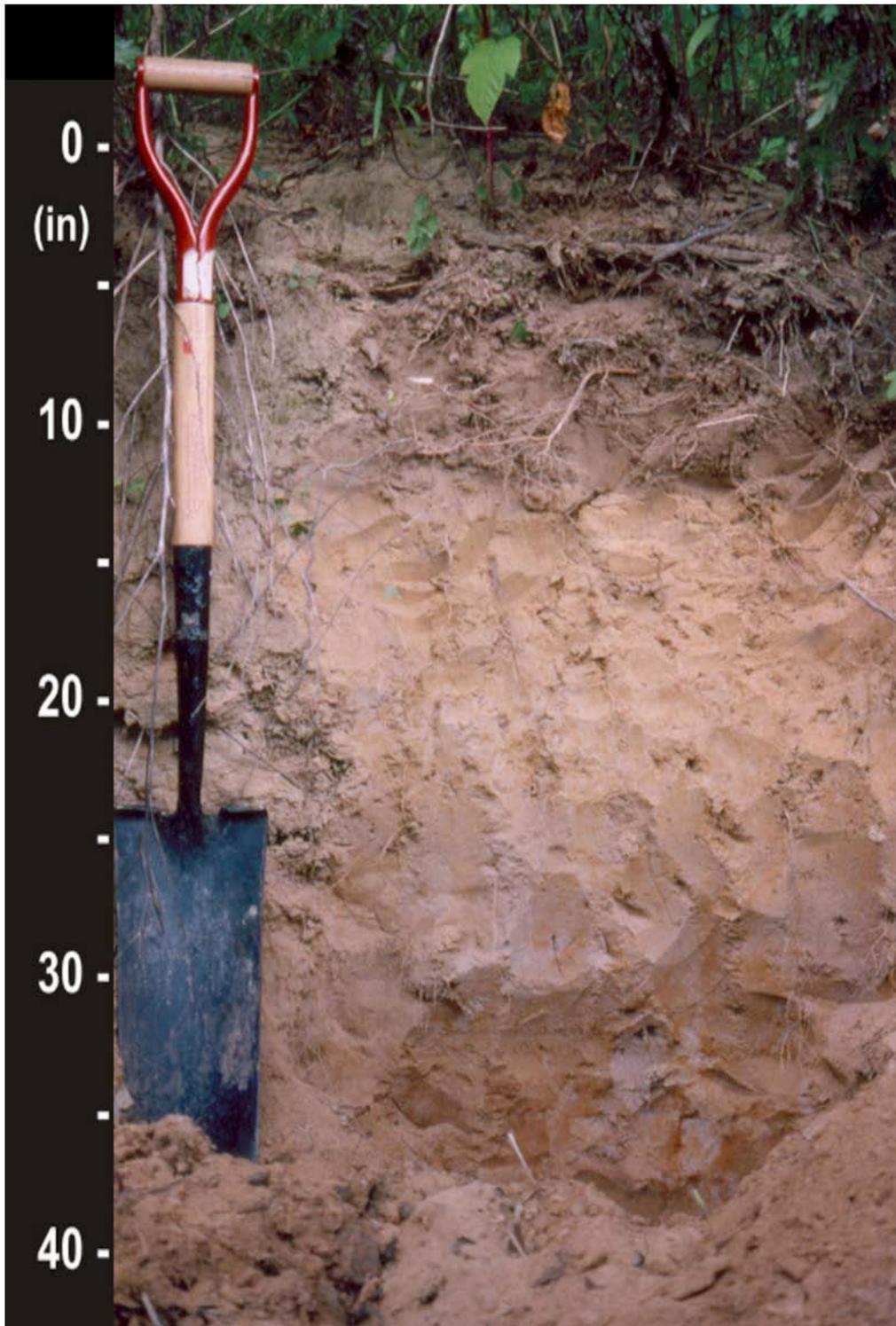


Figure 19. Pompton soil profile. These somewhat poorly drained soils developed in water sorted sandy and gravelly materials dominated by granitic gneiss with lesser amounts of many other kinds of materials.

BC—32 to 40 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; friable; 10 percent medium distinct dark yellowish brown (10YR 4/6) iron-manganese masses throughout; 1 percent medium distinct grayish brown (10YR 5/2) iron depletions throughout; very strongly acid; clear wavy boundary.

C1—40 to 47 inches; grayish brown (2.5Y 5/2) sand; single grain; loose; 15 percent medium distinct dark yellowish brown (10YR 4/4) iron-manganese masses throughout; very strongly acid; gradual wavy boundary.

C2—47 to 60 inches; dark yellowish brown (10YR 4/6) fine sand; single grain; loose; very strongly acid.

### Range in Characteristics

**Thickness of solum:** 32 to 40 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** ranges from 0 to 35 percent gravels and cobbles, by volume through the solum; from 0 to 75 percent gravels and cobbles, by volume in individual horizons in the C horizon

**Reaction:** very strongly acid to strongly acid

**Permeability:** moderately rapid in the solum and rapid or very rapid in the substratum

#### **O horizon:**

Color - black to brown

Texture - slightly to moderately decomposed plant material

#### **A horizon:**

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

Texture - sandy loam to silt loam

Structure - weak or moderate granular

#### **Bw horizon:**

Color - hue of 7.5YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6

Texture - fine sandy loam, sandy loam, or gravelly or cobbly analogues

Structure - weak or moderate subangular blocky

Redoximorphic features - iron depletions in shades of gray to yellowish brown and iron concentrations in shades of brownish yellow to dark yellowish brown

#### **BC horizon:**

Color - hue of 7.5YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6

Texture - sandy loam, loamy sand, or gravelly or cobbly analogues

Structure - weak or moderate subangular blocky, massive, or single grain

Redoximorphic features - iron depletions in shades of grayish brown and iron concentrations in shades of dark yellowish brown

#### **C horizon:**

Color - hue of 7.5YR or 5Y, value of 4 to 6, and chroma of 2 to 6

Texture - sand to sandy loam or gravelly and cobbly analogues

Structure - massive or single grain

Redoximorphic features - iron concentrations in shades of dark yellowish brown

## Preakness Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Outwash plain

**Parent Material:** Coarse-loamy outwash derived from granite and some basalt

**Drainage Class:** Poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Natchaug

Pompton

Very poorly drained Preakness

### Taxonomic Classification

Coarse-loamy, mixed, active, acid, mesic Typic Humaquepts

### Typical Pedon

Preakness sandy loam in an area of Preakness sandy loam, 0 to 3 percent slopes, in hardwoods; located Hatfield Swamp at the West Essex Park, Essex County; approximately 1,055 feet northwest of Pine Tree Place and 1,677 feet northwest of Van Ness Place. USGS Caldwell quadrangle; Latitude: 40 degrees, 50 minutes, 56.85 seconds N.; Longitude: 74 degrees, 18 minutes, 54.23 seconds W.

Oi—0 to 1 inches; very dark brown (10YR 2/2) slightly decomposed plant material; very strongly acid; abrupt wavy boundary.

A—1 to 9 inches; very dark gray (10YR 3/1) sandy loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure parting to moderate fine granular; friable; many fine and common medium roots; strongly acid; abrupt wavy boundary.

Bg1—9 to 11 inches; grayish brown (2.5Y 5/2) sandy loam; moderate medium subangular blocky structure; friable; common fine roots; 5 percent medium prominent yellowish brown (10YR 5/6) iron-manganese masses; 2 percent medium prominent black (10YR 2/1) manganese coatings; strongly acid; clear wavy boundary.

Bg2—11 to 24 inches; grayish brown (2.5Y 5/2) sandy loam; moderate medium subangular blocky structure; friable; common fine roots; 5 percent medium prominent dark yellowish brown (10YR 4/6) iron-manganese masses; 5 percent medium prominent strong brown (7.5YR 4/6) iron-manganese masses; moderately acid; clear wavy boundary.

BCg1—24 to 28 inches; gray (2.5Y 6/1) loamy sand; moderate medium subangular blocky structure; friable; common fine roots; 15 percent coarse prominent yellowish brown (10YR 5/6) iron-manganese masses; 3 percent nonflat rounded fine gravel; moderately acid; gradual wavy boundary.

BCg2—28 to 33 inches; light brownish gray (2.5Y 6/2) loamy sand; weak coarse subangular blocky structure; friable; 18 percent coarse prominent dark yellowish brown (10YR 4/6) iron-manganese masses; 3 percent nonflat rounded fine gravel; moderately acid; gradual wavy boundary.

Cg—33 to 55 inches; grayish brown (2.5Y 5/2) sand; single grain; loose; 33 percent medium prominent dark yellowish brown (10YR 4/6) iron-manganese masses; moderately acid; gradual wavy boundary.

C—55 to 60 inches; light olive brown (2.5Y 5/3) sand; single grain; loose; 15 percent medium distinct dark yellowish brown (10YR 4/4) iron-manganese masses; moderately acid.

### Range in Characteristics

**Thickness of solum:** 27 to 35 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** range from 0 to 20 percent gravel and cobbles through the solum and 0 to 70 percent in individual strata of the substratum

**Reaction:** strongly to moderately acid unless limed, and ranges to moderately acid in the lower part of the substratum

**Permeability:** moderate or moderately rapid in the surface and subsoil and rapid or very rapid in the substratum

#### **O horizon:**

Color - hue of 7.5YR or 10YR, value of 2, and chroma of 1 or 2

Texture - slightly to moderately decomposed plant material

#### **A horizon:**

Color - hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2

Texture - sandy loam to silt loam

Structure - weak to strong granular or moderate subangular blocky

#### **B horizon:**

Color - hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 0 to 2

Texture - fine sandy loam or sandy loam

Structure - weak to moderate subangular blocky

Redoximorphic features - iron concentrations in shades of strong brown to dark yellowish brown

#### **BC horizon:**

Color - hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 0 to 2

Texture - sandy loam, loamy fine sand, or loam

Structure - weak or moderate subangular blocky or massive

Redoximorphic features - iron concentrations in shades of strong brown to dark yellowish brown

#### **C horizon:**

Color - hue of 5YR to 5Y or 5GY, value of 4 to 7, and chroma of 0 to 4

Texture - fine sand, loam, loamy fine sand, loamy sand, sand, or sandy loam in the fine-earth fraction

Structure - massive or single grain

Redoximorphic features - iron concentrations in shades of strong brown to dark yellowish brown

## Rikers Series

**Local Physiographic Area:** Eastern Lowland

**Geomorphic Setting:** Tidal flat, urban land, built-up areas fill

**Parent Material:** Sandy-skeletal material derived from coal ash

**Drainage Class:** Somewhat excessively drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 8 percent

### Associated Soils

Loamy fill  
Udorthents  
Urban land

### Taxonomic Classification

Sandy-skeletal, mixed, mesic Typic Udorthents

### Typical Pedon

Rikers loamy sand in an area of Rikers loamy sand, 0 to 3 percent slopes, in urban and built-up areas; located Essex County, New Jersey; Port Newark, 2,778 feet northeast from the North Terminal building at Newark Airport and 2,602 feet southwest from the intersection of Stockton and Delancey Street. USGS Elizabeth quadrangle; Latitude: 40 degrees, 42 minutes, 41.46 seconds N.; Longitude: 74 degrees, 9 minutes, 29.55 seconds W.

A—0 to 6 inches; black (10YR 2/1) loamy sand; weak medium and fine granular structure; friable; 8 percent nonflat subangular fine gravel and 4 percent nonflat subangular medium gravel; neutral; abrupt smooth boundary.

C1—6 to 11 inches; black (10YR 2/1) gravelly sand; single grain; loose; 11 percent nonflat subangular fine gravel and 14 percent nonflat subangular medium gravel; neutral; gradual wavy boundary.

C2—11 to 20 inches; black (10YR 2/1) extremely gravelly sand; single grain; loose; 6 percent nonflat subangular fine gravel and 61 percent nonflat subangular medium and coarse gravel; slightly acid; gradual wavy boundary.

C3—20 to 71 inches; black (10YR 2/1) extremely gravelly sand; single grain; loose; 6 percent nonflat subangular fine gravel and 71 percent nonflat subangular medium and coarse gravel; slightly acid.

### Range in Characteristics

**Thickness of solum:** 2 to 10 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** ranges from 0 to 75 percent gravel, by volume

**Reaction:** slightly acid to neutral

**Permeability:** rapid throughout

#### A horizon:

Color - hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4

Texture - loamy sand or sand

Structure - weak to moderate, fine to medium granular and subangular blocky

#### Bw horizon (if it occurs):

Color - hue of 10YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4

Texture - sand or loamy sand

Structure - weak to moderate, fine to medium subangular blocky

**C horizon:**

Color - hue of 10YR to 2.5Y, value of 2 to 6, and chroma of 1 to 4

Texture - sand or loamy sand

Structure - single grain

**Rockaway Series**

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Till plain, ground moraine

**Parent Material:** Coarse-loamy till derived from gneiss

**Drainage Class:** Well drained

**Soil Depth Class:** Shallow to a fragipan layer

**Slope:** 0 to 15 percent

**Associated Soils**

Hibernia

Moderately well drained Rockaway

**Taxonomic Classification**

Coarse-loamy, mixed, semiactive, mesic Typic Fragiudults

**Typical Pedon**

Rockaway loam in an area of Rockaway loam, 0 to 8 percent slopes, extremely stony, in hardwoods; located East Hill Park, Essex County, approximately 350 feet east of the parking lot. USGS Caldwell quadrangle; Latitude: 40 degrees, 47 minutes, 21.66 seconds N.; Longitude: 74 degrees, 17 minutes, 49.53 seconds W.

A1—0 to 2 inches; very dark brown (10YR 2/2) loam; strong fine granular structure; friable; 2 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse granite gravel and 5 percent nonflat subangular basalt cobbles; very strongly acid; abrupt smooth boundary.

A2—2 to 4 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular and moderate fine subangular blocky structure; friable; many fine and medium and common coarse roots throughout; 2 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse granite gravel and 5 percent nonflat subangular basalt cobbles; very strongly acid; clear wavy boundary.

BA—4 to 8 inches; dark yellowish brown (10YR 3/4) loam; moderate fine subangular blocky structure; friable; many fine and medium and common coarse roots throughout; 5 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse basalt gravel and 4 percent nonflat subangular granite cobbles; very strongly acid; clear wavy boundary.

BE—8 to 15 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate fine subangular blocky and moderate medium subangular blocky structure; friable; common fine and medium roots throughout; 5 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse basalt gravel and 4 percent nonflat subangular granite cobbles; very strongly acid; gradual wavy boundary.

Bt—15 to 24 inches; dark yellowish brown (10YR 4/6) sandy loam; moderate medium subangular blocky structure; friable; common fine and medium roots throughout; common very fine vesicular pores; 25 percent patchy distinct clay films on rock fragments; 5 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse basalt gravel and 4 percent nonflat subangular granite cobbles; very strongly acid; gradual wavy boundary.

Btx1—24 to 31 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; firm; 50 percent patchy prominent clay films on rock fragments; 5 percent medium prominent spherical manganese masses throughout; 2 percent fine prominent spherical yellowish red (5YR 4/6) iron-manganese masses throughout; 5 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse basalt gravel and 4 percent nonflat subangular granite cobbles; strongly acid; gradual wavy boundary.

Btx2—31 to 36 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; firm; 50 percent patchy prominent clay films on rock fragments; 5 percent medium prominent spherical manganese masses throughout; 5 percent medium faint spherical brown (7.5YR 5/4) iron-manganese masses throughout; 2 percent fine prominent spherical yellowish red (5YR 4/6) iron-manganese masses throughout; 5 percent nonflat subangular fine granite gravel and 5 percent nonflat subangular medium and coarse basalt gravel and 4 percent nonflat subangular granite cobbles; strongly acid; gradual wavy boundary.

Btx3—36 to 60 inches; strong brown (7.5YR 4/6) sandy loam; moderate medium subangular blocky structure; firm; 50 percent patchy prominent clay films on rock fragments; 5 percent medium faint spherical brown (7.5YR 5/4) iron-manganese masses throughout; 5 percent medium prominent spherical manganese masses throughout; 5 percent medium distinct spherical yellowish red (5YR 4/6) iron-manganese masses throughout; 3 percent nonflat subangular fine basalt gravel and 8 percent nonflat subangular medium and coarse granite gravel and 3 percent nonflat subangular granite cobbles; strongly acid.

### Range in Characteristics

**Thickness of solum:** 35 to 50 inches

**Depth to fragipan:** 20 to 40 inches

**Depth to bedrock:** 60 inches or more

**Content and size of rock fragments:** range from 5 to 40 percent by volume in the solum and from 25 to 65 percent in the C horizon

**Reaction:** very strongly acid or strongly acid

**Permeability:** moderate or moderately rapid in the upper part of the solum, slow in the fragipan

#### **O horizon (if it occurs):**

Color - brown to black

Texture - moderately decomposed plant material to highly decomposed plant material

#### **A horizon:**

Color - neutral or has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 0 to 4

Texture - loam, silt loam, fine sandy loam, or sandy loam

Structure - weak or moderate, fine or medium granular to weak fine or medium subangular blocky

**BA and BE horizon:**

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

Texture - loam, silt loam, fine sandy loam, or sandy loam

Structure - weak or moderate, fine or medium granular to weak fine or medium subangular blocky

**Bt horizon:**

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

Texture - loam to sandy loam

Structure - weak to strong fine to coarse subangular blocky

**Btx horizon:**

Color - hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6

Texture - loam to sandy loam

Structure - weak to strong thick platy but in some pedons it is massive or subangular blocky

Redoximorphic features - iron concentrations in shades of red

**Tunkhannock Series**

**Local Physiographic Area:** Eastern Lowland

**Geomorphic Setting:** Outwash terrace on outwash plain, kame or delta on delta plain

**Parent Material:** Loamy-skeletal outwash from red sandstone, siltstone, and shale; with some basalt and granitic gneiss

**Drainage Class:** Somewhat excessively drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 60 percent

**Associated Soils**

Dunellen

Udorthents

**Taxonomic Classification**

Loamy-skeletal, mixed, superactive, mesic Typic Dystrudepts

**Typical Pedon**

Tunkhannock fine sandy loam in an area of Tunkhannock fine sandy loam, 15 to 25 percent slopes, in hardwoods; located Weequahic Park, Essex County; northwest side lake, 1,200 feet southwest of park entrance and 400 feet southeast of parking lot in woods. USGS Elizabeth quadrangle; Latitude: 40 degrees, 42 minutes, 13.00 seconds N.; Longitude: 74 degrees, 12 minutes, 8.00 seconds W.

A1—0 to 3 inches; very dark gray (7.5YR 3/1) fine sandy loam; moderate medium granular structure; loose; many fine and common very coarse roots throughout; 5 percent flat subrounded medium and coarse sandstone gravel; very strongly acid; clear wavy boundary.

A2—3 to 7 inches; dark brown (7.5YR 3/3) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; many fine roots throughout; 20 percent flat subrounded medium and coarse sandstone gravel; very strongly acid; clear wavy boundary.

Bw1—7 to 18 inches; yellowish red (5YR 4/6) very gravelly fine sandy loam; moderate medium subangular blocky structure; friable; common fine, medium, coarse roots throughout; 35 percent flat subrounded medium and coarse sandstone gravel; very strongly acid; gradual wavy boundary.

Bw2—18 to 28 inches; yellowish red (5YR 4/6) very gravelly fine sandy loam; moderate medium subangular blocky structure; friable; common fine and medium roots throughout; 8 percent patchy distinct clay films on rock fragments; 55 percent flat subrounded medium and coarse sandstone gravel; very strongly acid; gradual wavy boundary.

CB—28 to 60 inches; yellowish red (5YR 4/6) extremely gravelly fine sandy loam; weak fine subangular blocky structure; friable; 70 percent flat subrounded medium and coarse sandstone gravel; very strongly acid.

### Range in Characteristics

**Thickness of solum:** 20 to 45 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 15 to 60 percent channers and flagstones, by volume in the B horizons, and 40 to 80 percent channers and flagstones in the C horizons

**Reaction:** extremely acid to moderately acid

**Permeability:** moderately rapid to rapid

#### A horizon:

Color - hue of 2.5YR to 10YR, value of 2 to 5, and chroma of 1 to 3

Texture - fine sandy loam, sandy loam, loam, or silt loam

Structure - moderate or weak, medium granular or subangular blocky

#### B horizon:

Color - hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6

Texture - fine sandy loam, sandy loam, loam, or silt loam

Structure - moderate medium or fine subangular blocky

#### CB horizon:

Color - hue of 2.5YR to 10YR, value of 3 to 6, and chroma of 3 to 6

Texture - sandy loam, loamy sand, loamy coarse sand, or sand

Structure - weak or moderate, medium or fine subangular blocky

## Udfluvents

**Local Physiographic Area:** Countywide

**Geomorphic Setting:** Flood plain, alluvial plain

**Parent Material:** Recent alluvium

**Drainage Class:** Moderately well drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Fluvaquents

### Taxonomic Classification

Udfluvents

### Typical Pedon

Udifluvents, 0 to 3 percent slopes, frequently flooded, in other grass/herbaceous cover; located on Flatbrookville, along the Delaware River. USGS Beverly quadrangle; Latitude: 40 degrees, 5 minutes, 36.12 seconds N.; Longitude: 74 degrees, 58 minutes, 43.68 seconds W.

A—0 to 3 inches; dark brown (10YR 3/3) loamy sand; single grain; loose; strongly acid; clear smooth boundary.

C1—3 to 16 inches; very dark gray (10YR 3/1) loamy sand; single grain; loose; strongly acid; gradual wavy boundary.

C2—16 to 22 inches; dark brown (10YR 3/3) sandy loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

C3—22 to 27 inches; dark brown (10YR 3/3) sandy loam; weak medium subangular blocky structure; friable; 15 percent medium faint brown (10YR 4/3) iron depletions; strongly acid; gradual wavy boundary.

C4—27 to 32 inches; dark brown (10YR 3/3) sandy loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

C5—32 to 60 inches; dark yellowish brown (10YR 3/4) stratified loamy sand; single grain; loose; 15 percent medium faint brown (10YR 4/3) iron depletions; strongly acid.

### Range in Characteristics

**Thickness of solum:** 6 to 30 inches or more

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 35 percent gravel, by volume throughout the soil

**Reaction:** variable

**Permeability:** variable

#### A horizon:

Color - hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 6

Texture - variable

Structure - variable

#### C horizon:

Color - hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 6

Texture - variable

Structure - variable

Redoximorphic features - iron depletions in shades of brown

### Udorthents

Udorthents consists of areas that have been subjected to considerable earth moving activities during grading, cut and fill, and/or other types of human disturbance for residential development, commercial and industrial buildings, cemeteries, and recreational areas. Human artifacts and coal ash are commonly found mixed with the soil material.

The Udorthents generally consist of loamy material in the upper part and sandy to loamy material from the original C horizon of mineral soils in the lower part. Because of the variability of these soils, a typical pedon is not given.

## Walkkill Series

**Local Physiographic Area:** Passaic Basin

**Geomorphic Setting:** Alluvial plain, flood plain

**Parent Material:** Alluvium over organic material

**Drainage Class:** Very poorly drained

**Soil Depth Class:** Very deep

**Slope:** 0 to 3 percent

### Associated Soils

Catden

Natchaug

### Taxonomic Classification

Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Humaquepts

### Typical Pedon

Walkkill mucky silt loam in an area of Walkkill mucky silt loam, 0 to 3 percent slopes, frequently flooded, in swamp; located Essex County, New Jersey; town of Livingston; 1,964 feet south of South Orange Avenue and 200 feet west of Peach Tree Hill Road. USGS Caldwell quadrangle; Latitude: 40 degrees, 46 minutes, 22.39 seconds N.; Longitude: 74 degrees, 22 minutes, 2.91 seconds W.

A—0 to 4 inches; very dark brown (10YR 2/2) mucky silt loam; massive structure parting to weak fine granular; very friable; many fine roots throughout; moderately acid; abrupt wavy boundary.

Bg—4 to 10 inches; gray (10YR 5/1) silt loam; moderate medium subangular blocky structure; very friable, very sticky, moderately plastic; 10 percent medium prominent spherical dark yellowish brown (10YR 4/6) masses of oxidized iron throughout; moderately acid; clear wavy boundary.

Ab—10 to 18 inches; black (10YR 2/1) clay loam; massive; very friable, very sticky, very plastic; 2 percent fine prominent spherical dark yellowish brown (10YR 3/6) masses of oxidized iron throughout; moderately acid; gradual wavy boundary.

2Oa1—18 to 31 inches; black (10YR 2/1) muck; moderately acid; abrupt wavy boundary.

2Oa2—31 to 50 inches; very dark grayish brown (10YR 3/2) muck; moderately acid; abrupt wavy boundary.

2Oa3—50 to 63 inches; olive gray (5Y 4/2) muck; moderately acid; abrupt wavy boundary.

3Cg—63 to 70 inches; olive gray (5Y 4/2) sand; single grain; loose; neutral.

### Range in Characteristics

**Thickness of solum:** 16 to 40 inches

**Depth to bedrock:** greater than 60 inches

**Content and size of rock fragments:** 0 to 15 percent gravel, by volume throughout the soil

**Reaction:** moderately acid to neutral

**Permeability:** moderate in the solum; moderately rapid to rapid in the organic material and substratum

**A horizon:**

Color - hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 2

Texture - silt loam, silty clay loam, loam, or fine sandy loam Some pedons have a mucky modifier.

Structure - weak or moderate, fine to coarse granular

**B horizon:**

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

Texture - silt loam or loam but permits fine sandy loam and silty clay loam subhorizons in the fine earth fraction

Structure - weak or moderate, fine or medium subangular blocky and massive

Redoximorphic features - iron concentrations in shades of dark yellowish brown

**2O horizon:**

Color - hues of 5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2

Texture - sapric or hemic material

**3C horizon:**

Color - hue of 7.5YR or 10YR, values of 2 to 4, and chroma of 1 or 2

Texture - sandy loam, loamy sand, or sand

Structure - massive or single grain

**Note:**

The Walkkill soils in Essex County are a taxadjunct because the surface is not as thick as that defined in the official series description.

## Yalesville Series

**Local Physiographic Area:** Watchung Mountain

**Geomorphic Setting:** Till plain, ground moraine

**Parent Material:** Coarse-loamy till derived from basalt

**Drainage Class:** Well drained

**Soil Depth Class:** Moderately deep to a bedrock (lithic) layer

**Slope:** 0 to 60 percent

### Associated Soils

Boonton

Holyoke

Rock outcrop

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Typic Dystrudepts

### Typical Pedon

Yalesville loam in an area of Yalesville loam, 0 to 8 percent slopes, extremely stony, in hardwoods; located Eagle Rock Reservation, Essex County, approximately 1,000 feet north of the softball field and 960 feet east of Prospect Avenue. USGS Orange quadrangle; Latitude: 40 degrees, 48 minutes, 20.37 seconds N.; Longitude: 74 degrees, 14 minutes, 34.75 seconds W.

Oa—0 to 1 inches; highly decomposed plant material; strongly acid.

A—1 to 5 inches; dark brown (10YR 3/3) loam; weak fine granular structure; friable; many medium roots throughout; 6 percent nonflat subangular fine gravel and 6 percent nonflat subangular medium and coarse gravel and 2 percent nonflat subangular cobbles; strongly acid; clear wavy boundary.

Bw1—5 to 19 inches; reddish brown (5YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; many medium and common very coarse roots throughout; 30 percent discontinuous faint clay bridges between sand grains; 5 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 3 percent nonflat subangular cobbles; strongly acid; clear wavy boundary.

Bw2—19 to 31 inches; reddish brown (5YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; common very coarse roots throughout; 30 percent discontinuous faint clay bridges between sand grains; 5 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 3 percent nonflat subangular cobbles; strongly acid; clear wavy boundary.

BC—31 to 32 inches; dark reddish brown (2.5YR 3/3) fine sandy loam; strong medium subangular blocky structure; firm; 25 percent discontinuous faint clay bridges between sand grains; 5 percent nonflat subangular fine gravel and 5 percent nonflat subangular medium and coarse gravel and 3 percent nonflat subangular cobbles; strongly acid; very abrupt smooth boundary.

R—32 inches; basalt bedrock.

### Range in Characteristics

**Thickness of solum:** 18 to 36 inches

**Depth to bedrock:** 32 inches

**Content and size of rock fragments:** range from 2 to 35 percent by volume in the solum and from 5 to 70 percent in the C horizon

**Reaction:** strongly acid

**Permeability:** moderate or moderately rapid in the surface layer and subsoil, and moderately rapid in the substratum

**O horizon (if it occurs):**

Color - brown to black

Texture - moderately decomposed plant material to highly decomposed plant material

**A horizon:**

Color - hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 or 3

Texture - sandy loam, fine sandy loam, loam, or silt loam

Structure - weak or moderate, fine or medium granular

**B horizon:**

Color - hue of 10R, 2.5YR, or 5YR, value of 3 to 6, and chroma of 4 to 6

Texture - sandy loam, fine sandy loam, loam, or silt

Structure - moderate or weak, medium subangular blocky

**BC horizon:**

Color - hue of 10R, 2.5YR, or 5YR, value of 3 to 5, and chroma of 3 to 6

Texture - loam, sandy loam, or fine sandy loam

Structure - moderate or weak, medium subangular blocky or massive



# Formation of the Soils

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This section tells how the factors of soil formation have affected the development of soils in Essex County, New Jersey.

## Factors of Soil Formation

Soil is produced by soil-forming processes acting on materials deposited or accumulated by geologic processes. The characteristics of the soil at any given point are determined by the parent material, climate, plant and animal life, relief, and time.

The factors of soil formation are so closely interrelated in their effects on the soil that one factor can change the effect in the other four. In Essex County, the main factors that affect the local formation of the soil are parent material, relief, and human activities.

The soils in the urban and suburban areas of Essex County have been greatly influenced by human activities through development of areas for housing and commercial or industrial use. During the process these areas were leveled or cut and filled to such an extent that 30 to 100 percent of the original soil has been altered.

## Parent Material

Modified from Scott Stanford - Geology Section

Parent material is the unconsolidated mineral or organic material in which a soil forms (Table 23). It determines the physical, chemical, and mineralogical properties of the soil. In Essex County, many of the soils formed in parent material of glacial origin. Glacial till deposits are unstratified, poorly sorted materials deposited directly by the ice sheet. Glacial outwash deposits are stratified sediments which include layered and sorted gravel, sand, silt, and clay, deposited by meltwater in glacial lakes and river plains.

The glacial till on the tops and western slopes of the Watchung Mountains and Riker Hill is thin and patchy, and outcrops of basalt are common. The terminal moraine area in the southwest is characterized by deep till deposits, with minor areas of stratified and coarse-textured materials in an irregular ridge and swale landscape. Soils of these areas include the well and moderately well drained Boonton soils on uplands, the somewhat poorly drained Haledon soils in lower positions, and the poorly drained Hasbrouck soils in depressions. The shallow to bedrock Holyoke soils and the moderately deep to bedrock Yalesville soils are found in areas of basalt outcrops. The particle size distribution, pH, and clay mineralogy of these soils, strongly influenced by the weathering of basalt (Tedrow, 1986), differ somewhat from Boonton and Yalesville soils developed on red sandstone materials in the lowlands. In the uplands further east, the ice sheet brought in gneissic materials from the Highlands, and the well and moderately well drained Rockaway soils, browner in color, have different physical, chemical, and mineralogical properties as well. In general, the upland soils are also siltier than those in the eastern lowlands due to glacial erosion.

Stratified sediments were laid down in lakes and river plains as the ice margin retreated. The well drained Knickerbocker, the moderately well drained Horseneck, the somewhat poorly drained Pompton, and the poorly and very poorly drained Preakness soils formed on outwash plains and terraces, mostly from granitic gneiss. The excessively drained Hinckley soils formed in coarse water-sorted material derived from granitic gneiss on kames and eskers. The well drained Peckmantown soils (fig. 18) formed in glaciofluvial deposits on deltas and fans located in the Peckman River Valley between First and Second Watchung Mountains. Redder soils include the well drained Dunellen soils, formed in stratified materials on outwash plains and terraces, and the well drained Tunkhannock soils, formed in water-sorted material on kames or outwash terraces.

Silt and clay settled onto the lowest parts of the lake floor, in some areas as much as 250 feet thick. Because these areas are the lowest on the landscape, the silt and clay deposits were generally covered by postglacial marsh and floodplain sediments after the lakes drained. Poorly drained Great Piece and Parsippany soils (fig. 14) formed in the glaciolacustrine deposits, derived mostly from granitic gneiss with lesser amounts of other materials.

After deglaciation, streams reestablished their courses on the drained lake floors and inactive river plains. The glacial deposits were eroded by the streams in places, and floodplains were developed along larger streams. Silt and sand were deposited on these floodplains, and peat was deposited in wetlands away from floodplains. These deposits are generally less than 10 feet thick. Very poorly drained soils formed in organic materials include Catden, Natchaug, and Walkkill. Within the past several thousand years, rising sea levels flooded the Newark Bay area, creating salt marshes. Peat and organic silt, generally less than 20 feet thick, were deposited in these marshes, which are now mostly covered by fill.

A large area of Essex County consists of soil materials transported by human activities. The soils formed on cut and filled soil materials have been mapped as Udorthents with their respective substratum. Soils on other types of fill, or "anthropogenic materials" are mapped to the series level: somewhat excessively drained Rikers soils (fig. 19) formed from coal ash, and well drained Bigapple soils formed from sandy dredge materials.

## 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.

The last glaciation (the late Wisconsinan) had a great impact on soil formation in Essex County. Till material was deposited from glacial ice forming deep soils on uplands and moderately deep and shallow soils on ridge tops. The meltwater from the glacier deposited sediment, forming soils with a wide range of particle size from coarse or sandy to fine or clayey texture.

The climate of Essex County is characterized by cold winters and warm summers. The effects of climate are reflected in the soils of the county. The temperatures throughout the year and rainfall have resulted in the depletion 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.

### **Plant and Animal Life**

Plants, burrowing animals, micro-organisms, earthworms, and other living organisms affect soil formation. The soils in Essex County formed mainly under a mixture of trees, shrubs, and grasses. Each year, the trees and shrubs formed new organic surface above the ground and the roots penetrated the soil and translocated the nutrients from the lower part of the soil to the upper layers developing a darker horizon at the surface.

The macro- and micro-organisms have an effect in the soil forming process. The micro-organisms help to change undecomposed organic matter into humus. The macro-organisms add the organic matter to the soil and mix the soil material, making the soil more porous for water and air infiltration. They also help in the development of granular structure and good tilth.

### **Relief**

Relief affects soil formation mainly through its effect on runoff, erosion, aeration, drainage, and soil temperature. Runoff is more rapid on steep and very steep soils than on less sloping soils. Consequently, plant growth generally is less vigorous on the steeper soils, less water penetrates the surface, and soil horizons are thinner and less distinct. Also, erosion is more severe on the steeper soils if all other factors are equal.

Relief can cause differences in the color, thickness, and horizonation of soils that formed in the same kind of parent material. The gradient, shape, length, and direction of the slopes influence the amount of moisture in the soil. The steep and very steep Boonton soils have a thin surface layer. The Haledon soils, which are less steep than the Boonton soils, have a thicker surface layer and some pedons have slightly to moderately decomposed organic material at the surface. The nearly level to gently sloping Hasbrouck soils, have a surface layer that is dark and thick, and a peat or mucky horizon.

### **Time**

Time enables relief, climate, and plant and animal life to change the parent material into a soil. Soil takes less time to form in a warm and moist climate than in a cool and dry climate. The time needed for a soil to form also depends on the kinds of parent material and the climate. The resistance to weathering of the parent material partly determines the length of time that is needed. This weathering is shown in the degree of distinct color between horizons, clay movement, structure, and profile development.

Soil weathering is related not only to time but also to the other four soil forming factors. Soils that do not have a B horizon or with little or no evidence of development are commonly considered “young” (Soil Survey Staff, 1998). Soils that have a well developed B horizon are considered “mature” or well developed. The weathering of a soil, however, depends on the interaction of all five soil-forming factors.

## **Human Activity**

In a way, humans can be considered a soil forming factor with organisms, through activities such as plowing or adding soil amendments. However, they can also alter or control the soil forming factors in a more significant manner. They can modify the climate, establish or influence the plants and animals, alter the relief, deposit new parent material for soil formation, and interrupt or reset the time of formation.

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# Glossary

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**ABC soil.** A soil having an A, a B, and a C horizon.

**Ablation till.** Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**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.

**Alluvial fan.** The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

**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.

**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

**Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

**Basal till.** Compact glacial till deposited beneath the ice.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

- Base slope.** A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.
- Bottom land.** The normal flood plain of a stream, subject to flooding.
- Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.
- Breaks.** The steep and very steep broken land at the border of an upland summit that is dissected by ravines.
- 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 sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.
- 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.
- 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.
- Clayey silty sand.** Unified soil classification that comprehend a mixture of clay, silt, and sand.
- Coarse textured soil.** Sand or loamy sand.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.
- COLE (coefficient of linear extensibility).** See Linear extensibility.
- Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.
- Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.
- Conglomerate.** A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.
- 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."
- 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.
- Cutbanks cave (in tables).** The walls of excavations tend to cave in or slough.
- Delta.** A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.
- Dense layer (in tables).** A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.
- 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.
- Dip slope.** A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.
- 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.
- Drumlin.** A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.
- Ecological site.** An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an

association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

- 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.
- Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
- Erosion (geologic).** Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
- Erosion (accelerated).** Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
- Erosion pavement.** A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.
- Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.
- Esker.** A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.
- Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.
- Fan terrace.** A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.
- Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
- Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.
- Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the 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**.
- Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.
- Fine textured soil.** Sandy clay, silty clay, or clay.
- First bottom.** The normal flood plain of a stream, subject to frequent or occasional flooding.
- 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.
- 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.
- Foothill.** A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.
- Footslope.** The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- 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.
- Glacial drift.** Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.
- Glacial outwash.** Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.
- Glacial till.** Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.
- Glaciofluvial deposits.** Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.
- Gravel.** Rounded or angular fragments of rock as much as 3 inches (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.
- 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.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hard to reclaim (in tables).** Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Head slope.** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

**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.

R layer.=Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

H layer.=Anthropogenic layer at the surface. The anthropogenic layer commonly underlies a C horizon, but it can be directly below a B horizon.

**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.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

- Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.
- Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.
- Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.
- Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.
- Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:
- |                     |                 |
|---------------------|-----------------|
| Less than 0.2 ..... | very low        |
| 0.2 to 0.4 .....    | low             |
| 0.4 to 0.75 .....   | moderately low  |
| 0.75 to 1.25 .....  | moderate        |
| 1.25 to 1.75 .....  | moderately high |
| 1.75 to 2.5 .....   | high            |
| More than 2.5 ..... | very high       |
- Interfluve.** An elevated area between two drainageways that sheds water to those drainageways.
- 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.
- Kame.** An irregular, short ridge or hill of stratified glacial drift.
- 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.
- Landslide.** The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.
- Large stones (in tables).** Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.
- Leaching.** The removal of soluble material from soil or other material by percolating water.
- 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.
- 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.
- Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.
- Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.
- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- 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.
- Moraine.** An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. 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).
- Mountain.** A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Mudstone.** Sedimentary rock formed by induration of silt and clay in approximately equal amounts.
- 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.
- 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.
- Nose slope.** A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

**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

**Outwash plain.** A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, **hardpan, fragipan, claypan, plowpan, and traffic pan.**

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedisediment.** A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

**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:

Impermeable .....	less than 0.0015 inch
Very slow .....	0.0015 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.)

**Piping (in tables).** Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

- Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.
- Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.
- Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.
- Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.
- 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.
- Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.
- Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:
- |                              |                |
|------------------------------|----------------|
| Ultra acid .....             | less than 3.5  |
| Extremely acid .....         | 3.5 to 4.4     |
| Very strongly acid .....     | 4.5 to 5.0     |
| Strongly acid .....          | 5.1 to 5.5     |
| Moderately acid .....        | 5.6 to 6.0     |
| Slightly acid .....          | 6.1 to 6.5     |
| Neutral .....                | 6.6 to 7.3     |
| Slightly alkaline .....      | 7.4 to 7.8     |
| Moderately alkaline .....    | 7.9 to 8.4     |
| Strongly alkaline .....      | 8.5 to 9.0     |
| Very strongly alkaline ..... | 9.1 and higher |
- 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.
- Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

- Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.
- Root zone.** The part of the soil that can be penetrated by plant roots.
- Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.
- 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.
- Sandstone.** Sedimentary rock containing dominantly sand-sized particles.
- 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.
- 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.
- Second bottom.** The first terrace above the normal flood plain (or first bottom) of a river.
- Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.
- Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
- Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
- Shale.** Sedimentary rock formed by the hardening of a clay deposit.
- Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Shoulder.** The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.
- Shrink-swell (in tables).** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Side slope.** A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- 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.

- 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.
- 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.
- Sloughed till.** Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.
- Slow refill (in tables).** The slow filling of ponds, resulting from restricted permeability in the soil.
- Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.
- 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.
- Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.
- 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.
- Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.
- 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.

**Talus.** Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

**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.

**Terminal moraine.** A belt of thick glacial drift that generally marks the termination of important glacial advances.

**Terrace (geologic).** An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are **sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay.** The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer (in tables).** Otherwise suitable soil material that is too thin for the specified use.

**Till plain.** An extensive area of nearly level to undulating soils underlain by glacial till.

**Toeslope.** The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

**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.

**Valley fill.** In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

**Variation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

**Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

**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.

**Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Windthrow.** The uprooting and tipping over of trees by the wind.



# Tables

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Table 1. Temperature and Precipitation  
(Recorded in the period 1971-2000 at Canoe Brook, NJ1335)

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 snowfall
				Maximum temperature higher than—	Minimum temperature lower than—			Less than—	More than—		
°F	°F	°F	°F	°F	Units	In	In	In	In	In	
January-----	38.0	18.2	28.1	65	-6	2	4.13	2.18	5.84	6	8.7
February-----	40.9	19.7	30.3	67	-4	2	3.01	1.79	4.09	5	7.6
March-----	50.1	28.8	39.5	79	8	21	4.17	2.56	5.63	6	4.3
April-----	61.2	37.9	49.5	86	22	91	4.22	2.37	5.86	6	0.7
May-----	71.9	47.7	59.8	92	30	310	4.74	2.64	6.61	8	0.0
June-----	80.4	57.1	68.8	96	41	562	4.41	2.43	6.16	6	0.0
July-----	85.4	62.2	73.8	99	46	743	4.73	2.60	6.61	7	0.0
August-----	83.6	60.7	72.2	96	45	689	4.83	2.58	6.81	6	0.0
September---	76.4	52.8	64.6	93	34	439	5.02	2.69	7.08	6	0.0
October-----	65.3	40.4	52.9	83	24	146	4.18	2.14	5.97	5	0.0
November----	53.9	33.0	43.4	76	15	34	4.43	2.22	6.36	6	0.6
December----	42.9	24.1	33.5	67	4	5	3.85	1.62	5.74	6	3.4
Yearly:											
Average---	62.5	40.2	51.4	-	-	-	-	-	-	-	-
Extreme---	103	-15	-	100	-9	-	-	-	-	-	-
Total-----	-	-	-	-	-	3043	51.72	43.90	58.33	73	25.2

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees. F)

Table 2. Freeze Dates in Spring and Fall  
(Recorded in the period 1971-2000 at Canoe Brook, NJ1335)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 13	April 29	May 12
2 year in 10 later than---	April 9	April 23	May 8
5 year in 10 later than---	March 31	April 13	April 29
First freezing temperature in fall:			
1 yr in 10 earlier than--	October 25	October 10	October 1
2 yr in 10 earlier than--	October 31	October 15	October 5
5 yr in 10 earlier than--	November 10	October 25	October 14

Table 3. Growing Season  
(Recorded for the period 1971-2000 at Canoe Brook, NJ1335)

Probability	Daily Minimum Temperature During growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	202	170	146
8 years in 10	209	178	153
5 years in 10	222	194	167
2 years in 10	235	210	181
1 year in 10	242	218	189

Table 4. Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
BhgA	Bigapple loamy sand, 0 to 3 percent slopes-----	495	0.6
BhguA	Bigapple-Urban land, Bigapple substratum complex, 0 to 3 percent slopes--	612	0.7
BoeBc	Boonton sandy loam, terminal moraine, 0 to 8 percent slopes, extremely stony-----	165	0.2
BoeCc	Boonton sandy loam, terminal moraine, 8 to 15 percent slopes, extremely stony-----	179	0.2
BoeDc	Boonton sandy loam, terminal moraine, 15 to 25 percent slopes, extremely stony-----	137	0.2
BogB	Boonton loam, 3 to 8 percent slopes-----	115	0.1
BogBc	Boonton loam, 0 to 8 percent slopes, extremely stony-----	2,484	3.0
BogC	Boonton loam, 8 to 15 percent slopes-----	115	0.1
BogCc	Boonton loam, 8 to 15 percent slopes, extremely stony-----	1,683	2.0
BogDc	Boonton loam, 15 to 35 percent slopes, extremely stony-----	1,002	1.2
BooB	Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes-----	392	0.5
BooBc	Boonton silt loam, red sandstone lowland, 0 to 8 percent slopes, extremely stony-----	147	0.2
BooC	Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes-----	107	0.1
BooCc	Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes, extremely stony-----	173	0.2
BosB	Boonton-Udorthents, Boonton substratum complex, 0 to 8 percent slopes----	24	*
BotB	Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes-----	387	0.5
BotC	Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes-----	20	*
BouB	Boonton-Urban land, Boonton substratum complex, 0 to 8 percent slopes----	7,631	9.2
BouC	Boonton-Urban land, Boonton substratum complex, 8 to 15 percent slopes---	1,904	2.3
BouD	Boonton-Urban land, Boonton substratum complex, 15 to 25 percent slopes--	93	0.1
BowrB	Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes-----	6,715	8.1
BowrC	Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes-----	1,084	1.3
BowtB	Boonton-Urban land, Boonton substratum complex, terminal moraine, 0 to 8 percent slopes-----	1,930	2.3
BowtC	Boonton-Urban land, Boonton substratum complex, terminal moraine, 8 to 15 percent slopes-----	338	0.4
BowtD	Boonton-Urban land, Boonton substratum complex, terminal moraine, 15 to 25 percent slopes-----	19	*
CatcA	Catden muck, 0 to 2 percent slopes-----	77	*
CatnA	Catden-Natchaug complex, 0 to 2 percent slopes-----	113	0.1
DunB	Dunellen sandy loam, 3 to 8 percent slopes-----	504	0.6
DunC	Dunellen sandy loam, 8 to 15 percent slopes-----	56	*
DunD	Dunellen sandy loam, 15 to 25 percent slopes-----	23	*
DusB	Dunellen-Udorthents, Dunellen substratum complex, 0 to 8 percent slopes--	123	0.1
DusC	Dunellen-Udorthents, Dunellen substratum complex, 8 to 15 percent slopes--	33	*
DuuB	Dunellen-Urban land, Dunellen substratum complex, 0 to 8 percent slopes--	1,464	1.8
DuuC	Dunellen-Urban land, Dunellen substratum complex, 8 to 15 percent slopes--	25	*
FmhAt	Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded-----	74	*
GrpA	Great Piece loam, 0 to 3 percent slopes-----	1,612	1.9
HanB	Haledon silt loam, 3 to 8 percent slopes-----	10	*
HanBc	Haledon silt loam, 0 to 8 percent slopes, extremely stony-----	1,355	1.6
HanCc	Haledon silt loam, 8 to 15 percent slopes, extremely stony-----	219	0.3
HasB	Haledon-Urban land, Haledon substratum complex, 0 to 8 percent slopes----	1,673	2.0
HasC	Haledon-Urban land, Haledon substratum complex, 8 to 15 percent slopes---	54	*
HctBc	Hasbrouck silt loam, 0 to 8 percent slopes, extremely stony-----	1,404	1.7
HkrnB	Hinckley sandy loam, 3 to 8 percent slopes-----	79	*
HkrnC	Hinckley sandy loam, 8 to 15 percent slopes-----	4	*
HkruB	Hinckley-Urban land, Hinckley substratum complex, 0 to 8 percent slopes--	56	*
HkruC	Hinckley-Urban land, Hinckley substratum complex, 8 to 15 percent slopes--	26	*
HokCh	Holyoke silt loam, 0 to 15 percent slopes, very rocky-----	76	*
HomC	Holyoke-Rock outcrop complex, 3 to 15 percent slopes-----	35	*
HotA	Horseneck sandy loam, 0 to 3 percent slopes-----	255	0.3

\* See footnote at end of table.

Table 4. Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
HotuB	Horseneck-Urban land, Horseneck substratum complex, 0 to 8 percent slopes-----	1,255	1.5
KneA	Knickerbocker fine sandy loam, 0 to 3 percent slopes-----	41	*
KneB	Knickerbocker fine sandy loam, 3 to 8 percent slopes-----	125	0.2
KneC	Knickerbocker fine sandy loam, 8 to 15 percent slopes-----	37	*
KnuB	Knickerbocker-Urban land, Knickerbocker substratum complex, 0 to 8 percent slopes-----	1,157	1.4
NazA	Natchaug muck, 0 to 2 percent slopes-----	450	0.5
PbpAt	Parsippany silt loam, 0 to 3 percent slopes, frequently flooded-----	1,650	2.0
PecmB	Peckmantown silt loam, 3 to 8 percent slopes-----	79	*
PecmBc	Peckmantown silt loam, 0 to 8 percent slopes, extremely stony-----	70	*
PecmC	Peckmantown silt loam, 8 to 15 percent slopes-----	8	*
PecmCc	Peckmantown silt loam, 8 to 15 percent slopes, extremely stony-----	35	*
PecuuB	Peckmantown-Urban land, Peckmantown substratum complex, 0 to 8 percent slopes-----	467	0.6
PecuuC	Peckmantown-Urban land, Peckmantown substratum complex, 8 to 15 percent slopes-----	95	0.1
PHG	Pits, sand and gravel-----	11	*
PohA	Pompton sandy loam, 0 to 3 percent slopes-----	1,195	1.4
PokuB	Pompton-Urban land, Pompton substratum complex, 0 to 8 percent slopes----	890	1.1
PrgA	Preakness muck, very poorly drained, 0 to 3 percent slopes-----	49	*
PrkA	Preakness sandy loam, 0 to 3 percent slopes-----	402	0.5
QY	Pits, quarry-----	37	*
RkkcA	Rikers loamy sand, 0 to 3 percent slopes-----	468	0.6
RNAAC	Rock outcrop-----	49	*
RoeBc	Rockaway loam, 0 to 8 percent slopes, extremely stony-----	27	*
RoeCc	Rockaway loam, 8 to 15 percent slopes, extremely stony-----	37	*
RonB	Rockaway-Urban land, Rockaway substratum complex, 0 to 8 percent slopes--	78	*
RonC	Rockaway-Urban land, Rockaway substratum complex, 8 to 15 percent slopes--	59	*
TunkB	Tunkhannock fine sandy loam, 3 to 8 percent slopes-----	54	*
TunkC	Tunkhannock fine sandy loam, 8 to 15 percent slopes-----	31	*
TunkD	Tunkhannock fine sandy loam, 15 to 25 percent slopes-----	37	*
TunkE	Tunkhannock fine sandy loam, 25 to 60 percent slopes-----	58	*
TunudB	Tunkhannock-Udorthents, Tunkhannock substratum complex, 0 to 8 percent slopes-----	39	*
UcdAt	Udfluvents, 0 to 3 percent slopes, frequently flooded-----	217	0.3
UdbonB	Udorthents, Boonton substratum, 0 to 8 percent slopes-----	1,210	1.5
Udboob	Udorthents, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland-----	908	1.1
UddunB	Udorthents, Dunellen substratum, 0 to 8 percent slopes-----	787	0.9
UdhalB	Udorthents, Haledon substratum, 0 to 8 percent slopes-----	816	1.0
UdhorB	Udorthents, Horseneck substratum, 0 to 8 percent slopes-----	400	0.5
UdkttB	Udorthents, loamy fill substratum, 0 to 8 percent slopes-----	552	0.7
UdpecB	Udorthents, Peckmantown substratum, 0 to 8 percent slopes-----	57	*
UdrkkB	Udorthents, Rikers substratum, 0 to 8 percent slopes-----	5	*
UdtunB	Udorthents, Tunkhannock substratum, 0 to 8 percent slopes-----	86	0.1
URBHGB	Urban land, Bigapple substratum, 0 to 8 percent slopes-----	3,286	4.0
URBONB	Urban land, Boonton substratum, 0 to 8 percent slopes-----	1,019	1.2
URBOOB	Urban land, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland-----	2,036	2.5
URDUNB	Urban land, Dunellen substratum, 0 to 8 percent slopes-----	3,551	4.3
URHORB	Urban land, Horseneck substratum, 0 to 8 percent slopes-----	671	0.8
URKNKB	Urban land, Knickerbocker substratum, 0 to 8 percent slopes-----	148	0.2
URKTTB	Urban land, loamy fill substratum, 0 to 8 percent slopes-----	613	0.7
URPECB	Urban land, Peckmantown substratum, 0 to 8 percent slopes-----	16	*
URPOMB	Urban land, Pompton substratum, 0 to 8 percent slopes-----	469	0.6
USBONB	Urban land, Boonton substratum-Boonton complex, 0 to 8 percent slopes----	350	0.4
USBONC	Urban land, Boonton substratum-Boonton complex, 8 to 15 percent slopes---	35	*
USBOOB	Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 0 to 8 percent slopes-----	11,373	13.7
USBOOC	Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 8 to 15 percent slopes-----	1,906	2.3

\* See footnote at end of table.

Table 4. Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
USDUNB	Urban land, Dunellen substratum-Dunellen complex, 0 to 8 percent slopes--	2,537	3.1
USDUNC	Urban land, Dunellen substratum-Dunellen complex, 8 to 15 percent slopes-	76	*
USYRRB	Urban land, Yalesville substratum-Yalesville-Rock outcrop complex, 0 to 8 percent slopes-----	94	0.1
WaakAt	Wallkill mucky silt loam, 0 to 3 percent slopes, frequently flooded-----	183	0.2
WATER	Water-----	2,345	2.8
YamnB	Yalesville loam, 3 to 8 percent slopes-----	18	*
YamnBc	Yalesville loam, 0 to 8 percent slopes, extremely stony-----	92	0.1
YamnCc	Yalesville loam, 8 to 15 percent slopes, extremely stony-----	48	*
YaobBc	Yalesville-Boonton-Holyoke complex, 0 to 8 percent slopes, extremely stony-----	66	*
YaohEh	Yalesville-Holyoke complex, 35 to 60 percent slopes, very rocky-----	391	0.5
YaorCc	Yalesville-Rock outcrop complex, 8 to 15 percent slopes, extremely stony-	62	*
YaotuB	Yalesville-Urban land, Yalesville substratum complex, 0 to 8 percent slopes-----	84	0.1
YaotuC	Yalesville-Urban land, Yalesville substratum complex, 8 to 15 percent slopes-----	41	*
YaouA	Yalesville loam, red sandstone lowland, 0 to 3 percent slopes-----	34	*
YaouB	Yalesville loam, red sandstone lowland, 3 to 8 percent slopes-----	12	*
YaovB	Yalesville-Urban land, Yalesville substratum complex, red sandstone lowland, 0 to 8 percent slopes-----	115	0.1
	Total-----	83,000	100.0

\* Less than 0.1 percent.

Table 5. Prime and Other Important Farmland

(Only the soils considered prime 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	Farmland Classification
BogB	Boonton loam, 3 to 8 percent slopes	All areas are prime farmland
BooB	Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes	All areas are prime farmland
DunB	Dunellen sandy loam, 3 to 8 percent slopes	All areas are prime farmland
HanB	Haledon silt loam, 3 to 8 percent slopes	All areas are prime farmland
HotA	Horseneck sandy loam, 0 to 3 percent slopes	All areas are prime farmland
KneA	Knickerbocker fine sandy loam, 0 to 3 percent slopes	All areas are prime farmland
KneB	Knickerbocker fine sandy loam, 3 to 8 percent slopes	All areas are prime farmland
PohA	Pompton sandy loam, 0 to 3 percent slopes	All areas are prime farmland
YamnB	Yalesville loam, 3 to 8 percent slopes	All areas are prime farmland
YaouA	Yalesville loam, red sandstone lowland, 0 to 3 percent slopes	All areas are prime farmland
YaouB	Yalesville loam, red sandstone lowland, 3 to 8 percent slopes	All areas are prime farmland
BogC	Boonton loam, 8 to 15 percent slopes	Farmland of statewide importance
BooC	Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes	Farmland of statewide importance
DunC	Dunellen sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
HkrnB	Hinckley sandy loam, 3 to 8 percent slopes	Farmland of statewide importance
HkrnC	Hinckley sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
KneC	Knickerbocker fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
PecmB	Peckmantown silt loam, 3 to 8 percent slopes	Farmland of statewide importance
PecmC	Peckmantown silt loam, 8 to 15 percent slopes	Farmland of statewide importance
TunkB	Tunkhannock fine sandy loam, 3 to 8 percent slopes	Farmland of statewide importance
TunkC	Tunkhannock fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
CatcA	Catden muck, 0 to 2 percent slopes	Farmland of unique importance
CatnA	Catden-Natchaug complex, 0 to 2 percent slopes	Farmland of unique importance
NazA	Natchaug muck, 0 to 2 percent slopes	Farmland of unique importance
WaakAt	Wallkill mucky silt loam, 0 to 3 percent slopes, frequently flooded	Farmland of unique importance

Table 6. Camp Areas, Picnic Areas, and Playgrounds

(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
BhgA: Bigapple-----	80	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy Gravel content	0.55 0.01
BhguA: Bigapple-----	60	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy Gravel content	0.55 0.01
Urban land, Bigapple substratum-----	30	Not rated		Not rated		Not rated	
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.50
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.63	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.63	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slope Large stones content Slow water movement	1.00 1.00 0.96	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
BogB: Boonton-----	80	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
BogBc: Boonton, extremely stony-----	85	Very limited Large stones content Slow water movement	1.00  0.96	Very limited Large stones content Slow water movement	1.00  0.96	Very limited Large stones content Slope Slow water movement	1.00  1.00 0.96
BogC: Boonton-----	90	Somewhat limited Slow water movement Slope	0.96  0.63	Somewhat limited Slow water movement Slope	0.96  0.63	Very limited Slope Slow water movement	1.00 0.96
BogCc: Boonton, extremely stony-----	85	Very limited Large stones content Slow water movement Slope	1.00  0.96  0.63	Very limited Large stones content Slow water movement Slope	1.00  0.96  0.63	Very limited Large stones content Slope Slow water movement	1.00  1.00 0.96
BogDc: Boonton, extremely stony-----	95	Very limited Slope Large stones content Slow water movement	1.00 1.00  0.96	Very limited Large stones content Slope Slow water movement	1.00 1.00  0.96	Very limited Large stones content Slope Slow water movement	1.00  1.00 0.96
BooB: Boonton, red sandstone lowland--	95	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96  0.88
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Large stones content Slow water movement	1.00  0.96	Very limited Large stones content Slow water movement	1.00  0.96	Very limited Large stones content Slow water movement Slope	1.00  0.96  0.88
BooC: Boonton, red sandstone lowland--	95	Somewhat limited Slow water movement Slope	0.96  0.16	Somewhat limited Slow water movement Slope	0.96  0.16	Very limited Slope Slow water movement	1.00 0.96

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Large stones Slow water movement Slope	1.00 0.96 0.37	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.37	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
BosB: Boonton-----	60	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96
Udorthents, Boonton substratum-----	40	Not limited		Not limited		Somewhat limited Slope	0.12
BotB: Boonton, red sandstone lowland--	60	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.88
Udorthents, Boonton red sandstone lowland substratum-	40	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.12
BotC: Boonton, red sandstone lowland--	60	Somewhat limited Slow water movement Slope	0.96 0.16	Somewhat limited Slow water movement Slope	0.96 0.16	Very limited Slope Slow water movement	1.00 0.96
Udorthents, Boonton red sandstone lowland substratum-	40	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.12
BouB: Boonton-----	50	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96
Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
BouC: Boonton-----	50	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope	1.00
		Slope	0.63	Slope	0.63	Slow water movement	0.96
Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	
BouD: Boonton-----	60	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowrB: Boonton, red sandstone lowland--	50	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96
						Slope	0.88
Urban land, Boonton red sandstone lowland substratum-	40	Not rated		Not rated		Not rated	
BowrC: Boonton, red sandstone lowland--	50	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope	1.00
		Slope	0.16	Slope	0.16	Slow water movement	0.96
Urban land, Boonton red sandstone lowland substratum-	40	Not rated		Not rated		Not rated	
BowtB: Boonton, terminal moraine-----	40	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96
						Slope	0.50
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowtC: Boonton, terminal moraine-----	40	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope	1.00
		Slope	0.63	Slope	0.63	Slow water movement	0.96

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
BowtC: (cont.) Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowtD: Boonton, terminal moraine-----	40	Very limited Slope Slow water movement	1.00 0.96	Very limited Slope Slow water movement	1.00 0.96	Very limited Slope Slow water movement	1.00 0.96
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
CatcA: Catden-----	85	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
CatnA: Catden-----	80	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Natchaug-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
DunB: Dunellen-----	85	Not limited		Not limited		Somewhat limited Gravel content Slope	0.54 0.50
DunC: Dunellen-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope Gravel content	1.00 0.54
DunD: Dunellen-----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope Gravel content	1.00 0.54
DusB: Dunellen-----	60	Not limited		Not limited		Somewhat limited Gravel content Slope	0.54 0.50
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Somewhat limited Slope	0.12

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
DusC: Dunellen-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope Gravel content	1.00 0.54
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Somewhat limited Slope	0.12
DuuB: Dunellen-----	60	Not limited		Not limited		Somewhat limited Gravel content Slope	0.54 0.50
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	
DuuC: Dunellen-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope Gravel content	1.00 0.54
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding	1.00 0.94 0.40	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00
GrpA: Great Piece-----	90	Very limited Depth to saturated zone Flooding Ponding Slow water movement	1.00 1.00 1.00 0.22	Very limited Depth to saturated zone Ponding Slow water movement	1.00 1.00 0.22	Very limited Depth to saturated zone Ponding Slow water movement	1.00 1.00 0.22
HanB: Haledon-----	85	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 Slope	1.00 0.96 0.50

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
HanBc: Haledon, extremely stony-----	85	Very limited Depth to saturated zone Large stones content Slow water movement	1.00 1.00 0.96	Very limited Large stones content Depth to saturated zone Slow water movement	1.00 1.00 0.96	Very limited Large stones content Depth to saturated zone Slow water movement Slope	1.00 1.00 0.96 0.50
HanCc: Haledon, extremely stony-----	85	Very limited Depth to saturated zone Large stones content Slow water movement Slope	1.00 1.00 0.96 0.63	Very limited Large stones content Depth to saturated zone Slow water movement Slope	1.00 1.00 0.96 0.63	Very limited Large stones content Depth to saturated zone Slope Slow water movement	1.00 1.00 1.00 0.96
HasB: Haledon-----	60	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 Slope	1.00 0.96 0.50
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	
HasC: Haledon-----	60	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	
HctBc: Hasbrouck, extremely stony-----	85	Very limited Depth to saturated zone Large stones content Ponding Slow water movement	1.00 1.00 1.00 0.96	Very limited Large stones content Depth to saturated zone Ponding Slow water movement	1.00 1.00 1.00 0.96	Very limited Large stones content Depth to saturated zone Ponding Slow water movement	1.00 1.00 1.00 0.96
HkrnB: Hinckley-----	90	Not limited		Not limited		Very limited Slope	1.00

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
HkrnC: Hinckley-----	90	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
HkruB: Hinckley-----	55	Not limited		Not limited		Very limited Slope	1.00
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HkruC: Hinckley-----	50	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HokCh: Holyoke, very rocky-	85	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Depth to bedrock Slope	1.00 0.16	Very limited Slope Depth to bedrock	1.00 1.00
HomC: Holyoke-----	80	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Somewhat limited Depth to saturated zone Too sandy	0.67 0.01	Somewhat limited Depth to saturated zone Too sandy	0.35 0.01	Somewhat limited Depth to saturated zone Too sandy	0.67 0.01
HotuB: Horseneck-----	55	Somewhat limited Depth to saturated zone Too sandy	0.67 0.01	Somewhat limited Depth to saturated zone Too sandy	0.35 0.01	Somewhat limited Depth to saturated zone Slope Too sandy	0.67 0.50 0.01
Urban land, Horseneck substratum-----	40	Not rated		Not rated		Not rated	
KneA: Knickerbocker-----	90	Somewhat limited Gravel content	0.01	Somewhat limited Gravel content	0.01	Very limited Gravel content	1.00
KneB: Knickerbocker-----	90	Somewhat limited Gravel content	0.01	Somewhat limited Gravel content	0.01	Very limited Slope Gravel content	1.00 1.00

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
KneC: Knickerbocker-----	95	Somewhat limited Slope Gravel content	0.63 0.01	Somewhat limited Slope Gravel content	0.63 0.01	Very limited Slope Gravel content	1.00 1.00
KnuB: Knickerbocker-----	55	Somewhat limited Gravel content	0.01	Somewhat limited Gravel content	0.01	Very limited Slope Gravel content	1.00 1.00
Urban land, Knickerbocker substratum-----	40	Not rated		Not rated		Not rated	
NazA: Natchaug-----	85	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
PbpAt: Parsippany, frequently flooded-	90	Very limited Depth to saturated zone Flooding Ponding Slow water movement	1.00 1.00 1.00 0.96	Very limited Depth to saturated zone Ponding Slow water movement Flooding	1.00 1.00 0.96 0.40	Very limited Depth to saturated zone Flooding Ponding Slow water movement	1.00 1.00 1.00 0.96
PecmB: Peckmantown-----	90	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96
PecmBc: Peckmantown, extremely stony----	90	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
PecmC: Peckmantown-----	90	Somewhat limited Slow water movement Slope	0.96 0.16	Somewhat limited Slow water movement Slope	0.96 0.16	Very limited Slope Slow water movement	1.00 0.96

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
PecmCc: Peckmantown, extremely stony----	90	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.16	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.16	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
PecuuB: Peckmantown-----	55	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	
PecuuC: Peckmantown-----	55	Somewhat limited Slow water movement Slope	0.96 0.16	Somewhat limited Slow water movement Slope	0.96 0.16	Very limited Slope Slow water movement	1.00 0.96
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94	Very limited Depth to saturated zone	1.00
PokuB: Pompton-----	55	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.94	Very limited Depth to saturated zone	1.00
Urban land, Pompton substratum-----	40	Not rated		Not rated		Not rated	
PrgA: Preakness, very poorly drained----	90	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
PrkA: Preakness, poorly drained-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Gravel content Too sandy	0.68 0.55
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement Slope Gravel content	1.00 0.96 0.50 0.07
RoeCc: Rockaway, extremely stony-----	85	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.63	Very limited Large stones content Slow water movement Slope	1.00 0.96 0.63	Very limited Large stones content Slope Slow water movement Gravel content	1.00 1.00 0.96 0.68
RonB: Rockaway-----	55	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Gravel content Slope	0.96 0.68 0.50
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
RonC: Rockaway-----	55	Somewhat limited Slow water movement Slope	0.96 0.63	Somewhat limited Slow water movement Slope	0.96 0.63	Very limited Slope Slow water movement Gravel content	1.00 0.96 0.68
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
TunkB: Tunkhannock-----	90	Not limited		Not limited		Somewhat limited Slope	0.88
TunkC: Tunkhannock-----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
TunkD: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
TunkE: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
TunudB: Tunkhannock-----	60	Not limited		Not limited		Very limited Slope	1.00
Udorthents, Tunkhannock substratum-----	40	Not limited		Not limited		Somewhat limited Slope	0.12
UcdAt: Udifluvents, frequently flooded-	90	Very limited Flooding Too sandy Depth to saturated zone	1.00 0.76 0.67	Somewhat limited Too sandy Flooding Depth to saturated zone	0.76 0.40 0.35	Very limited Flooding Too sandy Depth to saturated zone	1.00 0.76 0.67
UdbonB: Udorthents, Boonton substratum-----	95	Not limited		Not limited		Somewhat limited Slope	0.12
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.12
UddunB: Udorthents, Dunellen substratum-----	95	Not limited		Not limited		Somewhat limited Slope	0.12
UdhalB: Udorthents, Haledon substratum-----	90	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 Slope	1.00 0.96 0.12

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
UdhorB: Udorthents, Horseneck substratum-----	95	Somewhat limited Depth to saturated zone	0.67	Somewhat limited Depth to saturated zone	0.35	Somewhat limited Depth to saturated zone Slope	0.67 0.12
UdkttB: Udorthents, loamy fill substratum----	85	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.12
UdpecB: Udorthents, Peckmantown substratum-----	95	Not limited		Not limited		Somewhat limited Slope	0.12
UdrkkB: Udorthents, Rikers substratum-----	95	Not limited		Not limited		Somewhat limited Slope	0.12
UdtunB: Udorthents, Tunkhannock substratum-----	90	Not limited		Not limited		Somewhat limited Slope	0.12
URBHGB: Urban land, Bigapple substratum-----	90	Not rated		Not rated		Not rated	
URBONB: Urban land, Boonton substratum-----	90	Not rated		Not rated		Not rated	
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Not rated		Not rated		Not rated	
URDUNB: Urban land, Dunellen substratum-----	90	Not rated		Not rated		Not rated	
URHORB: Urban land, Horseneck substratum-----	90	Not rated		Not rated		Not rated	
URKNKB: Urban land, Knickerbocker substratum-----	90	Not rated		Not rated		Not rated	

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
URKTTB: Urban land, loamy fill substratum----	85	Not rated		Not rated		Not rated	
URPECB: Urban land, Peckmantown substratum-----	90	Not rated		Not rated		Not rated	
URPOMB: Urban land, Pompton substratum-----	90	Not rated		Not rated		Not rated	
USBONB: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Very limited Slope Slow water movement	1.00 0.96
USBONC: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Somewhat limited Slow water movement Slope	0.96 0.63	Somewhat limited Slow water movement Slope	0.96 0.63	Very limited Slope Slow water movement	1.00 0.96
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	
Boonton, red sandstone lowland--	30	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement	0.96	Somewhat limited Slow water movement Slope	0.96 0.88
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	
Boonton, red sandstone lowland--	30	Somewhat limited Slow water movement Slope	0.96 0.16	Somewhat limited Slow water movement Slope	0.96 0.16	Very limited Slope Slow water movement	1.00 0.96
USDUNB: Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
USDUNB: Dunellen-----	30	Not limited		Not limited		Somewhat limited Gravel content Slope	0.54 0.50
USDUNC: Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	
Dunellen-----	30	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope Gravel content	1.00 0.54
USYRRB: Urban land, Yalesville substratum-----	50	Not rated		Not rated		Not rated	
Yalesville-----	30	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.88 0.29
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Flooding	1.00 1.00 0.40	Very limited Depth to saturated zone Flooding Ponding	1.00 1.00 1.00
WATER: Water-----	100	Not rated		Not rated		Not rated	
YamnB: Yalesville-----	85	Not limited		Not limited		Very limited Slope Depth to bedrock	1.00 0.29
YamnBc: Yalesville, extremely stony----	85	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 0.29
YamnCc: Yalesville, extremely stony----	90	Very limited Large stones content Slope	1.00 0.16	Very limited Large stones content Slope	1.00 0.16	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 0.29

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
YaobBc: Yalesville, extremely stony----	40	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 0.29
Boonton, extremely stony-----	30	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slow water movement	1.00 0.96	Very limited Large stones content Slope Slow water movement	1.00 1.00 0.96
Holyoke, extremely stony-----	30	Very limited Large stones content Depth to bedrock	1.00 1.00	Very limited Large stones content Depth to bedrock	1.00 1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 1.00
YaohEh: Yalesville, very rocky-----	50	Very limited Slope Large stones content	1.00 1.00	Very limited Large stones content Slope	1.00 1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 0.29
Holyoke, very rocky-	30	Very limited Slope Large stones content Depth to bedrock	1.00 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 1.00
YaorCc: Yalesville, extremely stony----	80	Very limited Large stones content Slope	1.00 0.16	Very limited Large stones content Slope	1.00 0.16	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 0.29
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.50 0.29
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	

Table 6. Camp Areas, Picnic Areas, and Playgrounds--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
YaotuC: Yalesville-----	55	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope Depth to bedrock	1.00 0.29
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	
YaouA: Yalesville, red sandstone lowland--	95	Not limited		Not limited		Not limited	
YaouB: Yalesville, red sandstone lowland--	95	Not limited		Not limited		Very limited Slope Depth to bedrock	1.00 0.29
YaovB: Yalesville, red sandstone lowland--	55	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.50 0.29
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	

Table 7. Paths, Trails, and Golf Fairways

(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
BhgA: Bigapple-----	80	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Droughty	0.99
BhguA: Bigapple-----	60	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Droughty	0.99
Urban land, Bigapple substratum-----	30	Not rated		Not rated		Not rated	
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Droughty	0.03
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Slope Droughty	0.63 0.03
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Large stones content Slope	1.00 1.00	Very limited Large stones content	1.00	Very limited Slope Droughty	1.00 0.03
BogB: Boonton-----	80	Not limited		Not limited		Not limited	
BogBc: Boonton, extremely stony-----	85	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Not limited	
BogC: Boonton-----	90	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
BogCc: Boonton, extremely stony-----	85	Very limited Large stones content Water erosion	1.00 1.00	Very limited Large stones content Water erosion	1.00 1.00	Somewhat limited Slope	0.63

Table 7. Paths, Trails, and Golf Fairways--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
BogDc: Boonton, extremely stony-----	95	Very limited Large stones content Water erosion Slope	1.00 1.00 1.00	Very limited Large stones content Water erosion	1.00 1.00	Very limited Slope	1.00
BooB: Boonton, red sandstone lowland--	95	Not limited		Not limited		Not limited	
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Not limited	
BooC: Boonton, red sandstone lowland--	95	Not limited		Not limited		Somewhat limited Slope	0.16
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Slope	0.37
BosB: Boonton-----	60	Not limited		Not limited		Not limited	
Udorthents, Boonton substratum-----	40	Not limited		Not limited		Not limited	
BotB: Boonton, red sandstone lowland--	60	Not limited		Not limited		Not limited	
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BotC: Boonton, red sandstone lowland--	60	Not limited		Not limited		Somewhat limited Slope	0.16
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BouB: Boonton-----	50	Not limited		Not limited		Not limited	

Table 7. Paths, Trails, and Golf Fairways--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
BouB: (cont.) Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	
BouC: Boonton-----	50	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	
BouD: Boonton-----	60	Very limited Water erosion Slope	1.00 0.50	Very limited Water erosion	1.00	Very limited Slope	1.00
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowrB: Boonton, red sandstone lowland--	50	Not limited		Not limited		Not limited	
Urban land, Boonton red sandstone lowland substratum-	40	Not rated		Not rated		Not rated	
BowrC: Boonton, red sandstone lowland--	50	Not limited		Not limited		Somewhat limited Slope	0.16
Urban land, Boonton red sandstone lowland substratum-	40	Not rated		Not rated		Not rated	
BowtB: Boonton, terminal moraine-----	40	Not limited		Not limited		Somewhat limited Droughty	0.03
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowtC: Boonton, terminal moraine-----	40	Not limited		Not limited		Somewhat limited Slope Droughty	0.63 0.03
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowtD: Boonton, terminal moraine-----	40	Very limited Slope	1.00	Not limited		Very limited Slope Droughty	1.00 0.03

Table 7. Paths, Trails, and Golf Fairways--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
BowtD: (cont.) Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
CatcA: Catden-----	85	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
CatnA: Catden-----	80	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Natchaug-----	15	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
DunB: Dunellen-----	85	Not limited		Not limited		Not limited	
DunC: Dunellen-----	85	Not limited		Not limited		Somewhat limited Slope	0.63
DunD: Dunellen-----	90	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
DusB: Dunellen-----	60	Not limited		Not limited		Not limited	
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Not limited	
DusC: Dunellen-----	60	Not limited		Not limited		Somewhat limited Slope	0.63
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Not limited	
DuuB: Dunellen-----	60	Not limited		Not limited		Not limited	
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	
DuuC: Dunellen-----	60	Not limited		Not limited		Somewhat limited Slope	0.63
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	

Table 7. Paths, Trails, and Golf Fairways--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
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Very limited Ponding Depth to saturated zone Flooding	1.00 0.86 0.40	Very limited Ponding Depth to saturated zone Flooding	1.00 0.86 0.40	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 0.94
GrpA: Great Piece-----	90	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
HanB: Haledon-----	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
HanBc: Haledon, extremely stony-----	85	Very limited Large stones content Depth to saturated zone	1.00 1.00	Very limited Large stones content Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
HanCc: Haledon, extremely stony-----	85	Very limited Large stones content Depth to saturated zone	1.00 1.00	Very limited Large stones content Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.63
HasB: Haledon-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	
HasC: Haledon-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	

Table 7. Paths, Trails, and Golf Fairways--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
HctBc: Hasbrouck, extremely stony-----	85	Very limited Large stones content Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Large stones content Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
HkrnB: Hinckley-----	90	Not limited		Not limited		Somewhat limited Droughty	0.76
HkrnC: Hinckley-----	90	Not limited		Not limited		Somewhat limited Droughty Slope	0.95 0.16
HkruB: Hinckley-----	55	Not limited		Not limited		Somewhat limited Droughty	0.76
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HkruC: Hinckley-----	50	Not limited		Not limited		Somewhat limited Droughty Slope	0.95 0.16
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HokCh: Holyoke, very rocky-	85	Not limited		Not limited		Very limited Depth to bedrock Slope	1.00 0.16
HomC: Holyoke-----	80	Not limited		Not limited		Very limited Depth to bedrock Slope	1.00 0.63
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Somewhat limited Depth to saturated zone Too sandy	0.04 0.01	Somewhat limited Depth to saturated zone Too sandy	0.04 0.01	Somewhat limited Depth to saturated zone Droughty	0.35 0.02
HotuB: Horseneck-----	55	Somewhat limited Depth to saturated zone Too sandy	0.04 0.01	Somewhat limited Depth to saturated zone Too sandy	0.04 0.01	Somewhat limited Depth to saturated zone Droughty	0.35 0.02

Table 7. Paths, Trails, and Golf Fairways--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
HotuB: (cont.) Urban land, Horseneck substratum-----	40	Not rated		Not rated		Not rated	
KneA: Knickerbocker-----	90	Not limited		Not limited		Somewhat limited Gravel content	0.01
KneB: Knickerbocker-----	90	Not limited		Not limited		Somewhat limited Gravel content	0.01
KneC: Knickerbocker-----	95	Not limited		Not limited		Somewhat limited Slope Gravel content	0.63 0.01
KnuB: Knickerbocker-----	55	Not limited		Not limited		Somewhat limited Gravel content	0.01
Urban land, Knickerbocker substratum-----	40	Not rated		Not rated		Not rated	
NazA: Natchaug-----	85	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
PbpAt: Parsippany, frequently flooded-	90	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 Flooding Depth to saturated zone Ponding	1.00 1.00 1.00
PecmB: Peckmantown-----	90	Not limited		Not limited		Not limited	
PecmBc: Peckmantown, extremely stony----	90	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Not limited	
PecmC: Peckmantown-----	90	Not limited		Not limited		Somewhat limited Slope	0.16
PecmCc: Peckmantown, extremely stony----	90	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Slope	0.16

Table 7. Paths, Trails, and Golf Fairways--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
PecuuB: Peckmantown-----	55	Not limited		Not limited		Not limited	
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	
PecuuC: Peckmantown-----	55	Not limited		Not limited		Somewhat limited Slope	0.16
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
PokuB: Pompton-----	55	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.86	Somewhat limited Depth to saturated zone	0.94
Urban land, Pompton substratum-----	40	Not rated		Not rated		Not rated	
PrgA: Preakness, very poorly drained-----	90	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
PrkA: Preakness, poorly drained-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Somewhat limited Too sandy	0.55	Somewhat limited Too sandy	0.55	Somewhat limited Droughty	0.98
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	

Table 7. Paths, Trails, and Golf Fairways--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
RoeBc: Rockaway, extremely stony-----	85	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Droughty Large stones content	0.34 0.05
RoeCc: Rockaway, extremely stony-----	85	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Slope Droughty Large stones content	0.63 0.34 0.01
RonB: Rockaway-----	55	Not limited		Not limited		Somewhat limited Droughty Large stones content	0.34 0.01
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
RonC: Rockaway-----	55	Not limited		Not limited		Somewhat limited Slope Droughty Large stones content	0.63 0.34 0.01
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
TunkB: Tunkhannock-----	90	Not limited		Not limited		Somewhat limited Droughty	0.11
TunkC: Tunkhannock-----	90	Not limited		Not limited		Somewhat limited Slope Droughty	0.63 0.11
TunkD: Tunkhannock-----	95	Somewhat limited Slope	0.50	Not limited		Very limited Slope Droughty	1.00 0.11
TunkE: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope Droughty	1.00 0.11
TunudB: Tunkhannock-----	60	Not limited		Not limited		Somewhat limited Droughty	0.11

Table 7. Paths, Trails, and Golf Fairways--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
TunudB: (cont.) Udorthents, Tunkhannock substratum-----	40	Not limited		Not limited		Very limited Droughty	1.00
UcdAt: Udifluvents, frequently flooded-	90	Somewhat limited Too sandy Flooding Depth to saturated zone	0.76 0.40 0.04	Somewhat limited Too sandy Flooding Depth to saturated zone	0.76 0.40 0.04	Very limited Flooding Droughty Depth to saturated zone	1.00 0.96 0.35
UdbonB: Udorthents, Boonton substratum-----	95	Not limited		Not limited		Not limited	
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Not limited		Not limited		Not limited	
UddunB: Udorthents, Dunellen substratum-----	95	Not limited		Not limited		Not limited	
UdhalB: Udorthents, Haledon substratum-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
UdhorB: Udorthents, Horseneck substratum-----	95	Somewhat limited Depth to saturated zone	0.04	Somewhat limited Depth to saturated zone	0.04	Somewhat limited Depth to saturated zone Droughty	0.35 0.02
UdkttB: Udorthents, loamy fill substratum----	85	Not limited		Not limited		Not limited	
UdpecB: Udorthents, Peckmantown substratum-----	95	Not limited		Not limited		Somewhat limited Droughty	0.28
UdrkkB: Udorthents, Rikers substratum-----	95	Not limited		Not limited		Somewhat limited Droughty	0.12

Table 7. Paths, Trails, and Golf Fairways--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
UdtunB: Udorthents, Tunkhannock substratum-----	90	Not limited		Not limited		Somewhat limited Droughty	0.11
URBHGB: Urban land, Bigapple substratum-----	90	Not rated		Not rated		Not rated	
URBONB: Urban land, Boonton substratum-----	90	Not rated		Not rated		Not rated	
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Not rated		Not rated		Not rated	
URDUNB: Urban land, Dunellen substratum-----	90	Not rated		Not rated		Not rated	
URHORB: Urban land, Horseneck substratum-----	90	Not rated		Not rated		Not rated	
URKNKB: Urban land, Knickerbocker substratum-----	90	Not rated		Not rated		Not rated	
URKTTB: Urban land, loamy fill substratum----	85	Not rated		Not rated		Not rated	
URPECB: Urban land, Peckmantown substratum-----	90	Not rated		Not rated		Not rated	
URPOMB: Urban land, Pompton substratum-----	90	Not rated		Not rated		Not rated	
USBONB: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Not limited		Not limited		Not limited	
USBONC: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63

Table 7. Paths, Trails, and Golf Fairways--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
USBOOB:							
Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	
Boonton, red sandstone lowland--	30	Not limited		Not limited		Not limited	
USBOOC:							
Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	
Boonton, red sandstone lowland--	30	Not limited		Not limited		Somewhat limited Slope	0.16
USDUNB:							
Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	
Dunellen-----	30	Not limited		Not limited		Not limited	
USDUNC:							
Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	
Dunellen-----	30	Not limited		Not limited		Somewhat limited Slope	0.63
USYRRB:							
Urban land, Yalesville substratum-----	50	Not rated		Not rated		Not rated	
Yalesville-----	30	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt:							
Wallkill, frequently flooded-----	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	saturated zone	
		Flooding	0.40	Flooding	0.40	Ponding	1.00
WATER:							
Water-----	100	Not rated		Not rated		Not rated	
YamnB:							
Yalesville-----	85	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29

Table 7. Paths, Trails, and Golf Fairways--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
YamnBc: Yalesville, extremely stony----	85	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Depth to bedrock	0.29
YamnCc: Yalesville, extremely stony----	90	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Depth to bedrock Slope	0.29 0.16
YaobBc: Yalesville, extremely stony----	40	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Depth to bedrock	0.29
Boonton, extremely stony-----	30	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Not limited	
Holyoke, extremely stony-----	30	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Depth to bedrock	1.00
YaohEh: Yalesville, very rocky-----	50	Very limited Large stones content Slope	1.00 1.00	Very limited Large stones content Slope	1.00 1.00	Very limited Slope Depth to bedrock	1.00 0.29
Holyoke, very rocky-	30	Very limited Large stones content Slope	1.00 1.00	Very limited Large stones content Slope	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00
YaorCc: Yalesville, extremely stony----	80	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Depth to bedrock Slope	0.29 0.16
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	

Table 7. Paths, Trails, and Golf Fairways--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
YaotuC: Yalesville-----	55	Not limited		Not limited		Somewhat limited Depth to bedrock Slope	0.29 0.16
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	
YaouA: Yalesville, red sandstone lowland--	95	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29
YaouB: Yalesville, red sandstone lowland--	95	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29
YaovB: Yalesville, red sandstone lowland--	55	Not limited		Not limited		Somewhat limited Depth to bedrock	0.29
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	

Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
BhgA: Bigapple-----	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair	Very poor	Very poor
BhguA: Bigapple-----	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair	Very poor	Very poor
Urban land, Bigapple substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
BoeBc: Boonton, terminal moraine, extremely stony-----	Very poor	Very poor	Good	Good	Good	Poor	Very poor	Poor	Fair	Very poor
BoeCc: Boonton, terminal moraine, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
BoeDc: Boonton, terminal moraine, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
BogB: Boonton-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
BogBc: Boonton, extremely stony	Very poor	Very poor	Good	Good	Good	Poor	Very poor	Poor	Fair	Very poor
BogC: Boonton-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BogCc: Boonton, extremely stony	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
BogDc: Boonton, extremely stony	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
BooB: Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
BooBc: Boonton, red sandstone lowland, extremely stony-----	Very poor	Very poor	Good	Good	Good	Poor	Very poor	Poor	Fair	Very poor
BooC: Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BooCc: Boonton, red sandstone lowland, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
BosB: Boonton-----	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Udorthents, Boonton substratum-----	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BotB: Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Udorthents, Boonton red sandstone lowland substratum-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BotC: Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Udorthents, Boonton red sandstone lowland substratum-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BouB: Boonton-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land, Boonton substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
BouC: Boonton-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Good



Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
CatcA: Catden-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
CatnA: Catden-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Natchaug-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
DunB: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DunC: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DunD: Dunellen-----	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
DusB: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Udorthents, Dunellen substratum-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DusC: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Udorthents, Dunellen substratum-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DuuB: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land, Dunellen substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
DuuC: Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land, Dunellen substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
FmhAt: Fluvaquents, loamy, frequently flooded----	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor
GrpA: Great Piece-----	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good



Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
HokCh: Holyoke, very rocky-----	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
HomC: Holyoke-----	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
HotA: Horseneck-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HotuB: Horseneck-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land, Horseneck substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
KneA: Knickerbocker-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
KneB: Knickerbocker-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
KneC: Knickerbocker-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
KnuB: Knickerbocker-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Urban land, Knickerbocker substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
NazA: Natchaug-----	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
PbpAt: Parsippany, frequently flooded-----	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
PecmB: Peckmantown-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PecmBc: Peckmantown, extremely stony-----	Very poor	Very poor	Good	Good	Good	Poor	Very poor	Poor	Good	Very poor

Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
PecmC: Peckmantown-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
PecmCc: Peckmantown, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
PecuuB: Peckmantown-----	Good	Good	Good	Good	Good	Poor	Very poor	Poor	Good	Very poor
Urban land, Peckmantown substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
PecuuC: Peckmantown-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land, Peckmantown substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
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
PohA: Pompton-----	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor
PokuB: Pompton-----	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor
Urban land, Pompton substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
PrgA: Preakness, very poorly drained-----	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
PrkA: Preakness, poorly drained-----	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
QY: Pits, quarry-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
RkkcA: Rikers-----	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair	Very poor	Very poor

Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life
RNAAC: Rock outcrop-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
RoeBc: Rockaway, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
RoeCc: Rockaway, extremely stony-----	Very poor	Very poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
RonB: Rockaway-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land, Rockaway substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
RonC: Rockaway-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land, Rockaway substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
TunkB: Tunkhannock-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
TunkC: Tunkhannock-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
TunkD: Tunkhannock-----	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
TunkE: Tunkhannock-----	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
TunudB: Tunkhannock-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Udorthents, Tunkhannock substratum-----	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
UcdAt: Udifluents, frequently flooded-----	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor





Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
USBOOB: (cont.) Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
USBOOC: Urban land, Boonton red sandstone lowland substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Boonton, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
USDUNB: Urban land, Dunellen substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
USDUNC: Urban land, Dunellen substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Dunellen-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
USYRRB: Urban land, Yalesville substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor
Yalesville-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Rock outcrop-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
WaakAt: Wallkill, frequently flooded-----	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
WATER: Water-----	---	---	---	---	---	---	---	---	---	---
YamnB: Yalesville-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
YamnBc: Yalesville, extremely stony-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 8. 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	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
YamnCc: Yalesville, extremely stony-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
YaobBc: Yalesville, extremely stony-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Boonton, extremely stony	Very poor	Very poor	Good	Good	Good	Poor	Very poor	Poor	Fair	Very poor
Holyoke, extremely stony	Very poor	Very poor	Fair	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
YaohEh: Yalesville, very rocky--	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Holyoke, very rocky----	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
YaorCc: Yalesville, extremely stony-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Rock outcrop-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
YaotuB: Yalesville-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land, Yalesville substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
YaotuC: Yalesville-----	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land, Yalesville substratum-----	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
YaouA: Yalesville, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
YaouB: Yalesville, red sandstone lowland-----	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor



Table 9. Hydric Soils

(This report lists all map unit components for the survey area. 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 report.)

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
BhgA: Bigapple loamy sand, 0 to 3 percent slopes	Bigapple	80	Tidal flats	No	---
BhguA: Bigapple-Urban land, Bigapple substratum complex, 0 to 3 percent slopes	Bigapple	60	Tidal flats	No	---
	Urban land, Bigapple substratum	30	---	No	---
BoeBc: Boonton sandy loam, terminal moraine, 0 to 8 percent slopes, extremely stony	Boonton, terminal moraine, extremely stony	80	Terminal moraines	No	---
BoeCc: Boonton sandy loam, terminal moraine, 8 to 15 percent slopes, extremely stony	Boonton, terminal moraine, extremely stony	80	Terminal moraines	No	---
BoeDc: Boonton sandy loam, terminal moraine, 15 to 25 percent slopes, extremely stony	Boonton, terminal moraine, extremely stony	80	Terminal moraines	No	---
BogB: Boonton loam, 3 to 8 percent slopes	Boonton	80	Ground moraines	No	---
BogBc: Boonton loam, 0 to 8 percent slopes, extremely stony	Boonton, extremely stony	85	Ground moraines	No	---
BogC: Boonton loam, 8 to 15 percent slopes	Boonton	90	Ground moraines	No	---
BogCc: Boonton loam, 8 to 15 percent slopes, extremely stony	Boonton, extremely stony	85	Ground moraines	No	---
BogDc: Boonton loam, 15 to 35 percent slopes, extremely stony	Boonton, extremely stony	95	Ground moraines	No	---
BooB: Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes	Boonton, red sandstone lowland	95	Ground moraines	No	---
BooBc: Boonton silt loam, red sandstone lowland, 0 to 8 percent slopes, extremely stony	Boonton, red sandstone lowland, extremely stony	95	Ground moraines	No	---
BooC: Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes	Boonton, red sandstone lowland	95	Ground moraines	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
BooCc: Boonton silt loam, red sandstone lowland, 8 to 15 percent slopes, extremely stony	Boonton, red sandstone lowland, extremely stony	95	Ground moraines	No	---
BosB: Boonton-Udorthents, Boonton substratum complex, 0 to 8 percent slopes	Boonton	60	Ground moraines	No	---
	Udorthents, Boonton substratum	40	Ground moraines	No	---
BotB: Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes	Boonton, red sandstone lowland	60	Ground moraines	No	---
	Udorthents, Boonton red sandstone lowland substratum	40	Ground moraines	No	---
BotC: Boonton-Udorthents, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes	Boonton, red sandstone lowland	60	Ground moraines	No	---
	Udorthents, Boonton red sandstone lowland substratum	40	Ground moraines	No	---
BouB: Boonton-Urban land, Boonton substratum complex, 0 to 8 percent slopes	Boonton	50	Ground moraines	No	---
	Urban land, Boonton substratum	40	Ground moraines	No	---
BouC: Boonton-Urban land, Boonton substratum complex, 8 to 15 percent slopes	Boonton	50	Ground moraines	No	---
	Urban land, Boonton substratum	40	Ground moraines	No	---
BouD: Boonton-Urban land, Boonton substratum complex, 15 to 25 percent slopes	Boonton	60	Ground moraines	No	---
	Urban land, Boonton substratum	30	Ground moraines	No	---
BowrB: Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 0 to 8 percent slopes	Boonton, red sandstone lowland	50	Ground moraines	No	---
	Urban land, Boonton red sandstone lowland substratum	40	Ground moraines	No	---
BowrC: Boonton-Urban land, Boonton substratum complex, red sandstone lowland, 8 to 15 percent slopes	Boonton, red sandstone lowland	50	Ground moraines	No	---
	Urban land, Boonton red sandstone lowland substratum	40	Ground moraines	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
BowtB: Boonton-Urban land, Boonton substratum complex, terminal moraine, 0 to 8 percent slopes	Boonton, terminal moraine	40	Terminal moraines	No	---
	Urban land, Boonton substratum	30	Terminal moraines	No	---
BowtC: Boonton-Urban land, Boonton substratum complex, terminal moraine, 8 to 15 percent slopes	Boonton, terminal moraine	40	Terminal moraines	No	---
	Urban land, Boonton substratum	30	Terminal moraines	No	---
BowtD: Boonton-Urban land, Boonton substratum complex, terminal moraine, 15 to 25 percent slopes	Boonton, terminal moraine	40	Terminal moraines	No	---
	Urban land, Boonton substratum	30	Terminal moraines	No	---
CatcA: Catden muck, 0 to 2 percent slopes	Catden	85	Outwash plains	Yes	1, 3
CatnA: Catden-Natchaug complex, 0 to 2 percent slopes	Catden	80	Outwash plains	Yes	1, 3
	Natchaug	15	Outwash plains	Yes	1, 3
DunB: Dunellen sandy loam, 3 to 8 percent slopes	Dunellen	85	Outwash plains	No	---
DunC: Dunellen sandy loam, 8 to 15 percent slopes	Dunellen	85	Outwash plains	No	---
DunD: Dunellen sandy loam, 15 to 25 percent slopes	Dunellen	90	Outwash plains	No	---
DusB: Dunellen-Udorthents, Dunellen substratum complex, 0 to 8 percent slopes	Dunellen	60	Outwash plains	No	---
	Udorthents, Dunellen substratum	40	Outwash plains	No	---
DusC: Dunellen-Udorthents, Dunellen substratum complex, 8 to 15 percent slopes	Dunellen	60	Outwash plains	No	---
	Udorthents, Dunellen substratum	40	Outwash plains	No	---
DuuB: Dunellen-Urban land, Dunellen substratum complex, 0 to 8 percent slopes	Dunellen	60	Outwash plains	No	---
	Urban land, Dunellen substratum	30	Outwash plains	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
DuuC: Dunellen-Urban land, Dunellen substratum complex, 8 to 15 percent slopes	Dunellen	60	Outwash plains	No	---
	Urban land, Dunellen substratum	30	Outwash plains	No	---
FmhAt: Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	Fluvaquents, loamy, frequently flooded	80	Flood plains	Yes	2A
GrpA: Great Piece loam, 0 to 3 percent slopes	Great Piece	90	Outwash plains	Yes	2B3, 3
HanB: Haledon silt loam, 3 to 8 percent slopes	Haledon	85	Ground moraines	No	---
HanBc: Haledon silt loam, 0 to 8 percent slopes, extremely stony	Haledon, extremely stony	85	Ground moraines	No	---
HanCc: Haledon silt loam, 8 to 15 percent slopes, extremely stony	Haledon, extremely stony	85	Ground moraines	No	---
HasB: Haledon-Urban land, Haledon substratum complex, 0 to 8 percent slopes	Haledon	60	Ground moraines	No	---
	Urban land, Haledon substratum	30	Ground moraines	No	---
HasC: Haledon-Urban land, Haledon substratum complex, 8 to 15 percent slopes	Haledon	60	Ground moraines	No	---
	Urban land, Haledon substratum	30	Ground moraines	No	---
HctBc: Hasbrouck silt loam, 0 to 8 percent slopes, extremely stony	Hasbrouck, extremely stony	85	Depressions	Yes	2B3
HkrnB: Hinckley sandy loam, 3 to 8 percent slopes	Hinckley	90	Eskers	No	---
HkrnC: Hinckley sandy loam, 8 to 15 percent slopes	Hinckley	90	Eskers	No	---
HkruB: Hinckley-Urban land, Hinckley substratum complex, 0 to 8 percent slopes	Hinckley	55	Eskers	No	---
	Urban land, Hinckley substratum	40	Eskers	No	---
HkruC: Hinckley-Urban land, Hinckley substratum complex, 8 to 15 percent slopes	Hinckley	50	Eskers	No	---
	Urban land, Hinckley substratum	40	Eskers	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
HokCh: Holyoke silt loam, 0 to 15 percent slopes, very rocky	Holyoke, very rocky	85	Ground moraines, hills, ridges	No	---
HomC: Holyoke-Rock outcrop complex, 3 to 15 percent slopes	Holyoke	80	Ground moraines, hills, ridges	No	---
	Rock outcrop	15	Ridges	Unranked	---
HotA: Horseneck sandy loam, 0 to 3 percent slopes	Horseneck	85	Outwash plains	No	---
HotuB: Horseneck-Urban land, Horseneck substratum complex, 0 to 8 percent slopes	Horseneck	55	Outwash plains	No	---
	Urban land, Horseneck substratum	40	Outwash plains	No	---
KneA: Knickerbocker fine sandy loam, 0 to 3 percent slopes	Knickerbocker	90	Terraces	No	---
KneB: Knickerbocker fine sandy loam, 3 to 8 percent slopes	Knickerbocker	90	Terraces	No	---
KneC: Knickerbocker fine sandy loam, 8 to 15 percent slopes	Knickerbocker	95	Terraces	No	---
KnuB: Knickerbocker-Urban land, Knickerbocker substratum complex, 0 to 8 percent slopes	Knickerbocker	55	Terraces	No	---
	Urban land, Knickerbocker substratum	40	Outwash plains	No	---
NazA: Natchaug muck, 0 to 2 percent slopes	Natchaug	85	Outwash plains	Yes	1, 3
PbpAt: Parsippany silt loam, 0 to 3 percent slopes, frequently flooded	Parsippany, frequently flooded	90	Lake terraces	Yes	2B3, 3
PecmB: Peckmantown silt loam, 3 to 8 percent slopes	Peckmantown	90	Outwash plains	No	---
PecmBc: Peckmantown silt loam, 0 to 8 percent slopes, extremely stony	Peckmantown, extremely stony	90	Outwash plains	No	---
PecmC: Peckmantown silt loam, 8 to 15 percent slopes	Peckmantown	90	Outwash plains	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
PecmCc: Peckmantown silt loam, 8 to 15 percent slopes, extremely stony	Peckmantown, extremely stony	90	Outwash plains	No	---
PecuuB: Peckmantown-Urban land, Peckmantown substratum complex, 0 to 8 percent slopes	Peckmantown	55	Outwash plains	No	---
	Urban land, Peckmantown substratum	40	Outwash plains	No	---
PecuuC: Peckmantown-Urban land, Peckmantown substratum complex, 8 to 15 percent slopes	Peckmantown	55	Outwash plains	No	---
	Urban land, Peckmantown substratum	40	Outwash plains	No	---
PHG: Pits, sand and gravel	Pits, sand and gravel	100	---	No	---
PohA: Pompton sandy loam, 0 to 3 percent slopes	Pompton	80	Outwash plains	No	---
PokuB: Pompton-Urban land, Pompton substratum complex, 0 to 8 percent slopes	Pompton	55	Outwash plains	No	---
	Urban land, Pompton substratum	40	Outwash plains	No	---
PrgA: Preakness muck, very poorly drained, 0 to 3 percent slopes	Preakness, very poorly drained	90	Outwash plains	Yes	2B3
PrkA: Preakness sandy loam, 0 to 3 percent slopes	Preakness, poorly drained	90	Outwash plains	Yes	2B3
QY: Pits, quarry	Pits, quarry	100	---	No	---
RkkcA: Rikers loamy sand, 0 to 3 percent slopes	Rikers	90	Tidal flats	No	---
RNAAC: Rock outcrop	Rock outcrop	100	Ridges	Unranked	---
RoeBc: Rockaway loam, 0 to 8 percent slopes, extremely stony	Rockaway, extremely stony	85	Ground moraines	No	---
RoeCc: Rockaway loam, 8 to 15 percent slopes, extremely stony	Rockaway, extremely stony	85	Ground moraines	No	---
RonB: Rockaway-Urban land, Rockaway substratum complex, 0 to 8 percent slopes	Rockaway	55	Ground moraines	No	---
	Urban land, Rockaway substratum	40	Ground moraines	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
RonC: Rockaway-Urban land, Rockaway substratum complex, 8 to 15 percent slopes	Rockaway	55	Ground moraines	No	---
	Urban land, Rockaway substratum	40	Ground moraines	No	---
TunkB: Tunkhannock fine sandy loam, 3 to 8 percent slopes	Tunkhannock	90	Kames	No	---
TunkC: Tunkhannock fine sandy loam, 8 to 15 percent slopes	Tunkhannock	90	Kames	No	---
TunkD: Tunkhannock fine sandy loam, 15 to 25 percent slopes	Tunkhannock	95	Kames	No	---
TunkE: Tunkhannock fine sandy loam, 25 to 60 percent slopes	Tunkhannock	95	Kames	No	---
TunudB: Tunkhannock-Udorthents, Tunkhannock substratum complex, 0 to 8 percent slopes	Tunkhannock	60	Kames	No	---
	Udorthents, Tunkhannock substratum	40	Kames	No	---
UcdAt: Udifluents, 0 to 3 percent slopes, frequently flooded	Udifluents, frequently flooded	90	Flood plains	No	---
UdbonB: Udorthents, Boonton substratum, 0 to 8 percent slopes	Udorthents, Boonton substratum	95	Ground moraines	No	---
UdbooB: Udorthents, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland	Udorthents, Boonton red sandstone lowland substratum	95	Ground moraines	No	---
UddunB: Udorthents, Dunellen substratum, 0 to 8 percent slopes	Udorthents, Dunellen substratum	95	Outwash plains	No	---
UdhalB: Udorthents, Haledon substratum, 0 to 8 percent slopes	Udorthents, Haledon substratum	90	Ground moraines	No	---
UdhorB: Udorthents, Horseneck substratum, 0 to 8 percent slopes	Udorthents, Horseneck substratum	95	Outwash plains	No	---
UdkttB: Udorthents, loamy fill substratum, 0 to 8 percent slopes	Udorthents, loamy fill substratum	85	Low hills	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
UdpecB: Udorthents, Peckmantown substratum, 0 to 8 percent slopes	Udorthents, Peckmantown substratum	95	Outwash plains	No	---
UdrkkB: Udorthents, Rikers substratum, 0 to 8 percent slopes	Udorthents, Rikers substratum	95	Tidal flats	No	---
UdtunB: Udorthents, Tunkhannock substratum, 0 to 8 percent slopes	Udorthents, Tunkhannock substratum	90	Eskers	No	---
URBHGB: Urban land, Bigapple substratum, 0 to 8 percent slopes	Urban land, Bigapple substratum	90	Tidal flats	No	---
URBONB: Urban land, Boonton substratum, 0 to 8 percent slopes	Urban land, Boonton substratum	90	Ground moraines	No	---
URBOOB: Urban land, Boonton substratum, 0 to 8 percent slopes, red sandstone lowland	Urban land, Boonton red sandstone lowland substratum	90	Ground moraines	No	---
URDUNB: Urban land, Dunellen substratum, 0 to 8 percent slopes	Urban land, Dunellen substratum	90	Outwash plains	No	---
URHORB: Urban land, Horseneck substratum, 0 to 8 percent slopes	Urban land, Horseneck substratum	90	Outwash plains	No	---
URKNKB: Urban land, Knickerbocker substratum, 0 to 8 percent slopes	Urban land, Knickerbocker substratum	90	Outwash plains	No	---
URKTTB: Urban land, loamy fill substratum, 0 to 8 percent slopes	Urban land, loamy fill substratum	85	Outwash plains	No	---
URPECB: Urban land, Peckmantown substratum, 0 to 8 percent slopes	Urban land, Peckmantown substratum	90	Outwash plains	No	---
URPOMB: Urban land, Pompton substratum, 0 to 8 percent slopes	Urban land, Pompton substratum	90	Outwash plains	No	---
USBONB: Urban land, Boonton substratum-Boonton complex, 0 to 8 percent slopes	Urban land, Boonton substratum	60	Ground moraines	No	---
	Boonton	30	Ground moraines	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
USBONC: Urban land, Boonton substratum-Boonton complex, 8 to 15 percent slopes	Urban land, Boonton substratum	60	Ground moraines	No	---
	Boonton	30	Ground moraines	No	---
USBOOB: Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 0 to 8 percent slopes	Urban land, Boonton red sandstone lowland substratum	60	Ground moraines	No	---
	Boonton, red sandstone lowland	30	Ground moraines	No	---
USBOOC: Urban land, Boonton substratum-Boonton complex, red sandstone lowland, 8 to 15 percent slopes	Urban land, Boonton red sandstone lowland substratum	60	Ground moraines	No	---
	Boonton, red sandstone lowland	30	Ground moraines	No	---
USDUNB: Urban land, Dunellen substratum-Dunellen complex, 0 to 8 percent slopes	Urban land, Dunellen substratum	60	Outwash plains	No	---
	Dunellen	30	Outwash plains	No	---
USDUNC: Urban land, Dunellen substratum-Dunellen complex, 8 to 15 percent slopes	Urban land, Dunellen substratum	60	Outwash plains	No	---
	Dunellen	30	Outwash plains	No	---
USYRRB: Urban land, Yalesville substratum-Yalesville-Rock outcrop complex, 0 to 8 percent slopes	Urban land, Yalesville substratum	50	Ground moraines	No	---
	Yalesville	30	Ground moraines	No	---
	Rock outcrop	15	Ridges	Unranked	---
WaakAt: Wallkill mucky silt loam, 0 to 3 percent slopes, frequently flooded	Wallkill, frequently flooded	90	Flood plains	Yes	2B3, 3
WATER: Water	Water	100	---	Unranked	---
YamnB: Yalesville loam, 3 to 8 percent slopes	Yalesville	85	Ground moraines	No	---
YamnBc: Yalesville loam, 0 to 8 percent slopes, extremely stony	Yalesville, extremely stony	85	Ground moraines	No	---
YamnCc: Yalesville loam, 8 to 15 percent slopes, extremely stony	Yalesville, extremely stony	90	Ground moraines	No	---

Table 9. Hydric Soils--Continued

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
YaobBc: Yalesville-Boonton-Holyoke complex, 0 to 8 percent slopes, extremely stony	Yalesville, extremely stony	40	Ground moraines	No	---
	Boonton, extremely stony	30	Ground moraines	No	---
	Holyoke, extremely stony	30	Ground moraines, hills, ridges	No	---
YaohEh: Yalesville-Holyoke complex, 35 to 60 percent slopes, very rocky	Yalesville, very rocky	50	Ground moraines	No	---
	Holyoke, very rocky	30	Ground moraines, hills, ridges	No	---
YaorCc: Yalesville-Rock outcrop complex, 8 to 15 percent slopes, extremely stony	Yalesville, extremely stony	80	Ground moraines	No	---
	Rock outcrop	15	Ridges	Unranked	---
YaotuB: Yalesville-Urban land, Yalesville substratum complex, 0 to 8 percent slopes	Yalesville	55	Ground moraines	No	---
	Urban land, Yalesville substratum	40	Ground moraines	No	---
YaotuC: Yalesville-Urban land, Yalesville substratum complex, 8 to 15 percent slopes	Yalesville	55	Ground moraines	No	---
	Urban land, Yalesville substratum	40	Ground moraines	No	---
YaouA: Yalesville loam, red sandstone lowland, 0 to 3 percent slopes	Yalesville, red sandstone lowland	95	Ground moraines	No	---
YaouB: Yalesville loam, red sandstone lowland, 3 to 8 percent slopes	Yalesville, red sandstone lowland	95	Ground moraines	No	---
YaovB: Yalesville-Urban land, Yalesville substratum complex, red sandstone lowland, 0 to 8 percent slopes	Yalesville, red sandstone lowland	55	Ground moraines	No	---
	Urban land, Yalesville substratum	40	Ground moraines	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.

Table 10. Dwellings and Small Commercial Buildings

(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
BhgA: Bigapple-----	80	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell	0.86
BhguA: Bigapple-----	60	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell	0.86	Somewhat limited Shrink-swell	0.86
Urban land, Bigapple substratum-----	30	Not limited		Somewhat limited Shrink-swell	0.86	Not limited	
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Not limited		Not limited		Not limited	
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
BogB: Boonton-----	80	Not limited		Not limited		Somewhat limited Slope	0.50
BogBc: Boonton, extremely stony-----	85	Not limited		Not limited		Somewhat limited Slope	0.50
BogC: Boonton-----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
BogCc: Boonton, extremely stony-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
BogDc: Boonton, extremely stony-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Table 10. Dwellings and Small Commercial Buildings--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
BooB: Boonton, red sandstone lowland--	95	Not limited		Not limited		Somewhat limited Slope	0.12
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Not limited		Not limited		Somewhat limited Slope	0.12
BooC: Boonton, red sandstone lowland--	95	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Somewhat limited Slope	0.37	Somewhat limited Slope	0.37	Very limited Slope	1.00
BosB: Boonton-----	60	Not limited		Not limited		Somewhat limited Slope	0.50
Udorthents, Boonton substratum-----	40	Not limited		Not limited		Not limited	
BotB: Boonton, red sandstone lowland--	60	Not limited		Not limited		Somewhat limited Slope	0.12
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BotC: Boonton, red sandstone lowland--	60	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BouB: Boonton-----	50	Not limited		Not limited		Somewhat limited Slope	0.50
Urban land, Boonton substratum-----	40	Not limited		Not limited		Not limited	
BouC: Boonton-----	50	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00

Table 10. Dwellings and Small Commercial Buildings--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
BouC:(cont.) Urban land, Boonton substratum-----	40	Not limited		Not limited		Not limited	
BouD: Boonton-----	60	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Urban land, Boonton substratum-----	30	Not limited		Not limited		Not limited	
BowrB: Boonton, red sandstone lowland--	50	Not limited		Not limited		Somewhat limited Slope	0.12
Urban land, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BowrC: Boonton, red sandstone lowland--	50	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Urban land, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Not limited	
BowtB: Boonton, terminal moraine-----	40	Not limited		Not limited		Not limited	
Urban land, Boonton substratum-----	30	Not limited		Not limited		Not limited	
BowtC: Boonton, terminal moraine-----	40	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Urban land, Boonton substratum-----	30	Not limited		Not limited		Not limited	
BowtD: Boonton, terminal moraine-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Urban land, Boonton substratum-----	30	Not limited		Not limited		Not limited	

Table 10. Dwellings and Small Commercial Buildings--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
CatcA: Catden-----	85	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00
CatnA: Catden-----	80	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00
Natchaug-----	15	Very limited Subsidence Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00 1.00
DunB: Dunellen-----	85	Not limited		Not limited		Not limited	
DunC: Dunellen-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
DunD: Dunellen-----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
DusB: Dunellen-----	60	Not limited		Not limited		Not limited	
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Not limited	
DusC: Dunellen-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Udorthents, Dunellen substratum-----	40	Not limited		Not limited		Not limited	
DuuB: Dunellen-----	60	Not limited		Not limited		Not limited	
Urban land, Dunellen substratum-----	30	Not limited		Not limited		Not limited	
DuuC: Dunellen-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00

Table 10. Dwellings and Small Commercial Buildings--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
Duuc:(cont.) Urban land, Dunellen substratum-----	30	Not limited		Not limited		Not limited	
FmhAt: Fluvaquents, loamy, frequently flooded-	80	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
GrpA: Great Piece-----	90	Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00
HanB: Haledon-----	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
HanBc: Haledon, extremely stony-----	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
HanCc: Haledon, extremely stony-----	85	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
HasB: Haledon-----	60	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Urban land, Haledon substratum-----	30	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
HasC: Haledon-----	60	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
Urban land, Haledon substratum-----	30	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

Table 10. Dwellings and Small Commercial Buildings--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
HctBc: Hasbrouck, extremely stony-----	85	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
HkrnB: Hinckley-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
HkrnC: Hinckley-----	90	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
HkruB: Hinckley-----	55	Not limited		Not limited		Somewhat limited Slope	0.50
Urban land, Hinckley substratum-----	40	Not limited		Not limited		Not limited	
HkruC: Hinckley-----	50	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Urban land, Hinckley substratum-----	40	Not limited		Not limited		Not limited	
HokCh: Holyoke, very rocky-	85	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Depth to hard bedrock Slope	1.00 1.00
HomC: Holyoke-----	80	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to hard bedrock Slope	1.00 1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Somewhat limited Depth to saturated zone	0.67	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.67
HotuB: Horseneck-----	55	Somewhat limited Depth to saturated zone	0.67	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.67
Urban land, Horseneck substratum-----	40	Somewhat limited Depth to saturated zone	0.67	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.67

Table 10. Dwellings and Small Commercial Buildings--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
KneA: Knickerbocker-----	90	Not limited		Somewhat limited Depth to saturated zone	0.82	Not limited	
KneB: Knickerbocker-----	90	Not limited		Somewhat limited Depth to saturated zone	0.82	Somewhat limited Slope	0.50
KneC: Knickerbocker-----	95	Somewhat limited Slope	0.63	Somewhat limited Depth to saturated zone Slope	0.82 0.63	Very limited Slope	1.00
KnuB: Knickerbocker-----	55	Not limited		Somewhat limited Depth to saturated zone	0.82	Somewhat limited Slope	0.50
Urban land, Knickerbocker substratum-----	40	Not limited		Somewhat limited Depth to saturated zone	0.82	Not limited	
NazA: Natchaug-----	85	Very limited Subsidence Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Subsidence Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00 1.00
PbpAt: Parsippany, frequently flooded-	90	Very limited Flooding Depth to saturated zone Ponding Shrink-swell	1.00 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Ponding Shrink-swell	1.00 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Ponding Shrink-swell	1.00 1.00 1.00 0.50
PecmB: Peckmantown-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
PecmBc: Peckmantown, extremely stony----	90	Not limited		Not limited		Somewhat limited Slope	0.50
PecmC: Peckmantown-----	90	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00

Table 10. Dwellings and Small Commercial Buildings--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
PecmCc: Peckmantown, extremely stony----	90	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
PecuuB: Peckmantown-----	55	Not limited		Not limited		Somewhat limited Slope	0.50
Urban land, Peckmantown substratum-----	40	Not limited		Not limited		Not limited	
PecuuC: Peckmantown-----	55	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
Urban land, Peckmantown substratum-----	40	Not limited		Not limited		Not limited	
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
PokuB: Pompton-----	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
Urban land, Pompton substratum-----	40	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
PrgA: Preakness, very poorly drained----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
PrkA: Preakness, poorly drained-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Not limited		Not limited		Not limited	

Table 10. Dwellings and Small Commercial Buildings--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
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Not limited		Not limited		Not limited	
RoeCc: Rockaway, extremely stony-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
RonB: Rockaway-----	55	Not limited		Not limited		Not limited	
Urban land, Rockaway substratum-----	40	Not limited		Not limited		Not limited	
RonC: Rockaway-----	55	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Urban land, Rockaway substratum-----	40	Not limited		Not limited		Not limited	
TunkB: Tunkhannock-----	90	Not limited		Not limited		Somewhat limited Slope	0.12
TunkC: Tunkhannock-----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
TunkD: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
TunkE: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
TunudB: Tunkhannock-----	60	Not limited		Not limited		Somewhat limited Slope	0.50
Udorthents, Tunkhannock substratum-----	40	Not limited		Not limited		Not limited	
UcdAt: Udifluents, frequently flooded-	90	Very limited Flooding Depth to saturated zone	1.00 0.67	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 0.67

Table 10. Dwellings and Small Commercial Buildings--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
UdbonB: Udorthents, Boonton substratum-----	95	Not limited		Not limited		Not limited	
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Not limited		Not limited		Not limited	
UddunB: Udorthents, Dunellen substratum-----	95	Not limited		Not limited		Not limited	
UdhalB: Udorthents, Haledon substratum-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
UdhorB: Udorthents, Horseneck substratum-----	95	Somewhat limited Depth to saturated zone	0.67	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.67
UdkttB: Udorthents, loamy fill substratum----	85	Not limited		Not limited		Not limited	
UdpecB: Udorthents, Peckmantown substratum-----	95	Not limited		Not limited		Not limited	
UdrkkB: Udorthents, Rikers substratum-----	95	Not limited		Not limited		Not limited	
UdtunB: Udorthents, Tunkhannock substratum-----	90	Not limited		Not limited		Not limited	
URBHGB: Urban land, Bigapple substratum-----	90	Not limited		Somewhat limited Shrink-swell	0.86	Not limited	
URBONB: Urban land, Boonton substratum-----	90	Not limited		Not limited		Not limited	
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Not limited		Not limited		Not limited	

Table 10. Dwellings and Small Commercial Buildings--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
URDUNB: Urban land, Dunellen substratum-----	90	Not limited		Not limited		Not limited	
URHORB: Urban land, Horseneck substratum-----	90	Somewhat limited Depth to saturated zone	0.67	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	0.67
URKNKB: Urban land, Knickerbocker substratum-----	90	Not limited		Somewhat limited Depth to saturated zone	0.82	Not limited	
URKTTB: Urban land, loamy fill substratum----	85	Not limited		Not limited		Not limited	
URPECB: Urban land, Peckmantown substratum-----	90	Not limited		Not limited		Not limited	
URPOMB: Urban land, Pompton substratum-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
USBONB: Urban land, Boonton substratum-----	60	Not limited		Not limited		Not limited	
Boonton-----	30	Not limited		Not limited		Somewhat limited Slope	0.50
USBONC: Urban land, Boonton substratum-----	60	Not limited		Not limited		Not limited	
Boonton-----	30	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Not limited		Not limited		Not limited	
Boonton, red sandstone lowland--	30	Not limited		Not limited		Somewhat limited Slope	0.12

Table 10. Dwellings and Small Commercial Buildings--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
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Not limited		Not limited		Not limited	
Boonton, red sandstone lowland--	30	Somewhat limited Slope	0.16	Somewhat limited Slope	0.16	Very limited Slope	1.00
USDUNB: Urban land, Dunellen substratum-----	60	Not limited		Not limited		Not limited	
Dunellen-----	30	Not limited		Not limited		Not limited	
USDUNC: Urban land, Dunellen substratum-----	60	Not limited		Not limited		Not limited	
Dunellen-----	30	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
USYRRB: Urban land, Yalesville substratum-----	50	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29
Yalesville-----	30	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock Slope	0.29 0.12
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Organic matter content	1.00	Ponding	1.00	Organic matter content	1.00
		Ponding	1.00			Ponding	1.00
WATER: Water-----	100	Not rated		Not rated		Not rated	
YamnB: Yalesville-----	85	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Slope Depth to hard bedrock	0.50 0.29

Table 10. Dwellings and Small Commercial Buildings--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
YamnBc: Yalesville, extremely stony----	85	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Slope Depth to hard bedrock	0.50 0.29
YamnCc: Yalesville, extremely stony----	90	Somewhat limited Depth to hard bedrock Slope	0.29 0.16	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Slope Depth to hard bedrock	1.00 0.29
YaobBc: Yalesville, extremely stony----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Slope Depth to hard bedrock	0.50 0.29
Boonton, extremely stony-----	30	Not limited		Not limited		Somewhat limited Slope	0.50
Holyoke, extremely stony-----	30	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00 0.50
YaohEh: Yalesville, very rocky-----	50	Very limited Slope Depth to hard bedrock	1.00 0.29	Very limited Slope Depth to hard bedrock	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 0.29
Holyoke, very rocky-	30	Very limited Slope Depth to hard bedrock	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 1.00
YaorCc: Yalesville, extremely stony----	80	Somewhat limited Depth to hard bedrock Slope	0.29 0.16	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Slope Depth to hard bedrock	1.00 0.29
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29

Table 10. Dwellings and Small Commercial Buildings--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
UaotuB: (cont.) Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29
YaotuC: Yalesville-----	55	Somewhat limited Depth to hard bedrock Slope	0.29 0.16	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Slope Depth to hard bedrock	1.00 0.29
Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29
YaouA: Yalesville, red sandstone lowland--	95	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29
YaouB: Yalesville, red sandstone lowland--	95	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Slope Depth to hard bedrock	0.50 0.29
YaovB: Yalesville, red sandstone lowland--	55	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29
Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.29

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(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
BhgA: Bigapple-----	80	Somewhat limited Shrink-swell	0.86	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.99
BhguA: Bigapple-----	60	Somewhat limited Shrink-swell	0.86	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.99
Urban land, Bigapple substratum-----	30	Not limited		Very limited Cutbanks cave	1.00	Not rated	
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.03
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.03
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slope Frost action	1.00 0.50	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope Droughty	1.00 0.03
BogB: Boonton-----	80	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BogBc: Boonton, extremely stony-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BogC: Boonton-----	90	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
BogCc: Boonton, extremely stony-----	85	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
BogDc: Boonton, extremely stony-----	95	Very limited Slope Frost action	1.00 0.50	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope	1.00
BooB: Boonton, red sandstone lowland--	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BooC: Boonton, red sandstone lowland--	95	Somewhat limited Frost action Slope	0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Somewhat limited Frost action Slope	0.50 0.37	Very limited Cutbanks cave Slope	1.00 0.37	Somewhat limited Slope	0.37
BosB: Boonton-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Udorthents, Boonton substratum-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BotB: Boonton, red sandstone lowland--	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Udorthents, Boonton red sandstone lowland substratum-	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
BotC: Boonton, red sandstone lowland--	60	Somewhat limited Frost action Slope	0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
Udorthents, Boonton red sandstone lowland substratum-	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
BouB: Boonton-----	50	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land, Boonton substratum-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BouC: Boonton-----	50	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
Urban land, Boonton substratum-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BouD: Boonton-----	60	Very limited Slope Frost action	1.00 0.50	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope	1.00
Urban land, Boonton substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BowrB: Boonton, red sandstone lowland--	50	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land, Boonton red sandstone lowland substratum-	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BowrC: Boonton, red sandstone lowland--	50	Somewhat limited Frost action Slope	0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
Urban land, Boonton red sandstone lowland substratum-	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BowtB: Boonton, terminal moraine-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.03
Urban land, Boonton substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
BowtC: Boonton, terminal moraine-----	40	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.03
Urban land, Boonton substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
BowtD: Boonton, terminal moraine-----	40	Very limited Slope Frost action	1.00 0.50	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope Droughty	1.00 0.03
Urban land, Boonton substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
CatcA: Catden-----	85	Very limited Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
CatnA: Catden-----	80	Very limited Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
Natchaug-----	15	Very limited Depth to saturated zone Subsidence Frost action Ponding	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
DunB: Dunellen-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DunC: Dunellen-----	85	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
DunD: Dunellen-----	90	Very limited Slope Frost action	1.00 0.50	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope	1.00

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
DusB: Dunellen-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Udorthents, Dunellen substratum-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DusC: Dunellen-----	60	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
Udorthents, Dunellen substratum-----	40	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
DuuB: Dunellen-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land, Dunellen substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
DuuC: Dunellen-----	60	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
Urban land, Dunellen substratum-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Very limited Ponding Frost action Flooding Depth to saturated zone	1.00 1.00 1.00 0.94	Very limited Ponding Depth to saturated zone Flooding Cutbanks cave	1.00 1.00 1.00 0.80 0.10	Very limited Ponding Flooding Depth to saturated zone	1.00 1.00 0.94
GrpA: Great Piece-----	90	Very limited Depth to saturated zone Frost action Ponding Flooding	1.00 1.00 1.00 0.40	Very limited Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
HanB: Haledon-----	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

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
HanBc: Haledon, extremely stony-----	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
HanCc: Haledon, extremely stony-----	85	Very limited Depth to saturated zone Frost action Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Cutbanks cave Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63
HasB: Haledon-----	60	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
Urban land, Haledon substratum-----	30	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	
HasC: Haledon-----	60	Very limited Depth to saturated zone Frost action Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Cutbanks cave Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63
Urban land, Haledon substratum-----	30	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	
HctBc: Hasbrouck, extremely stony-----	85	Very limited Depth to saturated zone Frost action Ponding Low strength	1.00 1.00 1.00 0.78	Very limited Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
HkrnB: Hinckley-----	90	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.76
HkrnC: Hinckley-----	90	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Droughty Slope	0.95 0.16

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
HkruB: Hinckley-----	55	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.76
Urban land, Hinckley substratum-----	40	Not limited		Very limited Cutbanks cave	1.00	Not rated	
HkruC: Hinckley-----	50	Somewhat limited Slope	0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Droughty Slope	0.95 0.16
Urban land, Hinckley substratum-----	40	Not limited		Very limited Cutbanks cave	1.00	Not rated	
HokCh: Holyoke, very rocky-	85	Very limited Depth to hard bedrock Frost action Slope	1.00 0.50 0.16	Very limited Depth to hard bedrock Slope	1.00 0.16	Very limited Depth to bedrock Slope	1.00 0.16
HomC: Holyoke-----	80	Very limited Depth to hard bedrock Slope Frost action	1.00 0.63 0.50	Very limited Depth to hard bedrock Slope	1.00 0.63	Very limited Depth to bedrock Slope	1.00 0.63
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Somewhat limited Frost action depth to saturated zone	0.50 0.35	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.35 0.02
HotuB: Horseneck-----	55	Somewhat limited Frost action Depth to saturated zone	0.50 0.35	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.35 0.02
Urban land, Horseneck substratum-----	40	Somewhat limited Frost action Depth to saturated zone	0.50 0.35	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	
KneA: Knickerbocker-----	90	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.82	Somewhat limited Gravel content	0.01

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
KneB: Knickerbocker-----	90	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.82	Somewhat limited Gravel content	0.01
KneC: Knickerbocker-----	95	Somewhat limited Slope	0.63	Very limited Cutbanks cave Depth to saturated zone Slope	1.00 0.82 0.63	Somewhat limited Slope Gravel content	0.63 0.01
KnuB: Knickerbocker-----	55	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.82	Somewhat limited Gravel content	0.01
Urban land, Knickerbocker substratum-----	40	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.82	Not rated	
NazA: Natchaug-----	85	Very limited Depth to saturated zone Subsidence Frost action Ponding	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00 1.00
PbpAt: Parsippany, frequently flooded-	90	Very limited Depth to saturated zone Frost action Flooding Low strength Ponding	1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave Ponding Flooding	1.00 1.00 1.00 1.00 0.80	Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00
PecmB: Peckmantown-----	90	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
PecmBc: Peckmantown, extremely stony----	90	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
PecmC: Peckmantown-----	90	Very limited Low strength Frost action Slope	1.00 0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
PecmCc: Peckmantown, extremely stony----	90	Very limited Low strength Frost action Slope	1.00 0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
PecuuB: Peckmantown-----	55	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
Urban land, Peckmantown substratum-----	40	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not rated	
PecuuC: Peckmantown-----	55	Very limited Low strength Frost action Slope	1.00 0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
Urban land, Peckmantown substratum-----	40	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not rated	
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Very limited Frost action Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone	0.94
PokuB: Pompton-----	55	Very limited Frost action Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone	0.94
Urban land, Pompton substratum-----	40	Very limited Frost action Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
PrgA: Preakness, very poorly drained-----	90	Very limited Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
PrkA: Preakness, poorly drained-----	90	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
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.98
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Somewhat limited Frost action	0.50	Somewhat limited Cutbanks cave	0.10	Somewhat limited Droughty Large stones content	0.34 0.05
RoeCc: Rockaway, extremely stony-----	85	Somewhat limited Slope Frost action	0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope Droughty Large stones content	0.63 0.34 0.01
RonB: Rockaway-----	55	Somewhat limited Frost action	0.50	Somewhat limited Cutbanks cave	0.10	Somewhat limited Droughty Large stones content	0.34 0.01
Urban land, Rockaway substratum-----	40	Somewhat limited Frost action	0.50	Somewhat limited Cutbanks cave	0.10	Not rated	
RonC: Rockaway-----	55	Somewhat limited Slope Frost action	0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope Droughty Large stones content	0.63 0.34 0.01

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
RonC:(cont.) Urban land, Rockaway substratum-----	40	Somewhat limited Frost action	0.50	Somewhat limited Cutbanks cave	0.10	Not rated	
TunkB: Tunkhannock-----	90	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.11
TunkC: Tunkhannock-----	90	Somewhat limited Slope	0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.11
TunkD: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope Droughty	1.00 0.11
TunkE: Tunkhannock-----	95	Very limited Slope	1.00	Very limited Slope Cutbanks cave	1.00 1.00	Very limited Slope Droughty	1.00 0.11
TunudB: Tunkhannock-----	60	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.11
Udorthents, Tunkhannock substratum-----	40	Not limited		Very limited Cutbanks cave	1.00	Very limited Droughty	1.00
UcdAt: Udifluvents, frequently flooded-	90	Very limited Flooding Frost action Depth to saturated zone	1.00 0.50 0.35	Very limited Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 1.00 0.80	Very limited Flooding Droughty Depth to saturated zone	1.00 0.96 0.35
UdbonB: Udorthents, Boonton substratum-----	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
UddunB: Udorthents, Dunellen substratum-----	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
UdhalB: Udorthents, Haledon substratum-----	90	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
UdhorB: Udorthents, Horseneck substratum-----	95	Somewhat limited Frost action Depth to saturated zone	0.50 0.35	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited Depth to saturated zone Droughty	0.35 0.02
UdkttB: Udorthents, loamy fill substratum----	85	Very limited Frost action Low strength	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
UdpecB: Udorthents, Peckmantown substratum-----	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.28
UdrkkB: Udorthents, Rikers substratum-----	95	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.12
UdtunB: Udorthents, Tunkhannock substratum-----	90	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.11
URBHGB: Urban land, Bigapple substratum-----	90	Not limited		Very limited Cutbanks cave	1.00	Not rated	
URBONB: Urban land, Boonton substratum-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
URDUNB: Urban land, Dunellen substratum-----	90	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
URHORB: Urban land, Horseneck substratum-----	90	Somewhat limited Frost action Depth to saturated zone	0.50 0.35	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	
URKNKB: Urban land, Knickerbocker substratum-----	90	Not limited		Very limited Cutbanks cave Depth to saturated zone	1.00 0.82	Not rated	
URKTTB: Urban land, loamy fill substratum----	85	Very limited Frost action Low strength	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not rated	
URPECB: Urban land, Peckmantown substratum-----	90	Very limited Low strength Frost action	1.00 0.50	Very limited Cutbanks cave	1.00	Not rated	
URPOMB: Urban land, Pompton substratum-----	90	Very limited Frost action Depth to saturated zone	1.00 0.94	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00	Not rated	
USBONB: Urban land, Boonton substratum-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
Boonton-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
USBONC: Urban land, Boonton substratum-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
Boonton-----	30	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
USBOOB: (cont.) Boonton, red sandstone lowland--	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
USBOOC: Urban land, Boonton red sandstone lowland substratum--	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
Boonton, red sandstone lowland--	30	Somewhat limited Frost action Slope	0.50 0.16	Very limited Cutbanks cave Slope	1.00 0.16	Somewhat limited Slope	0.16
USDUNB: Urban land, Dunellen substratum-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
Dunellen-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
USDUNC: Urban land, Dunellen substratum-----	60	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not rated	
Dunellen-----	30	Somewhat limited Slope Frost action	0.63 0.50	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
USYRRB: Urban land, Yalesville substratum-----	50	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Not rated	
Yalesville-----	30	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Very limited Depth to saturated zone Frost action Flooding Ponding	1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Organic matter content Cutbanks cave Ponding Flooding	1.00 1.00 1.00 1.00 1.00 0.80	Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
WATER: Water-----	100	Not rated		Not rated		Not rated	
YamnB: Yalesville-----	85	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
YamnBc: Yalesville, extremely stony----	85	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
YamnCc: Yalesville, extremely stony----	90	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.16 0.10	Somewhat limited Depth to bedrock Slope	0.29 0.16
YaobBc: Yalesville, extremely stony----	40	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
Boonton, extremely stony-----	30	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
Holyoke, extremely stony-----	30	Very limited Depth to hard bedrock Frost action	1.00 0.50	Very limited Depth to hard bedrock	1.00	Very limited Depth to bedrock	1.00
YaohEh: Yalesville, very rocky-----	50	Very limited Slope Frost action Depth to hard bedrock	1.00 0.50 0.29	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 1.00 0.10	Very limited Slope Depth to bedrock	1.00 0.29
Holyoke, very rocky-	30	Very limited Depth to hard bedrock Slope Frost action	1.00 1.00 0.50	Very limited Depth to hard bedrock Slope	1.00 1.00	Very limited Slope Depth to bedrock	1.00 1.00

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
YaorCc: Yalesville, extremely stony----	80	Somewhat limited Frost action Depth to hard bedrock Slope	0.50 0.29 0.16	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.16 0.10	Somewhat limited Depth to bedrock Slope	0.29 0.16
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Not rated	
YaotuC: Yalesville-----	55	Somewhat limited Frost action Depth to hard bedrock Slope	0.50 0.29 0.16	Very limited Depth to hard bedrock Slope Cutbanks cave	1.00 0.16 0.10	Somewhat limited Depth to bedrock Slope	0.29 0.16
Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Not rated	
YaouA: Yalesville, red sandstone lowland--	95	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
YaouB: Yalesville, red sandstone lowland--	95	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29
YaovB: Yalesville, red sandstone lowland--	55	Somewhat limited Frost action Depth to hard bedrock	0.50 0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Somewhat limited Depth to bedrock	0.29

Table 11. Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
YaovB: (cont.) Urban land, Yalesville substratum-----	40	Somewhat limited Depth to hard bedrock	0.29	Very limited Depth to hard bedrock Cutbanks cave	1.00 0.10	Not rated	

Table 12. Sewage Disposal

(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
BhgA: Bigapple-----	80	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage	1.00
BhguA: Bigapple-----	60	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage	1.00
Urban land, Bigapple substratum-----	30	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage	1.00
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slow water movement	1.00	Very limited Seepage Slope	1.00 0.32
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope Seepage	1.00 1.00
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope Seepage	1.00 1.00
BogB: Boonton-----	80	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.92

Table 12. Sewage Disposal--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
BogBc: Boonton, extremely stony-----	85	Very limited Slow water movement Seepage, bottom layer	1.00  1.00	Very limited Seepage Slope	1.00 0.92
BogC: Boonton-----	90	Very limited Slow water movement Seepage, bottom layer Slope	1.00  1.00 0.63	Very limited Slope Seepage	1.00 1.00
BogCc: Boonton, extremely stony-----	85	Very limited Slow water movement Seepage, bottom layer Slope	1.00  1.00 0.63	Very limited Slope Seepage	1.00 1.00
BogDc: Boonton, extremely stony-----	95	Very limited Slow water movement Slope Seepage, bottom layer	1.00  1.00 1.00	Very limited Slope Seepage	1.00 1.00
BooB: Boonton, red sandstone lowland--	95	Very limited Slow water movement	1.00	Somewhat limited Slope Seepage	0.68 0.50
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Slow water movement	1.00	Somewhat limited Slope Seepage	0.68 0.50
BooC: Boonton, red sandstone lowland--	95	Very limited Slow water movement Slope	1.00 0.16	Very limited Slope Seepage	1.00 0.50

Table 12. Sewage Disposal--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
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Slow water movement Slope	1.00  0.37	Very limited Slope Seepage	1.00  0.50
BosB: Boonton-----	60	Very limited Slow water movement Seepage, bottom layer	1.00  1.00	Very limited Seepage Slope	1.00  0.92
Udorthents, Boonton substratum-----	40	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00  0.08
BotB: Boonton, red sandstone lowland--	60	Very limited Slow water movement	1.00	Somewhat limited Slope Seepage	0.68  0.50
Udorthents, Boonton red sandstone lowland substratum-	40	Very limited Slow water movement	1.00	Somewhat limited Slope	0.08
BotC: Boonton, red sandstone lowland--	60	Very limited Slow water movement Slope	1.00  0.16	Very limited Slope Seepage	1.00  0.50
Udorthents, Boonton red sandstone lowland substratum-	40	Very limited Slow water movement	1.00	Somewhat limited Slope	0.08
BouB: Boonton-----	50	Very limited Slow water movement Seepage, bottom layer	1.00  1.00	Very limited Seepage Slope	1.00  0.92
Urban land, Boonton substratum-----	40	Very limited Seepage, bottom layer Slow water movement	1.00  0.50	Very limited Seepage	1.00

Table 12. Sewage Disposal--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
BouC: Boonton-----	50	Very limited Slow water movement Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
Urban land, Boonton substratum-----	40	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
BouD: Boonton-----	60	Very limited Slow water movement Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Urban land, Boonton substratum-----	30	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
BowrB: Boonton, red sandstone lowland--	50	Very limited Slow water movement	1.00	Somewhat limited Slope Seepage	0.68 0.50
Urban land, Boonton red sandstone lowland substratum-	40	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
BowrC: Boonton, red sandstone lowland--	50	Very limited Slow water movement Slope	1.00 0.16	Very limited Slope Seepage	1.00 0.50
Urban land, Boonton red sandstone lowland substratum-	40	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50

Table 12. Sewage Disposal--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
BowtB: Boonton, terminal moraine-----	40	Very limited Slow water movement	1.00	Very limited Seepage Slope	1.00 0.32
Urban land, Boonton substratum-----	30	Very limited Slow water movement	1.00	Very limited Seepage	1.00
BowtC: Boonton, terminal moraine-----	40	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope Seepage	1.00 1.00
Urban land, Boonton substratum-----	30	Very limited Slow water movement	1.00	Very limited Seepage	1.00
BowtD: Boonton, terminal moraine-----	40	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope Seepage	1.00 1.00
Urban land, Boonton substratum-----	30	Very limited Slow water movement	1.00	Very limited Seepage	1.00
CatcA: Catden-----	85	Very limited Depth to saturated zone Seepage, bottom layer Ponding Slow water movement	1.00 1.00 1.00 0.50	Very limited Depth to saturated zone Ponding Organic matter content Seepage	1.00 1.00 1.00 0.50
CatnA: Catden-----	80	Very limited Depth to saturated zone Seepage, bottom layer Ponding Slow water movement	1.00 1.00 1.00 0.50	Very limited Depth to saturated zone Ponding Organic matter content Seepage	1.00 1.00 1.00 0.50

Table 12. Sewage Disposal--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
CatnA: (cont.) Natchaug-----	15	Very limited Depth to saturated zone Subsidence Seepage, bottom layer Ponding Slow water movement	1.00  1.00 1.00 1.00 0.50	Very limited Depth to saturated zone Seepage Ponding Organic matter content	1.00  1.00 1.00 1.00
DunB: Dunellen-----	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.32
DunC: Dunellen-----	85	Very limited Seepage, bottom layer Slope	1.00  0.63	Very limited Slope Seepage	1.00 1.00
DunD: Dunellen-----	90	Very limited Slope Seepage, bottom layer	1.00 1.00	Very limited Slope Seepage	1.00 1.00
DusB: Dunellen-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.32
Udorthents, Dunellen substratum-----	40	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
DusC: Dunellen-----	60	Very limited Seepage, bottom layer Slope	1.00  0.63	Very limited Slope Seepage	1.00 1.00
Udorthents, Dunellen substratum-----	40	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
DuuB: Dunellen-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.32
Urban land, Dunellen substratum-----	30	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00

Table 12. Sewage Disposal--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
DuuC: Dunellen-----	60	Very limited Seepage, bottom layer Slope	1.00  0.63	Very limited Slope Seepage	1.00  1.00
Urban land, Dunellen substratum-----	30	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Very limited Flooding Ponding Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 1.00 1.00 0.50	Very limited Ponding Flooding Seepage Depth to saturated zone	1.00 1.00 1.00 1.00
GrpA: Great Piece-----	90	Very limited Depth to saturated zone Ponding Slow water movement Flooding	1.00 1.00 0.50 0.40	Very limited Depth to saturated zone Seepage Ponding Flooding	1.00 1.00 1.00 0.40
HanB: Haledon-----	85	Very limited Slow water movement Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
HanBc: Haledon, extremely stony-----	85	Very limited Slow water movement Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
HanCc: Haledon, extremely stony-----	85	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 1.00 0.53

Table 12. Sewage Disposal--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
HasB: Haledon-----	60	Very limited Slow water movement Depth to saturated zone	1.00  1.00	Very limited Depth to saturated zone Seepage Slope	1.00  0.53 0.32
Urban land, Haledon substratum-----	30	Very limited Slow water movement Depth to saturated zone	1.00  1.00	Very limited Depth to saturated zone Seepage	1.00  0.53
HasC: Haledon-----	60	Very limited Slow water movement Depth to saturated zone Slope	1.00  1.00  0.63	Very limited Slope Depth to saturated zone Seepage	1.00  1.00  0.53
Urban land, Haledon substratum-----	30	Very limited Slow water movement Depth to saturated zone	1.00  1.00	Very limited Depth to saturated zone Seepage	1.00  0.53
HctBc: Hasbrouck, extremely stony-----	85	Very limited Slow water movement Depth to saturated zone Seepage, bottom layer Ponding	1.00  1.00  1.00  1.00	Very limited Seepage Depth to saturated zone Ponding	1.00  1.00  1.00
HkrnB: Hinckley-----	90	Very limited Seepage, bottom layer Filtering capacity	1.00  1.00	Very limited Seepage Slope	1.00  0.92
HkrnC: Hinckley-----	90	Very limited Seepage, bottom layer Filtering capacity Slope	1.00  1.00  0.16	Very limited Slope Seepage	1.00  1.00

Table 12. Sewage Disposal--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
HkruB: Hinckley-----	55	Very limited Seepage, bottom layer Filtering capacity	1.00  1.00	Very limited Seepage Slope	1.00 0.92
Urban land, Hinckley substratum-----	40	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
HkruC: Hinckley-----	50	Very limited Seepage, bottom layer Filtering capacity Slope	1.00  1.00  0.16	Very limited Slope Seepage	1.00 1.00
Urban land, Hinckley substratum-----	40	Very limited Seepage, bottom layer Filtering capacity	1.00  1.00	Very limited Seepage	1.00
HokCh: Holyoke, very rocky-	85	Very limited Depth to bedrock Slope	1.00  0.16	Very limited Depth to hard bedrock Slope Seepage	1.00  1.00 0.50
HomC: Holyoke-----	80	Very limited Depth to bedrock Slope	1.00  0.63	Very limited Depth to hard bedrock Slope Seepage	1.00  1.00 0.50
Rock outcrop-----	15	Not rated		Not rated	
HotA: Horseneck-----	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	1.00 1.00

Table 12. Sewage Disposal--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
HotuB: Horseneck-----	55	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 0.32
Urban land, Horseneck substratum-----	40	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00
KneA: Knickerbocker-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 0.99
KneB: Knickerbocker-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 0.99 0.92
KneC: Knickerbocker-----	95	Very limited Depth to saturated zone Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage Depth to saturated zone	1.00 1.00 0.99
KnuB: Knickerbocker-----	55	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone Slope	1.00 0.99 0.92
Urban land, Knickerbocker substratum-----	40	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 0.99

Table 12. Sewage Disposal--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
NazA: Natchaug-----	85	Very limited Depth to saturated zone Subsidence Seepage, bottom layer Ponding Slow water movement	1.00  1.00 1.00 1.00 0.50	Very limited Depth to saturated zone Seepage Ponding Organic matter content	1.00  1.00 1.00 1.00
PbpAt: Parsippany, frequently flooded-	90	Very limited Flooding Slow water movement Depth to saturated zone Seepage, bottom layer Ponding	1.00 1.00 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage Ponding	1.00 1.00 1.00 1.00
PecmB: Peckmantown-----	90	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Somewhat limited Slope Seepage	0.92 0.50
PecmBc: Peckmantown, extremely stony----	90	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Somewhat limited Slope Seepage	0.92 0.50
PecmC: Peckmantown-----	90	Very limited Slow water movement Seepage, bottom layer Slope	1.00 1.00 0.16	Very limited Slope Seepage	1.00 0.50
PecmCc: Peckmantown, extremely stony----	90	Very limited Slow water movement Seepage, bottom layer Slope	1.00 1.00 0.16	Very limited Slope Seepage	1.00 0.50

Table 12. Sewage Disposal--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
PecuuB: Peckmantown-----	55	Very limited Slow water movement Seepage, bottom layer	1.00  1.00	Somewhat limited Slope Seepage	0.92  0.50
Urban land, Peckmantown substratum-----	40	Very limited Seepage, bottom layer Slow water movement	1.00  0.50	Somewhat limited Seepage	0.50
PecuuC: Peckmantown-----	55	Very limited Slow water movement Seepage, bottom layer Slope	1.00  1.00  0.16	Very limited Slope Seepage	1.00  0.50
Urban land, Peckmantown substratum-----	40	Very limited Seepage, bottom layer Slow water movement	1.00  0.50	Somewhat limited Seepage	0.50
PHG: Pits, sand and gravel-----	100	Not rated		Not rated	
PohA: Pompton-----	80	Very limited Depth to saturated zone Seepage, bottom layer	1.00  1.00	Very limited Seepage Depth to saturated zone	1.00  1.00
PokuB: Pompton-----	55	Very limited Depth to saturated zone Seepage, bottom layer	1.00  1.00	Very limited Seepage Depth to saturated zone	1.00  1.00
Urban land, Pompton substratum-----	40	Very limited Depth to saturated zone Seepage, bottom layer	1.00  1.00	Very limited Seepage Depth to saturated zone	1.00  1.00

Table 12. Sewage Disposal--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
PrgA: Preakness, very poorly drained-----	90	Very limited Depth to saturated zone Seepage, bottom layer Ponding	1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Ponding Organic matter content	1.00 1.00 1.00 1.00
PrkA: Preakness, poorly drained-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00
QY: Pits, quarry-----	100	Not rated		Not rated	
RkkcA: Rikers-----	90	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage	1.00
RNAAC: Rock outcrop-----	100	Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Very limited Slow water movement	1.00	Very limited Seepage Slope	1.00 0.32
RoeCc: Rockaway, extremely stony-----	85	Very limited Slow water movement Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
RonB: Rockaway-----	55	Very limited Slow water movement	1.00	Very limited Seepage Slope	1.00 0.32
Urban land, Rockaway substratum-----	40	Very limited Slow water movement	1.00	Very limited Seepage	1.00

Table 12. Sewage Disposal--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
RonC: Rockaway-----	55	Very limited Slow water movement Slope	1.00  0.63	Very limited Slope Seepage	1.00  1.00
Urban land, Rockaway substratum-----	40	Very limited Slow water movement	1.00	Very limited Seepage	1.00
TunkB: Tunkhannock-----	90	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.68
TunkC: Tunkhannock-----	90	Very limited Seepage, bottom layer Slope	1.00  0.63	Very limited Slope Seepage	1.00 1.00
TunkD: Tunkhannock-----	95	Very limited Slope Seepage, bottom layer	1.00 1.00	Very limited Slope Seepage	1.00 1.00
TunkE: Tunkhannock-----	95	Very limited Slope Seepage, bottom layer	1.00 1.00	Very limited Slope Seepage	1.00 1.00
TunudB: Tunkhannock-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.92
Udorthents, Tunkhannock substratum-----	40	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
UcdAt: Udifluvents, frequently flooded-	90	Very limited Flooding Depth to saturated zone Seepage, bottom layer	1.00 1.00 1.00	Very limited Flooding Seepage Depth to saturated zone	1.00 1.00 1.00

Table 12. Sewage Disposal--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
UdbonB: Udorthents, Boonton substratum-----	95	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Very limited Slow water movement	1.00	Somewhat limited Slope	0.08
UddunB: Udorthents, Dunellen substratum-----	95	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
UdhalB: Udorthents, Haledon substratum-----	90	Very limited Slow water movement Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.08
UdhorB: Udorthents, Horseneck substratum-----	95	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
UdkttB: Udorthents, loamy fill substratum----	85	Very limited Slow water movement	1.00	Somewhat limited Slope	0.08
UdpecB: Udorthents, Peckmantown substratum-----	95	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage Slope	1.00 0.08

Table 12. Sewage Disposal--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
UdrkB: Udorthents, Rikers substratum-----	95	Very limited Seepage, bottom layer Filtering capacity	1.00  1.00	Very limited Seepage Slope	1.00  0.08
UdtunB: Udorthents, Tunkhannock substratum-----	90	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.08
URBHGB: Urban land, Bigapple substratum-----	90	Very limited Seepage, bottom layer Filtering capacity	1.00  1.00	Very limited Seepage	1.00
URBONB: Urban land, Boonton substratum-----	90	Very limited Seepage, bottom layer Slow water movement	1.00  0.50	Very limited Seepage	1.00
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
URDUNB: Urban land, Dunellen substratum-----	90	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
URHORB: Urban land, Horseneck substratum-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00  1.00	Very limited Seepage Depth to saturated zone	1.00  1.00

Table 12. Sewage Disposal--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
URKNKB: Urban land, Knickerbocker substratum-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00  1.00	Very limited Seepage Depth to saturated zone	1.00 0.99
URKTTB: Urban land, loamy fill substratum----	85	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
URPECB: Urban land, Peckmantown substratum-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Somewhat limited Seepage	0.50
URPOMB: Urban land, Pompton substratum-----	90	Very limited Depth to saturated zone Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to saturated zone	1.00 1.00
USBONB: Urban land, Boonton substratum-----	60	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
Boonton-----	30	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.92
USBONC: Urban land, Boonton substratum-----	60	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00

Table 12. Sewage Disposal--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
USBONC: (cont.)					
Boonton-----	30	Very limited Slow water movement	1.00	Very limited Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Slope	0.63		
USBOOB:					
Urban land, Boonton red sandstone lowland substratum-	60	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
Boonton, red sandstone lowland--	30	Very limited Slow water movement	1.00	Somewhat limited Slope	0.68
				Seepage	0.50
USBOOC:					
Urban land, Boonton red sandstone lowland substratum-	60	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
Boonton, red sandstone lowland--	30	Very limited Slow water movement	1.00	Very limited Slope	1.00
		Slope	0.16	Seepage	0.50
USDUNB:					
Urban land, Dunellen substratum-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
Dunellen-----	30	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
				Slope	0.32
USDUNC:					
Urban land, Dunellen substratum-----	60	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
Dunellen-----	30	Very limited Seepage, bottom layer	1.00	Very limited Slope	1.00
		Slope	0.63	Seepage	1.00

Table 12. Sewage Disposal--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
USYRRB: Urban land, Yalesville substratum-----	50	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage	1.00 1.00
Yalesville-----	30	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.68
Rock outcrop-----	15	Not rated		Not rated	
WaakAt: Walkkill, frequently flooded-----	90	Very limited Flooding Depth to saturated zone Seepage, bottom layer Ponding Slow water movement	1.00 1.00 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Ponding Organic matter content Seepage	1.00 1.00 1.00 1.00 0.53
WATER: Water-----	100	Not rated		Not rated	
YamnB: Yalesville-----	85	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.92
YamnBc: Yalesville, extremely stony----	85	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.92
YamnCc: Yalesville, extremely stony----	90	Very limited Slow water movement Depth to bedrock Slope	1.00 1.00 0.16	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00

Table 12. Sewage Disposal--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
YaobBc: Yalesville, extremely stony----	40	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.92
Boonton, extremely stony-----	30	Very limited Slow water movement Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.92
Holyoke, extremely stony-----	30	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 0.92 0.50
YaohEh: Yalesville, very rocky-----	50	Very limited Slow water movement Slope Depth to bedrock	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Holyoke, very rocky-	30	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 0.50
YaorCc: Yalesville, extremely stony----	80	Very limited Slow water movement Depth to bedrock Slope	1.00 1.00 0.16	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Rock outcrop-----	15	Not rated		Not rated	
YaotuB: Yalesville-----	55	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.32

Table 12. Sewage Disposal--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
YaotuB: (cont.) Urban land, Yalesville substratum-----	40	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage	1.00 1.00
YaotuC: Yalesville-----	55	Very limited Slow water movement Depth to bedrock Slope	1.00 1.00 0.16	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 1.00
Urban land, Yalesville substratum-----	40	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage	1.00 1.00
YaouA: Yalesville, red sandstone lowland--	95	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage	1.00 1.00
YaouB: Yalesville, red sandstone lowland--	95	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.92
YaovB: Yalesville, red sandstone lowland--	55	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 1.00 0.32
Urban land, Yalesville substratum-----	40	Very limited Slow water movement Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Seepage	1.00 1.00

Table 13. Disposal Field

(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 recommended system type listed under type of installation permitted in NJ are derived from NJAC 7:9A standards (see footnotes at end of table). The recommended system type is generally the most desirable for the given soil and site conditions. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
BhgA: Bigapple-----	80	Not limited		C		I	
BhguA: Bigapple-----	60	Not limited		C		I	
Urban land, Bigapple substratum-----	30	Not rated		Not rated		Not rated	
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BogB: Boonton-----	80	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
BogBc: Boonton, extremely stony-----	85	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BogC: Boonton-----	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
BogCc: Boonton, extremely stony-----	85	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BogDc: Boonton, extremely stony-----	95	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BooB: Boonton, red sandstone lowland--	95	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BooC: Boonton, red sandstone lowland--	95	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
BosB: Boonton-----	60	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Udorthents, Boonton substratum-----	40	Not limited		C		I	
BotB: Boonton, red sandstone lowland--	60	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Udorthents, Boonton red sandstone lowland substratum--	40	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
BotC: Boonton, red sandstone lowland--	60	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Udorthents, Boonton red sandstone lowland substratum--	40	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
BouB: Boonton-----	50	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
BouC: Boonton-----	50	Very limited Restrictive substratum	1.00	Restrictive substratum SRB, SRE	1.00	IIIHr	1.00
		Restrictive horizon	1.00			IIISr	1.00
Urban land, Boonton substratum-----	40	Not rated		Not rated		Not rated	
BouD: Boonton-----	60	Very limited Restrictive substratum	1.00	Restrictive substratum SRB, SRE	1.00	IIIHr	1.00
		Restrictive horizon	1.00			IIISr	1.00
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowrB: Boonton, red sandstone lowland--	50	Very limited Restrictive substratum	1.00	Restrictive substratum SRB, SRE	1.00	IIIHr	1.00
		Restrictive horizon	1.00			IIISr	1.00
Urban land, Boonton red sandstone lowland substratum--	40	Not rated		Not rated		Not rated	
BowrC: Boonton, red sandstone lowland--	50	Very limited Restrictive substratum	1.00	Restrictive substratum SRB, SRE	1.00	IIIHr	1.00
		Restrictive horizon	1.00			IIISr	1.00
Urban land, Boonton red sandstone lowland substratum--	40	Not rated		Not rated		Not rated	
BowtB: Boonton, terminal moraine-----	40	Very limited Restrictive substratum	1.00	Restrictive substratum SRB, SRE	1.00	IIIHr	1.00
		Restrictive horizon	1.00			IIISr	1.00
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
BowtC: Boonton, terminal moraine-----	40	Very limited Restrictive substratum Restrictive horizon	1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00	IIIHr IIISr	1.00 1.00
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
BowtD: Boonton, terminal moraine-----	40	Very limited Restrictive substratum Restrictive horizon	1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00	IIIHr IIISr	1.00 1.00
Urban land, Boonton substratum-----	30	Not rated		Not rated		Not rated	
CatcA: Catden-----	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
CatnA: Catden-----	80	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
Natchaug-----	15	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
DunB: Dunellen-----	85	Not limited		C		I	
DunC: Dunellen-----	85	Not limited		C		I	
DunD: Dunellen-----	90	Not limited		C		I	
DusB: Dunellen-----	60	Not limited		C		I	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
DusB: (cont.) Udorthents, Dunellen substratum-----	40	Not limited		C		I	
DusC: Dunellen-----	60	Not limited		C		I	
Udorthents, Dunellen substratum-----	40	Not limited		C		I	
DuuB: Dunellen-----	60	Not limited		C		I	
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	
DuuC: Dunellen-----	60	Not limited		C		I	
Urban land, Dunellen substratum-----	30	Not rated		Not rated		Not rated	
FmhAt: Fluvaquents, loamy, frequently flooded-	80	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
GrpA: Great Piece-----	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
HanB: Haledon-----	85	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
HanBc: Haledon, extremely stony-----	85	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
HanCc: Haledon, extremely stony-----	85	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
HasB: Haledon-----	60	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	
HasC: Haledon-----	60	Very limited					
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Haledon substratum-----	30	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
HctBc: Hasbrouck, extremely stony-----	85	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
HkrnB: Hinckley-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
HkrnC: Hinckley-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
HkruB: Hinckley-----	55	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HkruC: Hinckley-----	50	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
Urban land, Hinckley substratum-----	40	Not rated		Not rated		Not rated	
HokCh: Holyoke, very rocky-	85	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
HomC: Holyoke-----	80	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
Rock outcrop-----	15	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
HotA: Horseneck-----	85	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
HotuB: Horseneck-----	55	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
Urban land, Horseneck substratum-----	40	Not rated		Not rated		Not rated	
KneA: Knickerbocker-----	90	Somewhat limited Depth to apparent zone of saturation	0.49	M	0.49	IIWr	0.49
KneB: Knickerbocker-----	90	Somewhat limited Depth to apparent zone of saturation	0.49	M	0.49	IIWr	0.49
KneC: Knickerbocker-----	95	Somewhat limited Depth to apparent zone of saturation	0.49	M	0.49	IIWr	0.49
KnuB: Knickerbocker-----	55	Somewhat limited Depth to apparent zone of saturation	0.49	M	0.49	IIWr	0.49
Urban land, Knickerbocker substratum-----	40	Not rated		Not rated		Not rated	
NazA: Natchaug-----	85	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
PbpAt: Parsippany, 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
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIWr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIHr	1.00
PecmB: Peckmantown-----	90	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
PecmBc: Peckmantown, extremely stony----	90	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
PecmC: Peckmantown-----	90	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
PecmCc: Peckmantown, extremely stony----	90	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
PecuuB: Peckmantown-----	55	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
PecuuC: Peckmantown-----	55	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Peckmantown substratum-----	40	Not rated		Not rated		Not rated	
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
PokuB: Pompton-----	55	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
Urban land, Pompton substratum-----	40	Not rated		Not rated		Not rated	
PrgA: Preakness, very poorly drained----	90	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00
PrkA: Preakness, poorly drained-----	90	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
		Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00	Not Permitted - Hydric Soil	1.00
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
RNAAC: Rock outcrop-----	100	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
RoeBc: Rockaway, extremely stony-----	85	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
RoeCc: Rockaway, extremely stony-----	85	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
RonB: Rockaway-----	55	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
RonC: Rockaway-----	55	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
Urban land, Rockaway substratum-----	40	Not rated		Not rated		Not rated	
TunkB: Tunkhannock-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
TunkC: Tunkhannock-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
TunkD: Tunkhannock-----	95	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
TunkE: Tunkhannock-----	95	Very limited Not Permitted Too Steep	1.00	Not Permitted - Too Steep	1.00	Not Permitted - Too Steep	1.00
		Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
TunudB: Tunkhannock-----	60	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
Udorthents, Tunkhannock substratum-----	40	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
UcdAt: Udifluvents, frequently flooded-	90	Very limited Not Permitted - Flooding	1.00	Not Permitted - Flooding	1.00	Not Permitted - Flooding	1.00
		Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
UdbonB: Udorthents, Boonton substratum-----	95	Not limited		C		I	
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
UddunB: Udorthents, Dunellen substratum-----	95	Not limited		C		I	
UdhalB: Udorthents, Haledon substratum-----	90	Very limited Depth to apparent	1.00	Depth to apparent	1.00	IIIWr	1.00
		zone of saturation		zone of saturation			
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
UdhorB: Udorthents, Horseneck substratum-----	95	Very limited Depth to apparent zone of saturation	1.00	Depth to apparent zone of saturation	1.00	IIIWr	1.00
UdkttB: Udorthents, loamy fill substratum----	85	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
UdpecB: Udorthents, Peckmantown substratum-----	95	Not limited		C		I	
UdrkkB: Udorthents, Rikers substratum-----	95	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
UdtunB: Udorthents, Tunkhannock substratum-----	90	Somewhat limited Excessively coarse horizon	0.99	SRE, M	0.99	IIHc	0.99
URBHGB: Urban land, Bigapple substratum-----	90	Not rated		Not rated		Not rated	
URBONB: Urban land, Boonton substratum-----	90	Not rated		Not rated		Not rated	
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Not rated		Not rated		Not rated	
URDUNB: Urban land, Dunellen substratum-----	90	Not rated		Not rated		Not rated	
URHORB: Urban land, Horseneck substratum-----	90	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
URKNKB: Urban land, Knickerbocker substratum-----	90	Not rated		Not rated		Not rated	
URKTTB: Urban land, loamy fill substratum----	85	Not rated		Not rated		Not rated	
URPECB: Urban land, Peckmantown substratum-----	90	Not rated		Not rated		Not rated	
URPOMB: Urban land, Pompton substratum-----	90	Not rated		Not rated		Not rated	
USBONB: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
USBONC: Urban land, Boonton substratum-----	60	Not rated		Not rated		Not rated	
Boonton-----	30	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	
Boonton, red sandstone lowland--	30	Very limited Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Not rated		Not rated		Not rated	

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
USBOOC: (cont.) Boonton, red sandstone lowland--	30	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIIHr	1.00
		Restrictive horizon	1.00	SRB, SRE	1.00	IIISr	1.00
USDUNB: Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	
Dunellen-----	30	Not limited		C		I	
USDUNC: Urban land, Dunellen substratum-----	60	Not rated		Not rated		Not rated	
Dunellen-----	30	Not limited		C		I	
USYRRB: Urban land, Yalesville substratum-----	50	Not rated		Not rated		Not rated	
Yalesville-----	30	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
Rock outcrop-----	15	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
WaakAt: Wallkill, 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
WATER: Water-----	100	Not rated		Not rated		Not rated	
YamNB: Yalesville-----	85	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
YamnBc: Yalesville, extremely stony----	85	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
YamnCc: Yalesville, extremely stony----	90	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
YaobBc: Yalesville, extremely stony----	40	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
Boonton, extremely stony-----	30	Very limited Restrictive substratum Restrictive horizon	1.00 1.00	Restrictive substratum SRB, SRE	1.00 1.00	IIISr IIISr	1.00 1.00
Holyoke, extremely stony-----	30	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
YaohEh: Yalesville, very rocky-----	50	Very limited Restrictive substratum Depth to massive bedrock Not Permitted Too Steep	1.00 1.00 1.00	Restrictive substratum Depth to massive bedrock Not Permitted - Too Steep	1.00 1.00 1.00	Not Permitted - Too Steep IIISr IIISr	1.00 1.00 1.00
Holyoke, very rocky-	30	Very limited Restrictive substratum Depth to massive bedrock Not Permitted Too Steep	1.00 1.00 1.00	Restrictive substratum Depth to massive bedrock Not Permitted - Too Steep	1.00 1.00 1.00	Not Permitted - Too Steep IIISr IIISr	1.00 1.00 1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
YaorCc: Yalesville, extremely stony----	80	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
Rock outcrop-----	15	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
YaotuD: Yalesville-----	55	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	
YaotuC: Yalesville-----	55	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	
YaouA: Yalesville, red sandstone lowland--	95	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00
YaouB: Yalesville, red sandstone lowland--	95	Very limited Restrictive substratum Depth to massive bedrock	1.00 1.00	Restrictive substratum Depth to massive bedrock	1.00 1.00	IIISr IIISr	1.00 1.00

Table 13. Disposal Field--Continued

Map symbol and soil name	Pct. of map unit	Disposal Field NJAC 7:9A		Type Installation Permitted in NJ		NJ Suitability Class (for each limitation most restrictive class is listed)	
		Rating class and limiting features	Value	Limiting features and recommended system type	Value	Suitability class and limiting feature	Value
YaovB: Yalesville, red sandstone lowland--	55	Very limited					
		Restrictive substratum	1.00	Restrictive substratum	1.00	IIISr	1.00
		Depth to massive bedrock	1.00	Depth to massive bedrock	1.00	IIISr	1.00
Urban land, Yalesville substratum-----	40	Not rated		Not rated		Not rated	

## Type of disposal field installation

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 these classes refer to NJAC 7:9A, Standards for Individual Subsurface Sewage Disposal Systems.

Table 14. Source of Gravel and Sand

(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
BhgA: Bigapple-----	80	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.08
		Bottom layer	0.00	Thickest layer	0.37
BhguA: Bigapple-----	60	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.08
		Bottom layer	0.00	Thickest layer	0.37
Urban land, Bigapple substratum-----	30	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.08
		Thickest layer	0.00	Thickest layer	0.37
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.03
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.03
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.03
BogB: Boonton-----	80	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
BogBc: Boonton, extremely stony-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.08

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BogC: Boonton-----	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
BogCc: Boonton, extremely stony-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.08
BogDc: Boonton, extremely stony-----	95	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
BooB: Boonton, red sandstone lowland--	95	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BooC: Boonton, red sandstone lowland--	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BosB: Boonton-----	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.08
Udorthents, Boonton substratum-----	40	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.08
		Thickest layer	0.00	Thickest layer	0.08
BotB: Boonton, red sandstone lowland--	60	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BotB: (cont.) Udorthents, Boonton red sandstone lowland substratum-	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BotC: Boonton, red sandstone lowland--	60	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Udorthents, Boonton red sandstone lowland substratum-	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BouB: Boonton-----	50	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Urban land, Boonton substratum-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
BouC: Boonton-----	50	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Urban land, Boonton substratum-----	40	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
BouD: Boonton-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Urban land, Boonton substratum-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
BowrB: Boonton, red sandstone lowland--	50	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BowrB: (cont.) Urban land, Boonton red sandstone lowland substratum-	40	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BowrC: Boonton, red sandstone lowland--	50	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Urban land, Boonton red sandstone lowland substratum-	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
BowtB: Boonton, terminal moraine-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Urban land, Boonton substratum-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.02
BowtC: Boonton, terminal moraine-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Urban land, Boonton substratum-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.02
BowtD: Boonton, terminal moraine-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.03
Urban land, Boonton substratum-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.00 0.02
CatcA: Catden-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.01 0.01

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
CatnA: Catden-----	80	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.01
Natchaug-----	15	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.01
DunB: Dunellen-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.11
DunC: Dunellen-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.11
DunD: Dunellen-----	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.02
		Bottom layer	0.00	Bottom layer	0.11
DusB: Dunellen-----	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.11
Udorthents, Dunellen substratum-----	40	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.02
		Bottom layer	0.00	Bottom layer	0.11
DusC: Dunellen-----	60	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.02
		Bottom layer	0.00	Bottom layer	0.11
Udorthents, Dunellen substratum-----	40	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.02
		Bottom layer	0.00	Bottom layer	0.11
DuuB: Dunellen-----	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.31
Urban land, Dunellen substratum-----	30	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.11
DuuC: Dunellen-----	60	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.02
		Bottom layer	0.00	Bottom layer	0.31

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
DuuC: (cont.) Urban land, Dunellen substratum-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
GrpA: Great Piece-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HanB: Haledon-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HanBc: Haledon, extremely stony-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HanCc: Haledon, extremely stony-----	85	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HasB: Haledon-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Urban land, Haledon substratum-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HasC: Haledon-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Urban land, Haledon substratum-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HctBc: Hasbrouck, extremely stony-----	85	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.02

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
HkrnB: Hinckley-----	90	Fair		Fair	
		Bottom layer	0.69	Thickest layer	0.08
		Thickest layer	0.69	Bottom layer	0.54
HkrnC: Hinckley-----	90	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
HkruB: Hinckley-----	55	Fair		Fair	
		Thickest layer	0.69	Thickest layer	0.08
		Bottom layer	0.69	Bottom layer	0.54
Urban land, Hinckley substratum-----	40	Fair		Fair	
		Thickest layer	0.28	Thickest layer	0.00
		Bottom layer	0.69	Bottom layer	0.54
HkruC: Hinckley-----	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Urban land, Hinckley substratum-----	40	Not rated		Not rated	
HokCh: Holyoke, very rocky-	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
HomC: Holyoke-----	80	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Rock outcrop-----	15	Not rated		Not rated	
HotA: Horseneck-----	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00	Bottom layer	0.08
HotuB: Horseneck-----	55	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00	Bottom layer	0.08
Urban land, Horseneck substratum-----	40	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.08
		Bottom layer	0.00	Thickest layer	0.09

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
KneA: Knickerbocker-----	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
KneB: Knickerbocker-----	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
KneC: Knickerbocker-----	95	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
KnuB: Knickerbocker-----	55	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.02
Urban land, Knickerbocker substratum-----	40	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.02
NazA: Natchaug-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.01
PbpAt: Parsippany, frequently flooded-	90	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.01
		Bottom layer	0.00	Bottom layer	0.11
PecmB: Peckmantown-----	90	Poor		Good	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00		
PecmBc: Peckmantown, extremely stony----	90	Poor		Good	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00		
PecmC: Peckmantown-----	90	Poor		Good	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00		
PecmCc: Peckmantown, extremely stony----	90	Poor		Good	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00		

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
PecuuB: Peckmantown-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.00
Urban land, Peckmantown substratum-----	40	Poor Thickest layer Bottom layer	0.00 0.00	Good Thickest layer	0.00
PecuuC: Peckmantown-----	55	Poor Thickest layer Bottom layer	0.00 0.00	Good Thickest layer	0.00
Urban land, Peckmantown substratum-----	40	Poor Thickest layer Bottom layer	0.00 0.00	Good Thickest layer	0.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated	
PohA: Pompton-----	80	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.04 0.34
PokuB: Pompton-----	55	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.04 0.34
Urban land, Pompton substratum-----	40	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.34
PrgA: Preakness, very poorly drained-----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.42 0.42
PrkA: Preakness, poorly drained-----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.37 0.42
QY: Pits, quarry-----	100	Not rated		Not rated	

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
RkkcA: Rikers-----	90	Fair		Fair	
		Thickest layer	0.53	Bottom layer	0.91
		Bottom layer	0.70	Thickest layer	0.91
RNAAC: Rock outcrop-----	100	Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.01
		Bottom layer	0.00	Thickest layer	0.03
RoeCc: Rockaway, extremely stony-----	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.03
RonB: Rockaway-----	55	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.01
		Bottom layer	0.00	Thickest layer	0.03
Urban land, Rockaway substratum-----	40	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.03
RonC: Rockaway-----	55	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.01
		Bottom layer	0.00	Thickest layer	0.03
Urban land, Rockaway substratum-----	40	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.03
TunkB: Tunkhannock-----	90	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00
TunkC: Tunkhannock-----	90	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00
TunkD: Tunkhannock-----	95	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
TunkE: Tunkhannock-----	95	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00
TunudB: Tunkhannock-----	60	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00
Udorthents, Tunkhannock substratum-----	40	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.75	Thickest layer	0.00
UcdAt: Udifluvents, frequently flooded-	90	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.10
		Bottom layer	0.00	Thickest layer	0.10
UdbonB: Udorthents, Boonton substratum-----	95	Poor		Fair	
		Thickest layer	0.00	Bottom layer	0.08
		Bottom layer	0.00	Thickest layer	0.08
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UddunB: Udorthents, Dunellen substratum-----	95	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.11
UdhalB: Udorthents, Haledon substratum-----	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UdhorB: Udorthents, Horseneck substratum-----	95	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
UdkttB: Udorthents, loamy fill substratum----	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UdpecB: Udorthents, Peckmantown substratum-----	95	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.10
UdrkkB: Udorthents, Rikers substratum-----	95	Fair Thickest layer Bottom layer	0.00 0.70	Fair Thickest layer Bottom layer	0.00 0.91
UdtunB: Udorthents, Tunkhannock substratum-----	90	Fair Thickest layer Bottom layer	0.00 0.75	Poor Bottom layer Thickest layer	0.00 0.00
URBHGB: Urban land, Bigapple substratum-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Bottom layer Thickest layer	0.08 0.37
URBONB: Urban land, Boonton substratum-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
URDUNB: Urban land, Dunellen substratum-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
URHORB: Urban land, Horseneck substratum-----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Bottom layer Thickest layer	0.08 0.09
URKNKB: Urban land, Knickerbocker substratum-----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.02

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
URKTTB: Urban land, loamy fill substratum----	85	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
URPECB: Urban land, Peckmantown substratum-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Good Thickest layer	0.00
URPOMB: Urban land, Pompton substratum-----	90	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.34
USBONB: Urban land, Boonton substratum-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Boonton-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
USBONC: Urban land, Boonton substratum-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Boonton-----	30	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Boonton, red sandstone lowland--	30	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
USBOOC: (cont.) Boonton, red sandstone lowland--	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
USDUNB: Urban land, Dunellen substratum-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
Dunellen-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
USDUNC: Urban land, Dunellen substratum-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
Dunellen-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.02 0.11
USYRRB: Urban land, Yalesville substratum-----	50	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Yalesville-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Rock outcrop-----	15	Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.27 0.42
WATER: Water-----	100	Not rated		Not rated	
YamnB: Yalesville-----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
YamnBc: Yalesville, extremely stony----	85	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
YamnCc: Yalesville, extremely stony----	90	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
YaobBc: Yalesville, extremely stony----	40	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Boonton, extremely stony-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
Holyoke, extremely stony-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
YaohEh: Yalesville, very rocky-----	50	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Holyoke, very rocky-	30	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
YaorCc: Yalesville, extremely stony----	80	Poor Thickest layer Bottom layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Rock outcrop-----	15	Not rated		Not rated	
YaotuB: Yalesville-----	55	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01
Urban land, Yalesville substratum-----	40	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.01

Table 14. Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
YaotuC: Yalesville-----	55	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
Urban land, Yalesville substratum-----	40	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.01
YaouA: Yalesville, red sandstone lowland--	95	Poor		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
YaouB: Yalesville, red sandstone lowland--	95	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
YaovB: Yalesville, red sandstone lowland--	55	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
Urban land, Yalesville substratum-----	40	Not rated		Not rated	

Table 15. Source of Reclamation Material, Roadfill, and Topsoil

(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
BhgA: Bigapple-----	80	Poor Too sandy Wind erosion Droughty Too acid	0.00 0.00 0.00 0.50	Fair Shrink-swell	0.92	Poor Too sandy Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.24 0.92 0.99
BhguA: Bigapple-----	60	Poor Too sandy Wind erosion Droughty Too acid	0.00 0.00 0.00 0.50	Fair Shrink-swell	0.92	Poor Too sandy Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.24 0.92 0.99
Urban land, Bigapple substratum-----	30	Poor Too sandy Droughty Too acid	0.00 0.00 0.50	Fair Shrink-swell	0.93	Poor Too sandy Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.24 0.92 0.99
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Good		Fair Rock fragments Too acid Hard to reclaim (rock fragments)	0.59 0.82 0.99
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Good		Fair Slope Rock fragments Too acid Hard to reclaim (rock fragments)	0.37 0.59 0.82 0.99
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Poor Slope	0.00	Poor Slope Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.59 0.82 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
BogB: Boonton-----	80	Poor Too acid Organic matter content low	0.00 0.88	Good		Fair Too acid	0.50
BogBc: Boonton, extremely stony-----	85	Poor Too acid Organic matter content low	0.00 0.88	Good		Fair Too acid	0.50
BogC: Boonton-----	90	Poor Too acid Organic matter content low	0.00 0.88	Good		Fair Slope Too acid	0.37 0.50
BogCc: Boonton, extremely stony-----	85	Poor Too acid Organic matter content low	0.00 0.88	Good		Fair Slope Too acid	0.37 0.50
BogDc: Boonton, extremely stony-----	95	Poor Too acid Organic matter content low	0.00 0.88	Poor Slope	0.00	Poor Slope Too acid	0.00 0.50
BooB: Boonton, red sandstone lowland--	95	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.95
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.95

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
BooC: Boonton, red sandstone lowland--	95	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Slope Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.84 0.95
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Slope Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.63 0.95
BosB: Boonton-----	60	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Good		Fair Too acid	0.50
Udorthents, Boonton substratum-----	40	Fair Too sandy Too acid Organic matter content low Water erosion	0.20 0.68 0.88 0.90	Good		Fair Too sandy Rock fragments	0.20 0.92
BotB: Boonton, red sandstone lowland--	60	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.95
Udorthents, Boonton red sandstone lowland substratum-	40	Fair Organic matter content low Too acid Water erosion	0.01 0.50 0.90	Good		Fair Rock fragments Too acid Hard to reclaim (rock fragments)	0.01 0.76 0.95

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
BotC: Boonton, red sandstone lowland--	60	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Slope Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.84 0.95
Udorthents, Boonton red sandstone lowland substratum--	40	Fair Organic matter content low Too acid Water erosion	0.01 0.50 0.90	Good		Fair Rock fragments Too acid Hard to reclaim (rock fragments)	0.01 0.76 0.95
BouB: Boonton-----	50	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Good		Fair Too acid	0.50
Urban land, Boonton substratum-----	40	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
BouC: Boonton-----	50	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Good		Fair Slope Too acid	0.37 0.50
Urban land, Boonton substratum-----	40	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
BouD: Boonton-----	60	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Fair Slope	0.50	Poor Slope Too acid	0.00 0.50

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
BouD:(cont.) Urban land, Boonton substratum-----	30	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
BowrB: Boonton, red sandstone lowland--	50	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.95
Urban land, Boonton red sandstone lowland substratum--	40	Fair Too acid Water erosion	0.08 0.99	Good		Poor Rock fragments Hard to reclaim (rock fragments) Too acid	0.00 0.46 0.50
BowrC: Boonton, red sandstone lowland--	50	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Slope Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.84 0.95
Urban land, Boonton red sandstone lowland substratum--	40	Fair Too acid Water erosion	0.08 0.99	Good		Poor Rock fragments Hard to reclaim (rock fragments) Too acid	0.00 0.46 0.50
BowtB: Boonton, terminal moraine-----	40	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Good		Fair Rock fragments Too acid Hard to reclaim (rock fragments)	0.59 0.82 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
BowtB: (cont.) Urban land, Boonton substratum-----	30	Fair Too acid Droughty Organic matter content low	0.12 0.26 0.32	Good		Fair Too acid Rock fragments Hard to reclaim (rock fragments)	0.59 0.88 0.95
BowtC: Boonton, terminal moraine-----	40	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Good		Fair Slope Rock fragments Too acid Hard to reclaim (rock fragments)	0.37 0.59 0.82 0.99
Urban land, Boonton substratum-----	30	Fair Too acid Droughty Organic matter content low	0.12 0.26 0.32	Good		Fair Too acid Rock fragments Hard to reclaim (rock fragments)	0.59 0.88 0.95
BowtD: Boonton, terminal moraine-----	40	Poor Too acid Organic matter content low Droughty	0.00 0.08 0.94	Poor Slope	0.00	Poor Slope Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.59 0.82 0.99
Urban land, Boonton substratum-----	30	Fair Too acid Droughty Organic matter content low	0.12 0.26 0.32	Good		Fair Too acid Rock fragments Hard to reclaim (rock fragments)	0.59 0.88 0.95
CatcA: Catden-----	85	Poor Wind erosion Too acid	0.00 0.61	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high	0.00 0.00
CatnA: Catden-----	80	Poor Wind erosion Too acid	0.00 0.61	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high	0.00 0.00
Natchaug-----	15	Poor Wind erosion Too acid	0.00 0.61	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Too acid	0.00 0.00 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
DunB: Dunellen-----	85	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
DunC: Dunellen-----	85	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Slope Too acid	0.32 0.37 0.88
DunD: Dunellen-----	90	Fair Too acid Organic matter content low	0.32 0.88	Fair Slope	0.98	Poor Slope Rock fragments Too acid	0.00 0.32 0.88
DusB: Dunellen-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
Udorthents, Dunellen substratum-----	40	Fair Too acid Organic matter content low Water erosion	0.32 0.88 0.90	Good		Fair Rock fragments Too acid	0.32 0.88
DusC: Dunellen-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Slope Too acid	0.32 0.37 0.88
Udorthents, Dunellen substratum-----	40	Fair Too acid Organic matter content low Water erosion	0.32 0.88 0.90	Good		Fair Rock fragments Too acid	0.32 0.88
DuuB: Dunellen-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Hard to reclaim (rock fragments) Rock fragments Too acid	0.02 0.32 0.88
Urban land, Dunellen substratum-----	30	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
DuuC: Dunellen-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Hard to reclaim (rock fragments) Rock fragments Slope Too acid	0.02 0.32 0.37 0.88
Urban land, Dunellen substratum-----	30	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Fair Organic matter content low Too acid Water erosion	0.12 0.84 0.90	Fair Wetness depth	0.04	Fair Wetness depth	0.04
GrpA: Great Piece-----	90	Poor Too acid Too sandy Organic matter content low	0.00 0.29 0.35	Poor Wetness depth	0.00	Poor Wetness depth Too sandy	0.00 0.29
HanB: Haledon-----	85	Fair Too acid Organic matter content low	0.50 0.88	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Hard to reclaim (rock fragments)	0.00 0.04 0.99
HanBc: Haledon, extremely stony-----	85	Fair Too acid Organic matter content low	0.50 0.88	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Hard to reclaim (rock fragments)	0.00 0.04 0.99
HanCc: Haledon, extremely stony-----	85	Fair Too acid Organic matter content low	0.50 0.88	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Slope Hard to reclaim (rock fragments)	0.00 0.04 0.37 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
HasB: Haledon-----	60	Fair Too acid Organic matter content low	0.50 0.88	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Hard to reclaim (rock fragments)	0.00 0.04 0.99
Urban land, Haledon substratum-----	30	Fair Too acid Organic matter content low Droughty Water erosion	0.50 0.88 0.95 0.99	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.88 0.95 0.99
HasC: Haledon-----	60	Fair Too acid Organic matter content low	0.50 0.88	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Slope Hard to reclaim (rock fragments)	0.00 0.04 0.37 0.99
Urban land, Haledon substratum-----	30	Fair Too acid Organic matter content low Droughty Water erosion	0.50 0.88 0.95 0.99	Poor Wetness depth	0.00	Poor Wetness depth Too acid Rock fragments Hard to reclaim (rock fragments)	0.00 0.50 0.76 0.99
HctBc: Hasbrouck, extremely stony-----	85	Poor Organic matter content low Too acid	0.00 0.00	Poor Wetness depth	0.00	Poor Hard to reclaim (dense layer) Wetness depth	0.00 0.00
HkrnB: Hinckley-----	90	Poor Too sandy Droughty Too acid Organic matter content low	0.00 0.20 0.50 0.88	Good		Poor Too sandy Hard to reclaim (rock fragments) Rock fragments	0.00 0.00 0.00
HkrnC: Hinckley-----	90	Poor Droughty Organic matter content low Too acid Too sandy	0.00 0.08 0.50 0.94	Good		Poor Hard to reclaim (rock fragments) Rock fragments Slope Too sandy Too acid	0.00 0.00 0.84 0.94 0.98

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
HkruB: Hinckley-----	55	Poor Too sandy Droughty Too acid Organic matter content low	0.00 0.20 0.50 0.88	Good		Poor Too sandy Hard to reclaim (rock fragments) Rock fragments	0.00 0.00 0.00
Urban land, Hinckley substratum-----	40	Poor Droughty Too acid Organic mater content low	0.00 0.61 0.88 8	Good		Poor Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.00 0.99
HkruC: Hinckley-----	50	Poor Droughty Organic matter content low Too acid Too sandy	0.00 0.08 8 0.50 0.94	Good		Poor Hard to reclaim (rock fragments) Rock fragments Slope Too sandy Too acid	0.00 0.00 0.84 0.94 0.98
Urban land, Hinckley substratum-----	40	Not rated		Good		Not rated	
HokCh: Holyoke, very rocky-	85	Poor Depth to bedrock Organic matter content low Droughty Too acid Water erosion	0.00 0.12 0.35 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too acid Rock fragments Slope	0.00 0.32 0.82 0.84
HomC: Holyoke-----	80	Poor Depth to bedrock Organic matter content low Droughty Too acid Water erosion	0.00 0.12 0.35 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock Too acid Slope Rock fragments	0.00 0.32 0.37 0.82
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Fair Too acid Organic matter content low Droughty Too sandy	0.12 0.68 0.82 0.99	Fair Wetness depth	0.38	Fair Wetness depth Too sandy	0.38 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
HotuB: Horseneck-----	55	Fair Too acid Organic matter content low Droughty Too sandy	0.12 0.68 0.82 0.99	Fair Wetness depth	0.38	Fair Wetness depth Too sandy	0.38 0.99
Urban land, Horseneck substratum-----	40	Fair Organic matter content low Too acid Droughty Too sandy	0.18 0.32 0.57 0.99	Fair Wetness depth	0.38	Fair Wetness depth Too acid Too sandy	0.38 0.88 0.99
KneA: Knickerbocker-----	90	Fair Organic matter content low Too acid	0.50 0.61	Good		Fair Rock fragments Too acid	0.18 0.99
KneB: Knickerbocker-----	90	Fair Organic matter content low Too acid	0.50 0.61	Good		Fair Rock fragments Too acid	0.18 0.99
KneC: Knickerbocker-----	95	Fair Organic matter content low Too acid	0.50 0.61	Good		Fair Rock fragments Slope Too acid	0.18 0.37 0.99
KnuB: Knickerbocker-----	55	Fair Organic matter content low Too acid	0.50 0.61	Good		Fair Rock fragments Too acid	0.18 0.99
Urban land, Knickerbocker substratum-----	40	Fair Organic matter content low Droughty Too acid	0.50 0.58 0.61	Good		Fair Rock fragments Too acid	0.18 0.99
NazA: Natchaug-----	85	Poor Wind erosion Too acid	0.00 0.61	Poor Wetness depth	0.00	Poor Wetness depth Organic matter content high Too acid	0.00 0.00 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
PbpAt: Parsippany, frequently flooded-	90	Poor Too clayey Too acid Organic matter content low	0.00 0.61 0.88	Poor Wetness depth Shrink-swell	0.00 0.87	Poor Wetness depth Too clayey	0.00 0.00
PecmB: Peckmantown-----	90	Poor Too acid Water erosion	0.00 0.06	Good		Fair Too acid	0.99
PecmBc: Peckmantown, extremely stony----	90	Poor Too acid Water erosion	0.00 0.06	Good		Fair Too acid	0.99
PecmC: Peckmantown-----	90	Poor Too acid Water erosion	0.00 0.06	Good		Fair Slope Too acid	0.84 0.99
PecmCc: Peckmantown, extremely stony----	90	Poor Too acid Water erosion	0.00 0.06	Good		Fair Slope Too acid	0.84 0.99
PecuuB: Peckmantown-----	55	Poor Too acid Water erosion	0.00 0.06	Good		Fair Too acid	0.99
Urban land, Peckmantown substratum-----	40	Fair Too acid Water erosion	0.61 0.99	Poor Low strength	0.00	Fair Too acid	0.99
PecuuC: Peckmantown-----	55	Poor Too acid Water erosion	0.00 0.06	Good		Fair Slope Too acid	0.84 0.99
Urban land, Peckmantown substratum-----	40	Fair Too acid Water erosion	0.61 0.99	Poor Low strength	0.00	Fair Too acid	0.99
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
PohA: Pompton-----	80	Poor Organic matter content low Too acid	0.00 0.12	Fair Wetness depth	0.04	Fair Wetness depth Too acid	0.04 0.98
PokuB: Pompton-----	55	Poor Organic matter content low Too acid	0.00 0.12	Fair Wetness depth	0.04	Fair Wetness depth Too acid	0.04 0.98
Urban land, Pompton substratum-----	40	Fair Organic matter content low Too acid Droughty	0.08 0.54 0.80	Fair Wetness depth	0.04	Fair Wetness depth Too acid	0.04 0.98
PrgA: Preakness, very poorly drained-----	90	Poor Organic matter content low Too acid	0.00 0.46	Poor Wetness depth	0.00	Poor Wetness depth Too acid	0.00 0.99
PrkA: Preakness, poorly drained-----	90	Poor Organic matter content low Too acid	0.00 0.32	Poor Wetness depth	0.00	Poor Wetness depth	0.00
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	
RkkcA: Rikers-----	90	Poor Too sandy Wind erosion Droughty Organic matter content low	0.00 0.00 0.05 0.50	Good		Poor Too sandy Hard to reclaim (rock fragments) Rock fragments	0.00 0.00 0.00
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Fair Droughty Organic matter content low Too acid	0.08 0.10 0.50	Good		Fair Rock fragments Too acid	0.68 0.88

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
RoeCc: Rockaway, extremely stony-----	85	Fair Droughty Organic matter content low Too acid	0.08 0.10 0.50	Good		Fair Slope Rock fragments Too acid	0.37 0.68 0.88
RonB: Rockaway-----	55	Fair Droughty Organic matter content low Too acid	0.08 0.10 0.50	Good		Fair Rock fragments Too acid	0.68 0.88
Urban land, Rockaway substratum-----	40	Fair Droughty Too acid Organic matter content low	0.04 0.50 0.75	Good		Fair Rock fragments Too acid	0.68 0.88
RonC: Rockaway-----	55	Fair Droughty Organic matter content low Too acid	0.08 0.10 0.50	Good		Fair Slope Rock fragments Too acid	0.37 0.68 0.88
Urban land, Rockaway substratum-----	40	Fair Droughty Too acid Organic matter content low	0.01 0.50 0.75	Good		Fair Rock fragments Too acid	0.68 0.88
TunkB: Tunkhannock-----	90	Fair Organic matter content low Too acid Droughty	0.12 0.50 0.56	Good		Poor Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.76
TunkC: Tunkhannock-----	90	Fair Organic matter content low Too acid Droughty	0.12 0.50 0.56	Good		Poor Hard to reclaim (rock fragments) Rock fragments Slope Too acid	0.00 0.00 0.37 0.76
TunkD: Tunkhannock-----	95	Fair Organic matter content low Too acid Droughty	0.12 0.50 0.56	Fair Slope	0.50	Poor Slope Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.00 0.76

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
Tunke: Tunkhannock-----	95	Fair Organic matter content low Too acid Droughty	0.12 0.50 0.56	Poor Slope	0.00	Poor Slope Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.00 0.76
TunudB: Tunkhannock-----	60	Fair Organic matter content low Too acid Droughty	0.12 0.50 0.56	Good		Poor Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.76
Udorthents, Tunkhannock substratum-----	40	Poor Droughty Organic matter content low Too acid Water erosion	0.00 0.12 0.50 0.90	Good		Poor Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.76
UcdAt: Udifluvents, frequently flooded-	90	Fair Droughty Too sandy Organic matter content low Too acid	0.02 0.04 0.50 0.54	Fair Wetness depth	0.38	Fair Too sandy Wetness depth	0.04 0.38
UdbonB: Udorthents, Boonton substratum-----	95	Fair Too sandy Too acid Organic matter content low Water erosion	0.20 0.68 0.88 0.90	Good		Fair Too sandy Rock fragments	0.20 0.92
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Fair Organic matter content low Too acid Water erosion	0.01 0.50 0.90	Good		Fair Rock fragments Too acid Hard to reclaim (rock fragments)	0.01 0.76 0.95
UddunB: Udorthents, Dunellen substratum-----	95	Fair Too acid Organic matter content low Water erosion	0.32 0.88 0.90	Good		Fair Rock fragments Too acid	0.32 0.88

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
UdhalB: Udorthents, Haledon substratum-----	90	Fair Too acid Organic matter content low Water erosion	0.68 0.88 0.90	Poor Wetness depth	0.00	Poor Wetness depth Rock fragments Hard to reclaim (rock fragments)	0.00 0.04 0.99
UdhorB: Udorthents, Horseneck substratum-----	95	Fair Too sandy Too acid Organic matter content low Droughty Water erosion	0.22 0.68 0.68 0.82 0.90	Fair Wetness depth	0.38	Fair Too sandy Wetness depth	0.22 0.38
UdkttB: Udorthents, loamy fill substratum----	85	Poor Too clayey Organic matter content low Too acid Water erosion	0.00 0.12 0.50 0.90	Poor Low strength	0.00	Poor Too clayey Hard to reclaim (dense layer) Too acid	0.00 0.00 0.59
UdpecB: Udorthents, Peckmantown substratum-----	95	Fair Too sandy Too acid Droughty Organic matter content low Water erosion	0.28 0.68 0.80 0.88 0.90	Good		Fair Rock fragments Too sandy	0.12 0.28
UdrkkB: Udorthents, Rikers substratum-----	95	Poor Too sandy Organic matter content low Too acid Droughty Water erosion	0.00 0.50 0.68 0.69 0.90	Good		Poor Too sandy Hard to reclaim (rock fragments) Rock fragments	0.00 0.00 0.00
UdtunB: Udorthents, Tunkhannock substratum-----	90	Fair Organic matter content low Too acid Droughty Water erosion	0.12 0.50 0.56 0.90	Good		Poor Hard to reclaim (rock fragments) Rock fragments Too acid	0.00 0.00 0.76

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
URBHGB: Urban land, Bigapple substratum-----	90	Poor Too sandy Droughty Too acid	0.00 0.00 0.50	Fair Shrink-swell	0.93	Poor Too sandy Rock fragments Too acid Hard to reclaim (rock fragments)	0.00 0.24 0.92 0.99
URBONB: Urban land, Boonton substratum-----	90	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Fair Too acid Water erosion	0.08 0.99	Good		Poor Rock fragments Hard to reclaim (rock fragments) Too acid	0.00 0.46 0.50
URDUNB: Urban land, Dunellen substratum-----	90	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
URHORB: Urban land, Horseneck substratum-----	90	Fair Organic matter content low Too acid Droughty Too sandy	0.18 0.32 0.73 0.99	Fair Wetness depth	0.38	Fair Wetness depth Too acid Too sandy	0.38 0.88 0.99
URKNKB: Urban land, Knickerbocker substratum-----	90	Fair Organic matter content low Droughty Too acid	0.50 0.58 0.61	Good		Fair Rock fragments Too acid	0.18 0.99

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
URKTTB: Urban land, loamy fill substratum----	85	Fair Too acid Organic matter content low Water erosion	0.12 0.12 0.90	Poor Low strength	0.00	Poor Hard to reclaim (dense layer) Too acid	0.00 0.59
URPECB: Urban land, Peckmantown substratum-----	90	Fair Too acid Water erosion	0.61 0.99	Poor Low strength	0.00	Fair Too acid	0.99
URPOMB: Urban land, Pompton substratum-----	90	Fair Organic matter content low Droughty Too acid	0.08 0.51 0.54	Fair Wetness depth	0.04	Fair Wetness depth Rock fragments Too acid	0.04 0.82 0.98
USBONB: Urban land, Boonton substratum-----	60	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
Boonton-----	30	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Good		Fair Too acid	0.50
USBONC: Urban land, Boonton substratum-----	60	Fair Too acid Organic matter content low Water erosion	0.08 0.88 0.99	Good		Fair Too acid	0.50
Boonton-----	30	Poor Too acid Organic matter content low Water erosion	0.00 0.88 0.90	Good		Fair Slope Too acid	0.37 0.50

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Fair Too acid Water erosion	0.08 0.99	Good		Poor Rock fragments Hard to reclaim (rock fragments) Too acid	0.00 0.46 0.50
Boonton, red sandstone lowland--	30	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.95
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Fair Too acid Water erosion	0.08 0.99	Good		Poor Rock fragments Hard to reclaim (rock fragments) Too acid	0.00 0.46 0.50
Boonton, red sandstone lowland--	30	Poor Too acid Organic matter content low	0.00 0.04	Good		Poor Rock fragments Hard to reclaim (dense layer) Too acid Slope Hard to reclaim (rock fragments)	0.00 0.29 0.50 0.84 0.95
USDUNB: Urban land, Dunellen substratum-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
Dunellen-----	30	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88
USDUNC: Urban land, Dunellen substratum-----	60	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Too acid	0.32 0.88

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
USDUNC: (cont.) Dunellen-----	30	Fair Too acid Organic matter content low	0.32 0.88	Good		Fair Rock fragments Slope Too acid	0.32 0.37 0.88
USYRRB: Urban land, Yalesville substratum-----	50	Poor Droughty Too acid Depth to bedrock	0.00 0.54 0.71	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
Yalesville-----	30	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Poor Too sandy Too acid	0.00 0.80	Poor Wetness depth	0.00	Poor Too sandy Wetness depth Organic matter content high	0.00 0.00 0.00
WATER: Water-----	100	Not rated		Not rated		Not rated	
YamnB: Yalesville-----	85	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
YamnBc: Yalesville, extremely stony----	85	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
YamnCc: Yalesville, extremely stony----	90	Fair Too acid Depth to bedrock Droughty	0.54 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Slope Too acid	0.50 0.71 0.84 0.98

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
YaobBc: Yalesville, extremely stony----	40	Fair Too acid Depth to bedrock Droughty	0.54 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.68 0.71 0.98
Boonton, extremely stony-----	30	Poor Too acid Organic matter content low	0.00 0.88	Good		Fair Too acid	0.50
Holyoke, extremely stony-----	30	Poor Depth to bedrock Organic matter content low Droughty Too acid Water erosion	0.00 0.12 0.35 0.50 0.99	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments Too acid	0.00 0.24 0.32
YaohEh: Yalesville, very rocky-----	50	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Slope Depth to bedrock	0.00 0.00	Poor Slope Rock fragments Depth to bedrock Too acid	0.00 0.50 0.71 0.98
Holyoke, very rocky-	30	Poor Depth to bedrock Organic matter content low Droughty Too acid	0.00 0.12 0.35 0.50	Poor Depth to bedrock Slope	0.00 0.00	Poor Slope Depth to bedrock Rock fragments Too acid	0.00 0.00 0.24 0.32
YaorCc: Yalesville, extremely stony----	80	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Slope Too acid	0.50 0.71 0.84 0.98
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98

Table 15. Source of Reclamation Material, Roadfill, and Topsoil--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
YaotuB: (cont.) Urban land, Yalesville substratum-----	40	Poor Droughty Too acid Depth to bedrock	0.00 0.54 0.71	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
YaotuC: Yalesville-----	55	Fair Too acid Depth to bedrock Droughty	0.50 0.71 0.75	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Slope Too acid	0.50 0.71 0.84 0.98
Urban land, Yalesville substratum-----	40	Poor Droughty Too acid Depth to bedrock	0.00 0.54 0.71	Poor Depth to bedrock	0.00	Fair Rock fragments Depth to bedrock Too acid	0.50 0.71 0.98
YaouA: Yalesville, red sandstone lowland--	95	Fair Droughty Too acid Depth to bedrock	0.34 0.50 0.71	Poor Depth to bedrock	0.00	Fair Too acid Depth to bedrock	0.32 0.71
YaouB: Yalesville, red sandstone lowland--	95	Fair Droughty Too acid Depth to bedrock	0.34 0.50 0.71	Poor Depth to bedrock	0.00	Fair Too acid Depth to bedrock	0.32 0.71
YaovB: Yalesville, red sandstone lowland--	55	Fair Droughty Too acid Depth to bedrock	0.34 0.50 0.71	Poor Depth to bedrock	0.00	Fair Too acid Depth to bedrock	0.32 0.71
Urban land, Yalesville substratum-----	40	Not rated		Poor Depth to bedrock	0.00	Not rated	

Table 16. Ponds and Embankments

(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
BhgA: Bigapple-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
BhguA: Bigapple-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
Urban land, Bigapple substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
BoeBc: Boonton, terminal moraine, extremely stony-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
BoeCc: Boonton, terminal moraine, extremely stony-----	80	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
BoeDc: Boonton, terminal moraine, extremely stony-----	80	Very limited Seepage Slope	1.00 0.28	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
BogB: Boonton-----	80	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BogBc: Boonton, extremely stony-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BogC: Boonton-----	90	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BogCc: Boonton, extremely stony-----	85	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
BogDc: Boonton, extremely stony-----	95	Very limited Seepage Slope	1.00 0.28	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BooB: Boonton, red sandstone lowland--	95	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
BooBc: Boonton, red sandstone lowland, extremely stony----	95	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
BooC: Boonton, red sandstone lowland--	95	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
BooCc: Boonton, red sandstone lowland, extremely stony----	95	Somewhat limited Seepage Slope	0.70 0.01	Not limited		Very limited Depth to water	1.00
BosB: Boonton-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Udorthents, Boonton substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BotB: Boonton, red sandstone lowland--	60	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Very limited Depth to water	1.00
BotC: Boonton, red sandstone lowland--	60	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Udorthents, Boonton red sandstone lowland substratum-	40	Not limited		Not limited		Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
BouB: Boonton-----	50	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BouC: Boonton-----	50	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BouD: Boonton-----	60	Very limited Seepage Slope	1.00 0.12	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
BowrB: Boonton, red sandstone lowland--	50	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Urban land, Boonton red sandstone lowland substratum--	40	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
BowrC: Boonton, red sandstone lowland--	50	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Urban land, Boonton red sandstone lowland substratum--	40	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
BowtB: Boonton, terminal moraine-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.02	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
BowtC: Boonton, terminal moraine-----	40	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.02	Very limited Depth to water	1.00
BowtD: Boonton, terminal moraine-----	40	Very limited Seepage Slope	1.00 0.28	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
Urban land, Boonton substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.02	Very limited Depth to water	1.00
CatcA: Catden-----	85	Very limited Seepage	1.00	Very limited Organic matter content Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 1.00 0.01	Somewhat limited Cutbanks cave	0.10
CatnA: Catden-----	80	Very limited Seepage	1.00	Very limited Organic matter content Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 1.00 0.01	Somewhat limited Cutbanks cave	0.10
Natchaug-----	15	Very limited Seepage	1.00	Very limited Organic matter content Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 1.00 0.01	Somewhat limited Cutbanks cave	0.10
DunB: Dunellen-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
DunC: Dunellen-----	85	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
DunD: Dunellen-----	90	Very limited Seepage Slope	1.00 0.04	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
DusB: Dunellen-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
Udorthents, Dunellen substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
DusC: Dunellen-----	60	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
Udorthents, Dunellen substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
DuuB: Dunellen-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.31	Very limited Depth to water	1.00
Urban land, Dunellen substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
DuuC: Dunellen-----	60	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.31	Very limited Depth to water	1.00
Urban land, Dunellen substratum-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
FmhAt: Fluvaquents, loamy, frequently flooded-	80	Very limited Seepage	1.00	Very limited Ponding Depth to saturated zone Piping	1.00 1.00 1.00	Somewhat limited Cutbanks cave	0.10
GrpA: Great Piece-----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Piping Ponding	1.00 1.00 1.00	Very limited Cutbanks cave	1.00
HanB: Haledon-----	85	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave Slow refill	1.00 0.28

Table 16. Ponds and Embankments--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
HanBc: Haledon, extremely stony-----	85	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave Slow refill	1.00 0.28
HanCc: Haledon, extremely stony-----	85	Somewhat limited Seepage Slope	0.72 0.01	Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave Slow refill	1.00 0.28
HasB: Haledon-----	60	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave Slow refill	1.00 0.28
Urban land, Haledon substratum-----	30	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
HasC: Haledon-----	60	Somewhat limited Seepage Slope	0.72 0.01	Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave Slow refill	1.00 0.28
Urban land, Haledon substratum-----	30	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
HctBc: Hasbrouck, extremely stony-----	85	Very limited Seepage	1.00	Very limited Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 0.02	Very limited Cutbanks cave	1.00
HkrnB: Hinckley-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
HkrnC: Hinckley-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
HkruB: Hinckley-----	55	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
Urban land, Hinckley substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
HkruC: Hinckley-----	50	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
Urban land, Hinckley substratum-----	40	Very limited Seepage	1.00	Not rated		Very limited Depth to water	1.00
HokCh: Holyoke, very rocky-	85	Very limited Depth to bedrock	1.00	Very limited Thin layer Piping	1.00 1.00	Very limited Depth to water	1.00
HomC: Holyoke-----	80	Very limited Depth to bedrock Slope	1.00 0.01	Very limited Thin layer Piping	1.00 1.00	Very limited Depth to water	1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
HotA: Horseneck-----	85	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.08	Very limited Cutbanks cave	1.00
HotuB: Horseneck-----	55	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.08	Very limited Cutbanks cave	1.00
Urban land, Horseneck substratum-----	40	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.09	Very limited Cutbanks cave	1.00
KneA: Knickerbocker-----	90	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54
KneB: Knickerbocker-----	90	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54
KneC: Knickerbocker-----	95	Very limited Seepage Slope	1.00 0.01	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54

Table 16. Ponds and Embankments--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
KnuB: Knickerbocker-----	55	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54
Urban land, Knickerbocker substratum-----	40	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54
NazA: Natchaug-----	85	Very limited Seepage	1.00	Very limited Organic matter content Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 1.00 0.01	Somewhat limited Cutbanks cave	0.10
PbpAt: Parsippany, frequently flooded-	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Ponding Piping Seepage	1.00 1.00 0.28 0.11	Very limited Cutbanks cave	1.00
PecmB: Peckmantown-----	90	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00
PecmBc: Peckmantown, extremely stony----	90	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00
PecmC: Peckmantown-----	90	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00
PecmCc: Peckmantown, extremely stony----	90	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00
PecuuB: Peckmantown-----	55	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
PecuuB: (cont.) Urban land, Peckmantown substratum-----	40	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00
PecuuC: Peckmantown-----	55	Very limited Seepage	1.00	Very limited Seepage Piping	1.00 1.00	Very limited Depth to water	1.00
Urban land, Peckmantown substratum-----	40	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00
PHG: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
PohA: Pompton-----	80	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.34	Very limited Cutbanks cave	1.00
PokuB: Pompton-----	55	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.34	Very limited Cutbanks cave	1.00
Urban land, Pompton substratum-----	40	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.34	Very limited Cutbanks cave	1.00
PrgA: Preakness, very poorly drained----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Ponding Seepage	1.00 1.00 0.42	Very limited Cutbanks cave	1.00
PrkA: Preakness, poorly drained-----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.42	Very limited Cutbanks cave	1.00
QY: Pits, quarry-----	100	Not rated		Not rated		Not rated	

Table 16. Ponds and Embankments--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
RkkcA: Rikers-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
RNAAC: Rock outcrop-----	100	Not rated		Not rated		Not rated	
RoeBc: Rockaway, extremely stony-----	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
RoeCc: Rockaway, extremely stony-----	85	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
RonB: Rockaway-----	55	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
Urban land, Rockaway substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
RonC: Rockaway-----	55	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
Urban land, Rockaway substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.03	Very limited Depth to water	1.00
TunkB: Tunkhannock-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
TunkC: Tunkhannock-----	90	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
TunkD: Tunkhannock-----	95	Very limited Seepage Slope	1.00 0.12	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
TunkE: Tunkhannock-----	95	Very limited Seepage Slope	1.00 0.88	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
TunudB: Tunkhannock-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
TunudB: (cont.) Udorthents, Tunkhannock substratum-----	40	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
UcdAt: Udifluvents, frequently flooded-	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.10	Very limited Cutbanks cave	1.00
UdbonB: Udorthents, Boonton substratum-----	95	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	95	Not limited		Not limited		Very limited Depth to water	1.00
UddunB: Udorthents, Dunellen substratum-----	95	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
UdhalB: Udorthents, Haledon substratum-----	90	Not limited		Very limited Depth to saturated zone	1.00	Very limited Cutbanks cave	1.00
UdhorB: Udorthents, Horseneck substratum-----	95	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.08	Very limited Cutbanks cave	1.00
UdkttB: Udorthents, loamy fill substratum----	85	Not limited		Somewhat limited Hard to pack	0.51	Very limited Depth to water	1.00
UdpecB: Udorthents, Peckmantown substratum-----	95	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00
UdrkkB: Udorthents, Rikers substratum-----	95	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
UdtunB: Udorthents, Tunkhannock substratum-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.75	Very limited Depth to water	1.00
URBHGB: Urban land, Bigapple substratum-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.91	Very limited Depth to water	1.00
URBONB: Urban land, Boonton substratum-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
URBOOB: Urban land, Boonton red sandstone lowland substratum-	90	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
URDUNB: Urban land, Dunellen substratum-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
URHORB: Urban land, Horseneck substratum-----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.09	Very limited Cutbanks cave	1.00
URKNKB: Urban land, Knickerbocker substratum-----	90	Very limited Seepage	1.00	Somewhat limited Depth to saturated zone Seepage	0.09 0.02	Very limited Cutbanks cave Depth to saturated zone	1.00 0.54
URKTTB: Urban land, loamy fill substratum----	85	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
URPECB: Urban land, Peckmantown substratum-----	90	Very limited Seepage	1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
URPOMB: Urban land, Pompton substratum-----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.34	Very limited Cutbanks cave	1.00
USBONB: Urban land, Boonton substratum-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Boonton-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
USBONC: Urban land, Boonton substratum-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
Boonton-----	30	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00
USBOOB: Urban land, Boonton red sandstone lowland substratum-	60	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Boonton, red sandstone lowland--	30	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
USBOOC: Urban land, Boonton red sandstone lowland substratum-	60	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Boonton, red sandstone lowland--	30	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
USDUNB: Urban land, Dunellen substratum-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
Dunellen-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
USDUNC: Urban land, Dunellen substratum-----	60	Very limited Seepage	1.00	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
USDUNC: (cont.) Dunellen-----	30	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.11	Very limited Depth to water	1.00
USYRRB: Urban land, Yalesville substratum-----	50	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Yalesville-----	30	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
WaakAt: Wallkill, frequently flooded-----	90	Very limited Seepage	1.00	Very limited Organic matter content Depth to saturated zone Piping Ponding Seepage	1.00 1.00 1.00 1.00 0.42	Very limited Cutbanks cave	1.00
WATER: Water-----	100	Not limited		Not rated		Not rated	
YamnB: Yalesville-----	85	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
YamnBc: Yalesville, extremely stony----	85	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
YamnCc: Yalesville, extremely stony----	90	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
YaobBc: Yalesville, extremely stony----	40	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Boonton, extremely stony-----	30	Very limited Seepage	1.00	Somewhat limited Seepage	0.08	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
YaobBc: (cont.) Holyoke, extremely stony-----	30	Very limited Depth to bedrock	1.00	Very limited Thin layer Piping	1.00 1.00	Very limited Depth to water	1.00
YaohEh: Yalesville, very rocky-----	50	Very limited Seepage Slope Depth to bedrock	1.00 0.97 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Holyoke, very rocky-	30	Very limited Depth to bedrock Slope	1.00 0.97	Very limited Thin layer Piping	1.00 1.00	Very limited Depth to water	1.00
YaorCc: Yalesville, extremely stony----	80	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YaotuB: Yalesville-----	55	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Urban land, Yalesville substratum-----	40	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
YaotuC: Yalesville-----	55	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
Urban land, Yalesville substratum-----	40	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.01	Very limited Depth to water	1.00
YaouA: Yalesville, red sandstone lowland--	95	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.03	Very limited Depth to water	1.00
YaouB: Yalesville, red sandstone lowland--	95	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.03	Very limited Depth to water	1.00

Table 16. Ponds and Embankments--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
YaovB: Yalesville, red sandstone lowland--	55	Very limited Seepage Depth to bedrock	1.00 0.81	Somewhat limited Thin layer Seepage	0.81 0.03	Very limited Depth to water	1.00
Urban land, Yalesville substratum-----	40	Very limited Seepage Depth to bedrock	1.00 0.81	Not rated		Very limited Depth to water	1.00

Table 17. Engineering 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	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
<b>BhgA:</b>												
Bigapple-----	0-3	Loamy sand	SM	A-2-4	0	0	100	87-90	68-78	24-33	0-30	1-8
	3-17	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	17-26	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	26-38	Loamy sand	SM	A-2-4	0	0	84-87	84-87	65-75	23-32	16-33	1-8
	38-60	Gravelly loamy sand	SM	A-2-4	0	0	79-81	71-77	55-66	20-28	16-33	1-8
<b>BhguA:</b>												
Bigapple-----	0-3	Loamy sand	SM	A-2-4	0	0	100	87-90	68-78	24-33	0-30	1-8
	3-17	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	17-26	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	26-38	Loamy sand	SM	A-2-4	0	0	84-87	84-87	65-75	23-32	16-33	1-8
	38-60	Gravelly loamy sand	SM	A-2-4	0	0	79-81	71-77	55-66	20-28	16-33	1-8
<b>Urban land, Bigapple substratum-----</b>												
	0-12	Material			---	---	---	---	---	---	---	---
	12-26	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	26-38	Loamy sand	SM	A-2-4	0	0	84-87	84-87	65-75	23-32	16-33	1-8
	38-60	Gravelly loamy sand	SM	A-2-4	0	0	79-81	71-77	55-66	20-28	16-33	1-8
<b>BoeBc:</b>												
Boonton, terminal moraine, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-4, A-2-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-4, A-2-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SC-SM	A-2-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SC-SM	A-4, A-2-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BoeCc: Boonton, terminal moraine, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-4, A-2-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-4, A-2-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SC-SM	A-4, A-2-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SC-SM	A-4, A-2-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12
BoeDc: Boonton, terminal moraine, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-4, A-2-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-4, A-2-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SC-SM	A-4, A-2-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SC-SM	A-4, A-2-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12

Table 17. Engineering 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	
BogB: Boonton-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	SC-SM, ML, CL-ML	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML, SC-SM	A-4	0	0	70-100	70-100	63-96	47-73	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	81-100	81-100	73-96	52-71	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	84-100	84-100	76-97	59-77	20-27	5-10
	30-40	Gravelly fine sandy loam	CL, SC, CL- ML, SC-SM	A-2, A-4	0	0	70-100	70-100	60-91	32-53	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0	0-7	76-100	76-100	66-94	34-52	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	79-100	79-100	67-90	20-31	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	0-7	78-100	78-100	65-89	21-31	0-21	NP-4

Table 17. Engineering 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	
BogBc: Boonton, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	SC-SM, CL-ML, ML	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML, SC-SM	A-4	0	0	70-100	70-100	63-96	47-73	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	81-100	81-100	73-96	52-71	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	SC-SM, CL, CL-ML	A-4	0	0	84-100	84-100	76-97	59-77	20-27	5-10
	30-40	Gravelly fine sandy loam	SC-SM, CL, CL-ML, SC	A-2, A-4	0	0	70-100	70-100	60-91	32-53	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM, CL-ML, CL	A-2, A-4	0	0-7	76-100	76-100	66-94	34-52	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	79-100	79-100	67-90	20-31	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	0-7	78-100	78-100	65-89	21-31	0-21	NP-4

Table 17. Engineering 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	
BogC: Boonton-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML, SC-SM	A-4	0	0	70-100	70-100	63-96	47-73	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	81-100	81-100	73-96	52-71	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	84-100	84-100	76-97	59-77	20-27	5-10
	30-40	Gravelly fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0	0	70-100	70-100	60-91	32-53	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0	0-7	76-100	76-100	66-94	34-52	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	79-100	79-100	67-90	20-31	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	0-7	78-100	78-100	65-89	21-31	0-21	NP-4

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BogCc: Boonton, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML, SC-SM	A-4	0	0	70-100	70-100	63-96	47-73	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	81-100	81-100	73-96	52-71	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	SC-SM, CL-ML, CL	A-4	0	0	84-100	84-100	76-97	59-77	20-27	5-10
	30-40	Gravelly fine sandy loam	SC-SM, SC, CL-ML, CL	A-2, A-4	0	0	70-100	70-100	60-91	32-53	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC-SM, SC, CL, CL-ML	A-2, A-4	0	0-7	76-100	76-100	66-94	34-52	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	79-100	79-100	67-90	20-31	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	0-7	78-100	78-100	65-89	21-31	0-21	NP-4

Table 17. Engineering 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	
BogDc: Boonton, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML, SC-SM	A-4	0	0	70-100	70-100	63-96	47-73	22-32	3-8
	8-17	Silt loam	ML	A-4	0	0	81-100	81-100	73-96	52-71	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	84-100	84-100	76-97	59-77	20-27	5-10
	30-40	Gravelly fine sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0	0	70-100	70-100	60-91	32-53	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	CL, CL-ML, SC, SC-SM	A-2, A-4	0	0-7	76-100	76-100	66-94	34-52	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	79-100	79-100	67-90	20-31	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	0-7	78-100	78-100	65-89	21-31	0-21	NP-4

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BooB: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BooBc: Boonton, red sandstone lowland, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BooC: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BooCc: Boonton, red sandstone lowland, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SC-SM, SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
BosB: Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-32	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	64-72	47-54	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-26	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-28	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-28	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-28	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-22	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-22	NP-4

Table 17. Engineering 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	
BosB: (cont.) Udorthents, Boonton substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-45	3-18
	12-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-22	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-22	NP-4
BotB: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
Udorthents, Boonton red sandstone lowland substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-45	3-18
	12-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BotC: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
Udorthents, Boonton red sandstone lowland substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-45	3-18
	12-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BouB: Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	63-71	47-54	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4

Table 17. Engineering 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	
BouC: Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	63-71	47-54	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
BouD: Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	63-71	47-54	22-32	3-8
	8-17	Silt loam	ML, CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4

Table 17. Engineering 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	
BowrB: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
Urban land, Boonton red sandstone lowland substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-67	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BowrC: Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
Urban land, Boonton red sandstone lowland substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-67	Gravelly loam, silt loam, gravelly fine sandy loam	SM, SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BowtB: Boonton, terminal moraine-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-2-4, A-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-2-4, A-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SM, SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-42	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	42-60	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
BowtC: Boonton, terminal moraine-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-2-4, A-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-2-4, A-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SM, SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-42	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	42-60	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
BowtD: Boonton, terminal moraine-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Sandy loam	SM	A-2-4, A-4	0-7	0-15	62-96	60-96	45-81	23-47	0-41	NP-7
	2-12	Sandy loam	SM	A-2-4, A-4	0-7	0-14	63-96	62-96	46-81	24-47	0-26	NP-7
	12-24	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	24-42	Gravelly sandy loam	SM, SC-SM	A-2-4, A-4	0-6	0-19	66-97	64-97	46-84	22-47	15-32	1-13
	42-60	Fine sandy loam	SM, SC-SM	A-4	0-6	0-19	66-97	64-97	55-97	25-51	15-30	1-12
Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-42	Sandy loam	SM, SC-SM	A-2-4, A-4	0-7	0-21	62-96	61-96	44-83	22-48	15-33	1-13
	42-60	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
CatcA: Catden-----	0-3	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-16	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	16-24	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	24-32	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	32-53	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	53-64	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	64-72	Sandy loam	SM	A-4	0	0	91-100	78-100	58-82	31-47	0-22	NP-6
CatnA: Catden-----	0-3	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-16	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	16-24	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	24-32	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	32-53	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	53-64	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	64-72	Sandy loam	SM	A-4	0	0	91-100	78-100	58-82	31-47	0-22	NP-6
Natchaug-----	0-5	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	5-18	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	18-40	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	40-60	Sandy loam	SM	A-4	0	0	100	100	74-82	39-47	0-22	NP-6

Table 17. Engineering 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	
DunB: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
DunC: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SM, SC, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
DunD: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
DusB: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
Udorthents, Dunellen substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-43	3-18
	12-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10

Table 17. Engineering 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	
DusC: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SM, SC, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
Udorthents, Dunellen substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-43	3-18
	12-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
DuuB: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Stratified gravelly sand to sand to loamy sand	SM, SP-SM	A-1, A-2	0	0-10	70-80	40-65	30-55	10-25	15-20	NP

Table 17. Engineering 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	
DuuB: (cont.) Urban land, Dunellen substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
DuuC: Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-2-4, A-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Stratified gravelly sand to sand to loamy sand	SM, SP-SM	A-1, A-2	0	0-10	70-80	40-65	30-55	10-25	15-20	NP
Urban land, Dunellen substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 2-4, A-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-2-4, A-2	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10

Table 17. Engineering 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	
FmhAt: Fluvaquents, loamy, frequently flooded-----	0-5	Loam, silt loam	SM, ML, CL	A-4, A-7-6	0	0-5	95-100	74-100	60-100	43-78	22-45	3-18
	5-12	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	76-100	68-100	55-87	22-38	7-19
	12-18	Sandy clay loam	CL, SC	A-6, A-7-6, A-2-6	0	0-11	90-100	57-100	44-92	26-60	29-44	13-25
	18-24	Sandy clay loam	CL, SC	A-6, A-7-6, A-2-6	0	0-11	90-100	57-100	44-92	26-60	29-44	13-25
	24-60	Sandy loam	CL, SM, SC-SM	A-1-b, A-4	0-1	0-10	90-100	59-100	42-81	24-51	16-27	2-10
GrpA: Great Piece-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-7	Loam	ML	A-6, A-7-5, A-4	0	0	100	100	81-100	57-77	24-52	3-18
	7-12	Sandy clay loam	CL	A-6, A-7-6	0	0	100	100	86-94	54-62	36-46	18-25
	12-20	Fine sandy loam	SC	A-4, A-6	0	0	100	100	80-95	24-39	15-32	1-13
	20-29	Loamy fine sand	SM	A-2-4	0	0	100	100	93-100	30-41	15-27	1-10
	29-33	Loamy fine sand	SM	A-2-4	0	0	100	100	94-100	22-33	15-27	1-10
	33-37	Silt loam	ML	A-4	0	0	100	100	98-100	73-93	16-36	2-17
	37-50	Very fine sandy loam	ML	A-4	0	0	100	100	98-100	67-78	15-27	1-10
	50-85	Silt loam	CL-ML	A-4	0	0	100	100	94-100	81-100	16-36	2-17
HanB: Haledon-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-8	Silt loam	CL, CL-ML, ML	A-4	0	0-10	84-90	72-90	66-88	53-72	26-37	7-12
	8-15	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	15-22	Silt loam	CL-ML, SC-SM, CL, SC	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	22-27	Loam	SC-SM, CL, SC	A-2, A-6	0	0-14	83-100	61-100	48-89	33-65	19-31	3-12
	27-30	Loam	SC-SM, CL, SC	A-4, A-2, A- 2-4	0	0-14	83-100	61-100	48-90	33-65	19-31	3-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2, A-4, A- 2-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6

Table 17. Engineering 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	
HanBc: Haledon, extremely stony	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-8	Silt loam	CL, CL-ML, ML	A-4	0	0-10	84-90	72-90	66-88	53-72	26-37	7-12
	8-15	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	15-22	Silt loam	CL-ML, SC-SM, SC, CL	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	22-27	Loam	SC-SM, SC, CL	A-2, A-6	0	0-14	83-100	61-100	48-89	33-65	19-31	3-12
	27-30	Loam	SC-SM, SC, CL	A-4, A-2, A-2-4	0	0-14	83-100	61-100	48-90	33-65	19-31	3-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2, A-4, A-2-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6
HanCc: Haledon, extremely stony	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-8	Silt loam	CL, CL-ML, ML	A-4	0	0-10	84-90	72-90	66-88	53-72	26-37	7-12
	8-15	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	15-22	Silt loam	CL-ML, SC-SM, SC, CL	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	22-27	Loam	SC-SM, SC, CL	A-2, A-6	0	0-14	83-100	61-100	48-89	33-65	19-31	3-12
	27-30	Loam	SC-SM, SC, CL	A-4, A-2, A-2-4	0	0-14	83-100	61-100	48-90	33-65	19-31	3-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2, A-4, A-2-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HasB: Haledon-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-8	Silt loam	CL, CL-ML, ML	A-4	0	0-10	84-90	72-90	66-88	53-72	26-37	7-12
	8-15	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	15-22	Silt loam	CL-ML, SC-SM, SC, CL	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	22-27	Loam	SC-SM, SC, CL	A-2, A-6	0	0-14	83-100	61-100	48-89	33-65	19-31	3-12
	27-30	Loam	SC-SM, SC, CL	A-4, A-2, A- 2-4	0	0-14	83-100	61-100	48-90	33-65	19-31	3-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2, A-4, A- 2-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6
Urban land, Haledon substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-30	Silt loam	CL-ML, SC-SM, SC, CL	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2-4, A-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6
HasC: Haledon-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-8	Silt loam	CL, CL-ML, ML	A-4	0	0-10	84-90	72-90	66-88	53-72	26-37	7-12
	8-15	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	15-22	Silt loam	CL-ML, SC-SM, SC, CL	A-4	0	0-14	87-100	65-100	58-95	48-80	23-31	7-12
	22-27	Loam	SC-SM, SC, CL	A-2, A-6	0	0-14	83-100	61-100	48-89	33-65	19-31	3-12
	27-30	Loam	SC-SM, SC, CL	A-4, A-2, A- 2-4	0	0-14	83-100	61-100	48-90	33-65	19-31	3-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2, A-4, A- 2-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6

Table 17. Engineering 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	
HasC: (cont.) Urban land, Haledon substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-30	Silt loam	CL-ML, SC-SM, CL	A-4	0	0-16	86-100	61-100	54-95	44-78	23-31	7-12
	30-60	Gravelly fine sandy loam, sandy loam, loam	SC-SM, SM	A-2-4, A-4	0	0-10	80-89	59-89	52-84	27-45	17-24	2-6
HctBc: Hasbrouck, extremely stony	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-2	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-5	Silt loam	ML	A-4, A-6	0	0	100	100	91-100	75-85	31-45	9-17
	5-10	Gravelly loam	CL-ML, ML, SM	A-4	0	0	79-93	47-93	38-92	26-68	0-41	NP-13
	10-17	Loam	CL-ML, ML, SM	A-4	0	0	79-100	64-100	59-98	35-62	25-37	4-10
	17-25	Loam, clay loam	CL	A-6	0	0	100	100	91-100	71-81	29-39	13-21
	25-34	Loam, clay loam	CL	A-6	0	0	100	100	96-100	75-85	29-39	13-21
	34-36	Gravelly loam, gravelly fine sandy loam, gravelly sandy loam	ML, SM, SC-SM	A-4	0	0-6	73-100	59-100	53-99	36-70	16-26	2-10
	36-39	Loam, very gravelly sandy loam	CL	A-4	0	0-7	100	100	90-100	63-73	20-30	6-13
	39-50	Fine sandy loam, gravelly sandy loam, very gravelly sandy loam	SM, SC-SM	A-2, A-4	0	0-6	86-100	71-100	60-94	28-50	16-26	2-10
	50-60	Fine sandy loam	SM	A-2-4, A-4	0	0	80-100	67-100	56-100	24-54	0-30	NP-13

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
HkrnB: Hinckley-----	0-4	Sandy loam	SM, ML	A-4	0	0	100	96-100	73-80	49-55	20-36	1-4
	4-10	Gravelly sandy loam, sandy loam	GM, SM	A-4	0	0	71-77	71-77	54-62	36-42	20-36	1-4
	10-15	Very gravelly sandy loam, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	GM	A-1, A-1-a	0	0	37-42	32-37	22-27	14-18	0-24	NP-4
	15-26	Extremely gravelly loamy sand, very gravelly sand, loamy fine sand, very gravelly loamy coarse sand, very gravelly loamy sand	GP	A-1-a	0	4-6	21-24	10-14	8-11	3-4	0-22	NP-2
	26-60	Extremely gravelly coarse sand, extremely gravelly sand	GP	A-1-a	0	10-11	18-22	11-15	8-12	1-2	0-18	NP-1

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
HkrnC: Hinckley-----	0-2	Sandy loam	ML	A-4	0	0	100	96-100	73-80	49-55	17-34	1-4
	2-5	Gravelly loamy sand, gravelly sandy loam, sandy loam	SM	A-4	0	0	96-100	89-96	68-77	45-52	17-34	1-4
	5-7	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	SM	A-2-4	0	0	75-78	58-64	41-47	26-31	0-26	NP-4
	7-19	Gravelly loamy sand, very gravelly sand, loamy fine sand, very gravelly loamy coarse sand, very gravelly loamy sand	GP-GM	A-1-a	0	0	31-35	31-35	19-22	10-12	0-22	NP-2
	19-26	Coarse sand, extremely gravelly sand	SP	A-1-a	0	0	86-89	23-26	5-7	2-3	0-18	NP-1
	26-36	Gravelly sand	SP-SM	A-3	0	0	75-78	72-75	54-59	4-6	0-18	NP-1
	36-60	Stratified very gravelly sand to cobbly coarse sand, loamy fine sand, cobbly sand, very gravelly sand	GP, GP-GM, SP, SP-SM	A-1-b	0	39-40	51-59	51-59	11-15	4-6	0-18	NP-1

Table 17. Engineering 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	
HkruB: Hinckley-----	0-4	Sandy loam	ML	A-4	0	0	100	96-100	73-80	49-55	20-36	1-4
	4-10	Gravelly sandy loam, sandy loam	GM, SM	A-4	0	0	71-77	71-77	54-62	36-42	20-36	1-4
	10-15	Very gravelly sandy loam, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	GM	A-1, A-1-a	0	0	37-42	32-37	22-27	14-18	0-24	NP-4
	15-26	Extremely gravelly loamy sand, very gravelly sand, loamy fine sand, very gravelly loamy coarse sand, very gravelly loamy sand	GP	A-1-a	0	4-6	21-24	10-14	8-11	3-4	0-22	NP-2
	26-60	Extremely gravelly coarse sand, extremely gravelly sand	GP	A-1-a	0	10-11	18-22	11-15	8-12	1-2	0-18	NP-1
Urban land, Hinckley substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-26	Very gravelly sandy loam, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	GM	A-1, A-1-a	0	0	37-42	32-37	22-27	14-18	0-24	NP-4
	26-60	Extremely gravelly coarse sand, extremely gravelly sand	GP	A-1-a	0	10-11	18-22	11-15	8-12	1-2	0-18	NP-1

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
HkruC: Hinckley-----	0-2	Sandy loam	ML	A-4	0	0	100	96-100	73-80	49-55	20-34	1-4
	2-5	Gravelly loamy sand, gravelly sandy loam, sandy loam	SM	A-4	0	0	96-100	89-96	68-77	45-52	20-34	1-4
	5-7	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	SM	A-2-4	0	0	75-85	58-70	41-52	26-34	0-28	NP-4
	7-19	Gravelly loamy sand, very gravelly sand, loamy fine sand, very gravelly loamy coarse sand, very gravelly loamy sand	GP-GM	A-1-a	0	0	31-35	31-35	19-22	10-12	0-22	NP-2
	19-26	Coarse sand, extremely gravelly sand	SP	A-1-a	0	0	86-89	23-26	5-7	2-3	0-18	NP-1
	26-36	Gravelly sand	SP, SP-SM	A-3	0	0	75-78	72-75	54-59	4-6	0-18	NP-1
	36-60	Stratified very gravelly sand to cobbly coarse sand, loamy fine sand, cobbly sand, very gravelly sand	GP, GP-GM, SP, SP-SM	A-1-b	0	39-40	51-59	51-59	11-15	4-6	0-18	NP-1

Table 17. Engineering 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	
HkruC: (cont.) Urban land, Hinckley substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-19	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand, gravelly sandy loam	SM	A-2-4	0	0	75-85	58-70	41-52	26-34	0-28	NP-4
	19-26	Coarse sand, extremely gravelly sand	SP	A-1-a	0	0	86-89	23-26	5-7	2-3	0-18	NP-1
	26-36	Gravelly sand	SP, SP-SM	A-3	0	0	75-78	72-75	54-59	4-6	0-18	NP-1
	36-60	Stratified very gravelly sand to cobbly coarse sand, loamy fine sand, cobbly sand, very gravelly sand	GP, GP-GM, SP, SP-SM	A-1-b	0	39-40	51-59	51-59	11-15	4-6	0-18	NP-1
HokCh: Holyoke, very rocky-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Silt loam	CL-ML, CL, SC-SM, ML	A-4	0	0	93-100	83-95	73-95	56-79	23-43	4-17
	5-14	Silt loam	CL-ML, CL	A-4	0	0	89-93	79-88	68-88	53-74	18-36	4-17
	14-18	Loam	CL-ML, CL, SC	A-4	0	0-8	74-96	53-96	46-96	28-67	18-36	4-17
	>18	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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							
						Pct	Pct					Pct	
HomC: Holyoke-----	In												
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP	
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP	
	3-5	Silt loam	CL-ML, CL, SC-SM, ML	A-4	0	0	93-100	83-95	73-95	56-79	23-43	4-17	
	5-14	Silt loam	CL-ML, CL	A-4	0	0	89-93	79-88	68-88	53-74	18-36	4-17	
	14-18	Loam	CL-ML, CL, SC	A-4	0	0-8	74-96	53-96	46-96	28-67	18-36	4-17	
	>18	Bedrock			---	---	---	---	---	---	---	---	
Rock outcrop----	---	Bedrock			---	---	---	---	---	---	---	---	
HotA: Horseneck-----													
	0-2	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-29	NP-6	
	2-14	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-24	NP-6	
	14-22	Sandy loam	SM	A-4	0	0	100	100	70-77	40-47	0-24	NP-6	
	22-27	Loamy sand	SM	A-2-4	0	0	100	100	76-83	26-33	0-22	NP-4	
	27-44	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4	
	44-60	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4	
HotuB: Horseneck-----													
	0-2	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-29	NP-6	
	2-14	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-24	NP-6	
	14-22	Sandy loam	SM	A-4	0	0	100	100	70-77	40-47	0-24	NP-6	
	22-27	Loamy sand	SM	A-2-4	0	0	100	100	76-83	26-33	0-22	NP-4	
	27-44	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4	
	44-60	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4	
Urban land, Horseneck substratum----													
	0-12	Material			---	---	---	---	---	---	---	---	
	12-44	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-24	NP-6	
	44-55	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4	

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
KneA: Knickerbocker---	0-8	Fine sandy loam	SM	A-1-b, A-2, A-4, A-2-4	0	0	77-100	55-100	48-95	23-49	25-37	2-7
	8-23	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	23-34	Loamy fine sand, loamy sand	SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	54-99	19-40	0-24	1-6
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
KneB: Knickerbocker---	0-8	Fine sandy loam	SM	A-1-b, A-2, A-4, A-2-4	0	0	77-100	55-100	48-95	23-49	25-37	2-7
	8-23	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	23-34	Loamy fine sand, loamy sand	SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	54-99	19-40	0-24	1-6
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
KneC: Knickerbocker---	0-8	Fine sandy loam	SM	A-1-b, A-2, A-4, A-2-4	0	0	77-100	55-100	48-95	23-49	25-37	2-7
	8-23	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	23-34	Loamy fine sand, loamy sand	SM	A-2, A-4, A- 2-4	0	0	79-100	58-100	54-99	19-40	0-24	1-6
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4

Table 17. Engineering 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	
KnuB: Knickerbocker---	0-8	Fine sandy loam	SM	A-1-b, A-2, A-4, A-2-4	0	0	77-100	55-100	48-95	23-49	25-37	2-7
	8-23	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A-2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	23-34	Loamy fine sand, loamy sand	SM	A-2, A-4, A-2-4	0	0	79-100	58-100	54-99	19-40	0-24	1-6
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
Urban land, Knickerbocker substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-34	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A-2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4

Table 17. Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
NazA: Natchaug-----	0-5	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	5-18	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	18-40	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	40-60	Sandy loam	SM	A-4	0	0	100	100	74-82	39-47	0-22	NP-6
PbpAt: Parsippany, frequently flooded-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-4	Silt loam	CL	A-6, A-7-6	0	0	100	100	90-100	77-87	31-45	13-21
	4-7	Silt loam	CL	A-6, A-7-6	0	0	100	100	90-100	77-87	31-45	13-21
	7-11	Silty clay loam, silty clay	CL	A-7-6, A-7	0	0	100	100	92-100	87-100	38-51	19-29
	11-17	Silty clay loam, silty clay	CL	A-7-6, A-7	0	0	100	100	92-100	87-100	38-51	19-29
	17-22	Silty clay loam, silty clay	CL, CH	A-7-6, A-7	0	0	100	100	94-100	89-99	44-56	25-32
	22-32	Silty clay loam, silty clay	CL, CH	A-7-6, A-7	0	0	100	100	94-100	89-99	44-56	25-32
	32-36	Silty clay loam, silty clay	CL, CH	A-7-6, A-7	0	0	100	100	94-100	89-99	44-56	25-32
	36-41	Fine sandy loam	SC	A-4	0	0	100	100	85-100	31-46	19-34	2-14
	41-53	Loamy fine sand	SC, SM, SC-SM	A-2, A-4, A- 6, A-2-4	0	0	100	100	89-100	23-38	19-34	2-14
	53-64	Loamy sand	SC, SM, SC-SM	A-2, A-2-4	0	0	100	100	77-92	19-34	19-34	2-14

Table 17. Engineering 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	
PecmB: Peckmantown-----	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Gravelly loamy coarse sand, fine sand, loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5
PecmBc: Peckmantown, extremely stony	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5

Table 17. Engineering 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	
PecmC: Peckmantown-----	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5
PecmCc: Peckmantown, extremely stony	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5

Table 17. Engineering 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	
PecuuB: Peckmantown-----	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5
Urban land, Peckmantown substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-59	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5
PecuuC: Peckmantown-----	0-2	Silt loam	ML	A-4	0	0	100	100	90-100	66-82	0-50	NP-13
	2-8	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	66-80	27-55	3-18
	8-14	Silt loam, loam	ML	A-4	0	0	100	96-100	90-100	69-83	22-49	3-18
	14-27	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	27-37	Very fine sandy loam, loam	CL-ML	A-4	0	0	100	100	90-100	68-84	0-35	NP-13
	37-40	Silt loam	ML	A-4	0	0	100	100	95-100	73-89	0-35	NP-13
	40-59	Silt loam	ML	A-4	0	0	100	100	94-100	72-88	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5

Table 17. Engineering 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	
PecuuC: (cont.) Urban land, Peckmantown substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-59	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	59-63	Fine sand, loamy coarse sand, gravelly loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5
PHG: Pits, sand and gravel-----	---	---	---	---	---	---	---	---	---	---	---	---
PohA: Pompton-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-4	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	4-8	Sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	76-87	38-49	22-39	3-13
	8-15	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	15-20	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	20-24	Loamy sand, sandy loam	SC-SM, SM	A-2-4, A-4	0	0	100	100	77-88	26-37	0-25	NP-7
	24-32	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	32-40	Loamy sand	SM	A-2-4	0	0	100	100	77-88	26-37	0-25	NP-7
	40-47	Sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	75-82	7-14	0-20	NP-4
	47-60	Fine sand	SM, SP-SM	A-2-4	0	0	100	100	93-100	10-17	0-20	NP-4

Table 17. Engineering 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	
PokuB: Pompton-----	0-2	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	2-4	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	4-8	Sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	76-87	38-49	22-39	3-13
	8-15	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	15-20	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	20-24	Loamy sand, sandy loam	SC-SM, SM	A-2-4, A-4	0	0	100	100	77-88	26-37	0-25	NP-7
	24-32	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	32-40	Loamy sand	SM	A-2-4	0	0	100	100	77-88	26-37	0-25	NP-7
	40-47	Sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	75-82	7-14	0-20	NP-4
	47-60	Fine sand	SM, SP-SM	A-2-4	0	0	100	100	93-100	10-17	0-20	NP-4
Urban land, Pompton substratum----	0-12	Material			---	---	---	---	---	---	---	---
	12-40	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-4	0	0	100	100	75-91	40-56	0-30	NP-12
	40-47	Sand	SM, SP-SM	A-2-4, A-3	0	0	100	100	75-82	7-14	0-20	NP-4
	47-60	Fine sand	SM, SP-SM	A-2-4	0	0	100	100	93-100	10-17	0-20	NP-4
PrgA: Preakness, very poorly drained-	0-6	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	6-13	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	13-15	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	23-33	2-6
	15-24	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	17-24	2-6
	24-32	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	17-24	2-6
	32-39	Loamy sand	SC-SM, SM	A-2-4	0	0	100	93-96	72-80	19-25	17-24	2-6
	39-43	Loamy sand	SC-SM, SM	A-2-4	0	0	100	93-96	72-80	19-25	17-24	2-6
	43-70	Gravelly loamy sand, sand	SM, SP-SM	A-2, A-2-4	0	0	100	100	76-84	9-17	0-22	NP-6
	70-72	Gravelly loamy sand, sand	SM, SP-SM	A-2, A-2-4	0	0	100	100	76-84	9-17	0-22	NP-6

Table 17. Engineering 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	
PrkA: Preakness, poorly drained-	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-9	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	23-33	2-6
	9-11	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	17-24	2-6
	11-24	Sandy loam	SC-SM, SM	A-4	0	0	100	100	74-79	36-41	17-24	2-6
	24-28	Loamy sand	SC-SM, SM	A-2-4	0	0	100	93-96	72-80	19-25	17-24	2-6
	28-33	Loamy sand	SC-SM, SM	A-2-4	0	0	100	93-96	72-80	19-25	17-24	2-6
	33-55	Gravelly loamy sand, sand	SM, SP-SM	A-2-4, A-2	0	0	100	100	76-84	9-17	0-22	NP-6
	55-60	Gravelly loamy sand, sand	SM, SP-SM	A-2-4, A-2	0	0	100	100	76-84	9-17	0-22	NP-6
QY: Pits, quarry----	---	---	---	---	---	---	---	---	---	---	---	---
RkkcA: Rikers-----	0-6	Loamy sand	SM	A-2-4	0	0	92-95	78-84	60-72	21-30	0-26	NP-7
	6-11	Gravelly sand	SP	A-3, A-1-b	0	0	78-81	61-66	47-55	4-9	0-21	NP-4
	11-20	Extremely gravelly sand	GP	A-1-a	0	0	29-30	21-24	16-20	1-3	0-21	NP-4
	20-71	Extremely gravelly sand	GP	A-1-a	0	0	21-22	13-16	10-14	1-2	0-21	NP-4
RNAAC: Rock outcrop----	---	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
RoeBc: Rockaway, extremely stony	0-2	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-9	75-90	41-90	34-83	23-59	20-37	2-10
	2-4	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-9	75-90	41-90	34-83	23-59	20-37	2-10
	4-8	Loam, gravelly sandy loam, gravelly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	1-8	83-96	51-96	42-89	29-64	20-37	2-10
	8-15	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	15-24	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	24-31	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	31-36	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	36-60	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6

Table 17. Engineering 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	
RoeCc: Rockaway, extremely stony	0-2	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	2-4	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	4-8	Loam, gravelly sandy loam, gravelly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	1-8	83-96	51-96	42-89	29-64	20-37	2-10
	8-15	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	15-24	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	24-31	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	31-36	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	36-60	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6

Table 17. Engineering 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	
RonB: Rockaway-----	0-2	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	2-4	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	4-8	Loam, gravelly sandy loam, gravelly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	1-8	83-96	51-96	42-89	29-64	20-37	2-10
	8-15	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	15-24	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	24-31	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	31-36	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	36-60	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6
Urban land, Rockaway substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-36	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	36-60	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
RonC: Rockaway-----	0-2	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	2-4	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-8	75-90	41-90	34-83	23-59	20-37	2-10
	4-8	Loam, gravelly sandy loam, gravelly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	1-8	83-96	51-96	42-89	29-64	20-37	2-10
	8-15	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	15-24	Sandy loam, gravelly sandy loam, gravelly loam	SC-SM, SM, SC	A-1-b, A-2-4, A-4	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	24-31	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4, A-4	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	31-36	Sandy loam, loam, gravelly sandy loam	SC-SM, SM	A-2-4, A-4, A-1-b	0	1-7	84-97	56-97	41-76	20-39	16-24	2-6
	36-60	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6
Urban land, Rockaway substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-36	Sandy loam, gravelly sandy loam, gravelly loam	SC, SM, SC-SM	A-4, A-2-4, A-1-b	0	1-8	83-96	51-96	37-80	18-43	17-31	2-10
	36-48	Sandy loam, gravelly loam, gravelly sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0-27	63-100	30-100	22-82	12-47	0-24	NP-6

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
TunkB: Tunkhannock-----	0-3	Fine sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	87-90	87-90	75-90	34-48	20-38	2-12
	3-7	Gravelly fine sandy loam, gravelly loam	SC, GM, SM, SC-SM	A-2-4, A-4	0	0	65-68	65-68	56-68	26-36	20-38	2-12
	7-18	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-b	0	0	35-57	35-57	30-57	14-31	16-31	2-13
	18-28	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-a	0	0	28-51	28-51	24-51	11-27	16-31	2-13
	28-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
TunkC: Tunkhannock-----	0-3	Fine sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	87-90	87-90	75-90	34-48	20-38	2-12
	3-7	Gravelly fine sandy loam, gravelly loam	SC, GM, SM, SC-SM	A-2-4, A-4	0	0	65-68	65-68	56-68	26-36	20-38	2-12
	7-18	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-b	0	0	35-57	35-57	30-57	14-31	16-31	2-13
	18-28	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-a	0	0	28-51	28-51	24-51	11-27	16-31	2-13
	28-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
TunkD: Tunkhannock-----	0-3	Fine sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	87-90	87-90	75-90	34-48	20-38	2-12
	3-7	Gravelly fine sandy loam, gravelly loam	SC, GM, SM, SC-SM	A-2-4, A-4	0	0	65-68	65-68	56-68	26-36	20-38	2-12
	7-18	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-b	0	0	35-57	35-57	30-57	14-31	16-31	2-13
	18-28	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-a	0	0	28-51	28-51	24-51	11-27	16-31	2-13
	28-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
Tunke: Tunkhannock-----	0-3	Fine sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	87-90	87-90	75-90	34-48	20-38	2-12
	3-7	Gravelly fine sandy loam, gravelly loam	SC, GM, SM, SC-SM	A-2-4, A-4	0	0	65-68	65-68	56-68	26-36	20-38	2-12
	7-18	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-b	0	0	35-57	35-57	30-57	14-31	16-31	2-13
	18-28	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-a	0	0	28-51	28-51	24-51	11-27	16-31	2-13
	28-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
TunudB: Tunkhannock-----	0-3	Fine sandy loam	SC, SM, SC-SM	A-2-4, A-4	0	0	87-90	87-90	75-90	34-48	20-38	2-12
	3-7	Gravelly fine sandy loam, gravelly loam	SC, GM, SM, SC-SM	A-2-4, A-4	0	0	65-68	65-68	56-68	26-36	20-38	2-12
	7-18	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-b	0	0	35-57	35-57	30-57	14-31	16-31	2-13
	18-28	Very gravelly fine sandy loam, cobbly loam, very gravelly sandy loam	GC-GM	A-1, A-2-4, A-1-a	0	0	28-51	28-51	24-51	11-27	16-31	2-13
	28-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13
Udorthents, Tunkhannock substratum-----	0-12	Loam	CL-ML	A-4	0	0	91-97	90-97	75-97	52-76	22-43	3-18
	12-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13

Table 17. Engineering 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	
UcdAt: Udifluvents, frequently flooded-----	0-3	Loamy sand	SM	A-2-4	0	0	100	100	74-84	18-28	0-35	NP-7
	3-16	Loamy sand	SM, SC-SM	A-2-4	0	0	100	100	74-84	18-28	0-30	NP-7
	16-22	Sandy loam	SC, SC-SM	A-4	0	0	100	100	70-86	32-48	0-35	NP-12
	22-27	Sandy loam	SC, SC-SM	A-4	0	0	100	100	70-86	32-48	0-35	NP-12
	27-32	Sandy loam	SC, SC-SM	A-4	0	0	100	100	70-86	32-48	0-35	NP-12
	32-60	Stratified loamy sand	SM, SC-SM	A-2-4	0	0	100	100	74-84	18-28	0-30	NP-7
UdbonB: Udorthents, Boonton substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-43	3-18
	12-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
UdbooB: Udorthents, Boonton red sandstone lowland substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-45	3-18
	12-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
UddunB: Udorthents, Dunellen substratum-----	0-12	Loam	CL-ML	A-4	0	0	100	90-97	75-97	52-76	22-43	3-18
	12-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A- 4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
UdhalB: Udorthents, Haledon substratum-----	0-12 12-60	Loam Gravelly fine sandy loam, sandy loam, loam	CL-ML SC-SM, SM	A-4 A-2-4, A-4	0 0	0 0-10	100 80-89	90-97 59-89	75-97 52-84	52-76 27-45	22-45 17-24	3-18 2-6
UdhorB: Udorthents, Horseneck substratum-----	0-12 12-60	Loam Loamy sand	CL-ML SM	A-4 A-2-4	0 0	0 0	100 100	90-97 100	75-97 76-83	52-76 27-34	22-45 0-22	3-18 NP-4
UdkttB: Udorthents, loamy fill substratum-----	0-12 12-60	Loam Silty clay	CL-ML CH	A-4 A-7-6	0 0	0 0	100 96-100	90-97 87-100	75-97 78-100	52-76 75-100	22-43 46-66	3-18 28-43
UdpecB: Udorthents, Peckmantown substratum-----	0-12 12-63  63-74 74-88	Loam Gravelly loamy coarse sand, fine sand, loamy coarse sand Coarse sand Coarse sand	CL-ML SM  SP-SM SP	A-4 A-2-4  A-3 A-1-b	0 0  0 0	0 0  0 0	100 80-86  94-97 91-94	90-97 71-80  87-93 78-84	75-97 48-61  49-61 34-44	52-76 18-28  4-13 2-10	22-45 0-26  0-23 0-23	3-18 NP-7  NP-5 NP-5
UdrkkB: Udorthents, Rikers substratum-----	0-12 12-20  20-71	Loam Extremely gravelly sand Extremely gravelly sand	CL-ML GP  GP	A-4 A-1-a  A-1-a	0 0  0 0	0 0  0 0	91-97 29-30  21-22	90-97 21-24  13-16	75-97 16-20  10-14	52-76 1-3  1-2	22-43 0-21  0-21	3-18 NP-4  NP-4

Table 17. Engineering 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	
UdtunB: Udorthents, Tunkhannock substratum-----	0-12	Loam	CL-ML	A-4	0	0	91-97	90-97	75-97	52-76	22-45	3-18
	12-60	Extremely gravelly fine sandy loam, gravelly sandy loam, very gravelly loamy sand	GP-GC	A-2, A-1-a	0	0	15-20	15-20	13-20	6-11	16-31	2-13
URBHGB: Urban land, Bigapple substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-26	Gravelly sand	SP-SM	A-3	0	0	75-78	75-78	58-65	5-11	0-26	NP-5
	26-38	Loamy sand	SM	A-2-4	0	0	84-87	84-87	65-75	23-32	16-33	1-8
	38-60	Gravelly loamy sand	SM	A-2-4	0	0	79-81	71-77	55-66	20-28	16-33	1-8
URBONB: Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4

Table 17. Engineering 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						
				Pct	Pct					Pct		
URBOOB: Urban land, Boonton red sandstone lowland substratum-----	In											
	0-12	Material			---	---	---	---	---	---	---	---
	12-67	Gravelly loam, silt loam, gravelly fine sandy loam	SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
URDUNE: Urban land, Dunellen substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
URHORB: Urban land, Horseneck substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-44	Sandy loam	SM	A-2-4	0	0	100	100	66-73	30-37	0-24	NP-6
	44-60	Loamy sand	SM	A-2-4	0	0	100	100	76-83	27-34	0-22	NP-4

Table 17. Engineering 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	
URKNKB: Urban land, Knickerbocker substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-34	Fine sandy loam, sandy loam	SM, SC-SM	A-2, A-4, A-2-4	0	0	79-100	58-100	51-95	24-49	16-26	2-7
	34-42	Loamy fine sand, loamy sand, fine sand	SM	A-2-4	0	0	80-100	60-100	55-98	20-38	0-22	NP-4
	42-51	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
	51-60	Loamy fine sand, gravelly loamy sand, gravelly sand, very fine sand	SM, SP-SM	A-1-b, A-2-4	0	0-3	70-100	36-100	33-98	12-38	0-22	NP-4
URKTTB: Urban land, loamy fill substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-41	Clay loam, silty clay loam	CL	A-6	0	0	100	100	88-100	69-82	35-49	18-28
	41-60	Silty clay	CH	A-7-6	0	0	96-100	87-100	78-100	75-100	46-66	28-43
URPECB: Urban land, Peckmantown substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-59	Silt loam	CL	A-4, A-6	0	0	100	100	83-99	67-83	0-35	NP-13
	59-63	Gravelly loamy coarse sand, fine sand, loamy coarse sand	SM	A-2-4	0	0	80-86	71-80	48-61	18-28	0-26	NP-7
	63-74	Coarse sand	SP-SM	A-3	0	0	94-97	87-93	49-61	4-13	0-23	NP-5
	74-88	Coarse sand	SP	A-1-b	0	0	91-94	78-84	34-44	2-10	0-23	NP-5

Table 17. Engineering 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	
URPOMB: Urban land, Pompton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-40	Sandy loam, gravelly sandy loam	SC, SC-SM, SM	A-2-4, A-4	0	0-4	88-100	71-100	53-91	28-56	0-30	NP-12
	40-47	Sand	SM, SP-SM	A-2-4, A-3	0	0-3	77-100	45-100	34-82	3-14	0-20	NP-4
	47-53	Fine sand	SM, SP-SM	A-2-4, A-3	0	0-3	77-100	45-100	42-100	4-17	0-20	NP-4
USBONB: Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	65-72	47-54	22-32	3-8
	8-17	Silt loam	CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4

Table 17. Engineering 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	
USBONC: Urban land, Boonton substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-47	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Boonton-----	0-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Silt loam	CL-ML, ML	A-4	0	0	70-73	70-73	65-72	47-54	22-32	3-8
	8-17	Silt loam	CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
USBOOB: Urban land, Boonton red sandstone lowland substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-67	Gravelly loam, silt loam, gravelly fine sandy loam	SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
USBOOB: (cont.) Boonton, red sandstone lowland-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
USBOOC: Urban land, Boonton red sandstone lowland substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-67	Gravelly loam, silt loam, gravelly fine sandy loam	SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-2-4, A-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10

Table 17. Engineering 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	
USBOOC: (cont.) Boonton, red sandstone lowland-----	In											
	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Silt loam	CL-ML, ML	A-4	0	0	100	100	91-98	71-78	25-47	6-18
	3-10	Loam, silt loam, gravelly fine sandy loam	CL-ML, ML	A-4	0	0	100	100	88-96	58-66	18-33	3-10
	10-27	Gravelly loam, silt loam, gravelly fine sandy loam	SC-SM	A-4	0	0	68-72	58-65	49-60	31-40	18-33	3-10
	27-40	Sandy loam, gravelly fine sandy loam	SC-SM	A-4	0	0	87-90	76-81	63-77	34-45	15-33	1-10
	40-67	Sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	75-80	67-75	57-72	30-42	15-33	1-10
	67-83	Gravelly sandy loam, loam, gravelly fine sandy loam	SM	A-4, A-2-4	0	0	81-83	69-74	55-67	30-40	15-33	1-10
USDUNB: Urban land, Dunellen substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
USDUNB: (cont.) Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SP- SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-83	42-81	31-69	7-21	17-28	2-10
USDUNC: Urban land, Dunellen substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-2-4, A-4, A-2, A-1	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-91	42-89	31-75	7-24	17-28	2-10
Dunellen-----	0-8	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	8-14	Sandy loam	SC, SM	A-2, A-4, A-2-4	0	0-1	94-100	69-100	47-82	21-44	20-39	2-13
	14-20	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	20-31	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	31-42	Sandy loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-1, A-2, A-4, A-2-4	0	0-1	95-100	58-100	42-85	20-48	17-31	2-12
	42-70	Loamy sand	SC, SM, SP- SM, SC-SM	A-1-b, A-2, A-2-4	0	0-8	75-83	42-81	31-69	7-21	17-28	2-10

Table 17. Engineering 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	
USYRRB: Urban land, Yalesville substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	31-32	Loam, fine sandy loam	SC	A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
Yalesville-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-1-a, A-2, A-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-4, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	---	Bedrock			---	---	---	---	---	---	---	---
WaakAt: Wallkill, frequently flooded-----	0-4	Mucky silt loam	PT	A-5, A-7, A-8	0	0	100	100	85-100	69-86	---	---
	4-10	Silt loam	MH, SC-SM, OH	A-4, A-7-5	0	0	100	100	88-100	73-85	35-68	9-18
	10-18	Clay loam	MH, SC-SM, OH	A-7-5	0	0	100	100	87-95	65-73	56-88	18-26
	18-31	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	31-50	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	50-63	Muck	PT	A-8	0	0	100	100	100	100	0-0	NP
	63-70	Gravelly loamy sand, sand	SM, SP-SM	A-2, A-2-4	0	0	100	100	76-84	9-17	0-22	NP-6
WATER: Water-----	---	---	---	---	---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YamnB: Yalesville-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-2-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
YamnBc: Yalesville, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-2-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YamnCc: Yalesville, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A- 6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-2-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
YaobBc: Yalesville, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A- 6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-2-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-91	13-91	11-88	4-40	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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	
YaobC: (cont.) Boonton, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, ML, SC-SM	A-4	0	0	100	100	91-97	60-66	22-31	3-8
	5-8	Gravelly loam	GC-GM	A-4	0	0	66-70	66-70	60-67	43-49	22-31	3-8
	8-17	Silt loam	CL-ML	A-4	0	0	92-96	92-96	83-92	60-68	19-25	3-8
	17-30	Silt loam, gravelly fine sandy loam, gravelly silt loam	CL, CL-ML, SC-SM	A-4	0	0	95-98	95-98	85-95	67-76	20-27	5-10
	30-40	Gravelly fine sandy loam	SC, SC-SM	A-2, A-4	0	0	76-79	76-79	64-72	35-42	20-27	4-9
	40-47	Fine sandy loam, gravelly sandy loam	SC, SC-SM	A-4	0	1-4	82-86	82-86	72-81	37-45	20-27	4-9
	47-58	Loamy sand	SM	A-2-4	0	0	85-88	85-88	72-79	22-27	0-21	NP-4
	58-72	Loamy sand	SM	A-2-4	0	3-5	83-86	83-86	69-76	22-27	0-21	NP-4
Holyoke, extremely stony	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, SC-SM, CL, SM	A-4	0	0-9	76-95	42-95	37-95	22-66	23-43	4-17
	5-14	Loam	CL-ML, CL, SC	A-4	0	0-9	69-95	44-95	37-95	23-65	18-36	4-17
	14-18	Loam	CL-ML, CL, SC	A-4	0	0-8	74-96	53-96	46-96	28-67	18-36	4-17
	>18	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YaohEh: Yalesville, very rocky-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A- 6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
Holyoke, very rocky-----	0-1	Slightly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-3	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	3-5	Loam	CL-ML, CL, SC-SM, SM	A-4	0	0-9	75-95	40-95	35-95	21-66	23-43	4-17
	5-14	Loam	CL-ML, CL, SC	A-4	0	0-9	69-95	44-95	37-95	23-65	18-36	4-17
	14-18	Loam	CL-ML, CL, SC	A-4	0	0-8	74-96	53-96	46-96	28-67	18-36	4-17
	>18	Bedrock			---	---	---	---	---	---	---	---
YaorCc: Yalesville, extremely stony	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A- 6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-2-4, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YaorCc: (cont.) Rock outcrop----	---	Bedrock			---	---	---	---	---	---	---	---
YaotuB: Yalesville-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
Urban land, Yalesville substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-6, A-4, A-2, A-1-b	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-97	4-45	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
YaotuC: Yalesville-----	0-1	Highly decomposed plant material	PT	A-8	0	0	100	100	100	100	0-0	NP
	1-5	Loam	SM, ML, CL	A-4, A-6	0	0-5	84-94	64-94	51-85	37-64	18-43	4-15
	5-19	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-2-6, A-1-b, A-2, A-4, A-6	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	19-31	Fine sandy loam, loam	GM, SM, SC	A-2-6, A-1-a, A-2, A-6	0	0-7	69-95	34-95	24-79	13-48	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-96	4-44	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YaotuC: (cont.) Urban land, Yalesville substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-31	Fine sandy loam, loam, gravelly loam	GM, SM, SC	A-6, A-4, A- 2, A-1-b	0	0-7	67-94	29-94	21-78	11-47	17-40	3-12
	31-32	Loam, fine sandy loam	GM, GP-GM, SM, SC	A-1-a, A-2, A-2-4	0	0-11	58-100	13-100	11-97	4-45	17-40	3-12
	>32	Bedrock			---	---	---	---	---	---	---	---
YaouA: Yalesville, red sandstone lowland-----	0-3	Loam	ML	A-4	0	0	94-98	94-98	76-91	51-65	0-37	NP-10
	3-17	Fine sandy loam, loam, gravelly loam	ML, SM, CL-ML	A-4	0	0	90-93	90-93	73-86	49-62	0-33	NP-10
	17-22	Fine sandy loam, loam	ML, CL-ML	A-4	0	0	93-96	93-96	75-90	51-64	0-31	NP-10
	22-32	Sandy loam, loam, fine sandy loam	SM, SC-SM	A-2-4, A-4	0	0	82-85	82-85	57-71	26-39	0-28	NP-10
	>32	Bedrock			---	---	---	---	---	---	---	---
YaouB: Yalesville, red sandstone lowland-----	0-3	Loam	ML	A-4	0	0	94-98	94-98	76-91	51-65	0-37	NP-10
	3-17	Fine sandy loam, loam, gravelly loam	ML, SM, CL-ML	A-4	0	0	90-93	90-93	73-86	49-62	0-33	NP-10
	17-22	Fine sandy loam, loam	CL-ML, ML	A-4	0	0	93-96	93-96	75-90	51-64	0-31	NP-10
	22-32	Sandy loam, loam, fine sandy loam	SC-SM, SM	A-2-4, A-4	0	0	82-85	82-85	57-71	26-39	0-28	NP-10
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 17. Engineering 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						
	<i>In</i>				<i>Pct</i>	<i>Pct</i>					<i>Pct</i>	
YaovB: Yalesville, red sandstone lowland-----	0-3	Loam	ML	A-4	0	0	94-98	94-98	76-91	51-65	0-37	NP-10
	3-17	Fine sandy loam, loam, gravelly loam	ML, SM, CL-ML	A-4	0	0	90-93	90-93	73-86	49-62	0-33	NP-10
	17-22	Fine sandy loam, loam	ML, CL-ML	A-4	0	0	93-96	93-96	75-90	51-64	0-31	NP-10
	22-32	Sandy loam, loam, fine sandy loam	SM, SC-SM	A-2-4, A-4	0	0	82-85	82-85	57-71	26-39	0-28	NP-10
	>32	Bedrock			---	---	---	---	---	---	---	---
Urban land, Yalesville substratum-----	0-12	Material			---	---	---	---	---	---	---	---
	12-22	Fine sandy loam, loam, gravelly loam	ML, SM, CL-ML	A-4	0	0	90-93	90-93	73-86	49-62	0-33	NP-10
	22-32	Sandy loam, loam, fine sandy loam	SM, SC-SM	A-2-4, A-4	0	0	82-85	82-85	57-71	26-39	0-28	NP-10
	>32	Bedrock			---	---	---	---	---	---	---	---

Table 18. Physical Soil Properties

(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 (Ksat)	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					
<b>BhgA:</b>														
Bigapple-----	0-3	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	1.0-6.0	0.1-2.0	.17	.17	2	2	134
	3-17	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	17-26	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	26-38	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	3.0-10.4	0.1-2.0	.17	.17			
	38-60	70-90	10-25	3-12	1.45-1.65	6-20	0.02-0.08	3.0-10.4	0.1-2.0	.10	.15			
<b>BhguA:</b>														
Bigapple-----	0-3	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	1.0-6.0	0.1-2.0	.17	.17	2	2	134
	3-17	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	17-26	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	26-38	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	3.0-10.4	0.1-2.0	.17	.17			
	38-60	70-90	10-25	3-12	1.45-1.65	6-20	0.02-0.08	3.0-10.4	0.1-2.0	.10	.15			
<b>Urban land, Bigapple substratum-----</b>	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-26	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	26-38	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	3.0-10.4	0.1-2.0	.17	.17			
	38-60	70-90	10-25	3-12	1.45-1.65	6-20	0.02-0.08	3.0-10.4	0.1-2.0	.10	.15			
<b>BoeBc:</b>														
Boonton, terminal moraine, extremely stony-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
<b>BoeCc:</b>														
Boonton, terminal moraine, extremely stony-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>BoeDc:</b> Boonton, terminal moraine, extremely stony-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
<b>BogB:</b> Boonton-----	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BogBc:</b> Boonton, extremely stony-----	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
<b>BogC:</b> Boonton-----	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>In/hr</i>	<i>In/in</i>	<i>Pct</i>	<i>Pct</i>					
	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BogCc:</b> Boonton, extremely stony-----	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BogDc:</b> Boonton, extremely stony-----	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
BooB: Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
BooBc: Boonton, red sandstone lowland, extremely stony----	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
BooC: Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
BooCc: Boonton, red sandstone lowland, extremely stony----	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>BosB:</b>														
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>Udorthents, Boonton substratum-----</b>	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	4	3	86
	12-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BotB:</b>														
Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
<b>Udorthents, Boonton red sandstone lowland substratum--</b>	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	3	86
	12-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
<b>BotC:</b>														
Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
<b>Udorthents, Boonton red sandstone lowland substratum--</b>	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	3	86
	12-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>BouB:</b>														
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BouC:</b>														
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
<b>BouD:</b>														
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.1-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
BouD: (cont.) Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.1-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.1-1.5	0.5-1.0	.28	.32			
BowrB: Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
Urban land, Boonton red sandstone lowland substratum-	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-67	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	67-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
BowrC: Boonton, red sandstone lowland--	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
Urban land, Boonton red sandstone lowland substratum-	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-67	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	67-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>BowtB:</b>														
Boonton, terminal moraine-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-42	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	42-60	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
<b>BowtC:</b>														
Boonton, terminal moraine-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-42	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	42-60	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
<b>BowtD:</b>														
Boonton, terminal moraine-----	0-1	0-80	0-48	0-12	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	3	5	56
	1-2	50-80	15-48	2-12	1.20-1.40	2-6	0.08-0.12	0.0-2.9	2.0-8.0	.17	.28			
	2-12	50-80	15-48	2-12	1.30-1.45	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24			
	12-24	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	24-42	50-85	12-44	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
	42-60	50-90	10-40	4-18	1.55-1.75	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28			
Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-42	50-80	15-46	4-18	1.30-1.55	2-6	0.06-0.10	0.0-2.9	0.0-1.0	.20	.24			
	42-60	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>CatcA:</b>														
Catden-----	0-3	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	5	2	134
	3-16	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	16-24	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	24-32	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	32-53	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	53-64	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	64-72	45-65	30-50	2-10	1.40-1.70	2-6	0.05-0.07	0.0-2.9	0.0-0.0	.15	.15			
<b>CatnA:</b>														
Catden-----	0-3	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	5	2	134
	3-16	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	16-24	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	24-32	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	32-53	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	53-64	0-65	0-50	0-10	0.13-0.23	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	64-72	45-65	30-50	2-10	1.40-1.70	2-6	0.05-0.07	0.0-2.9	0.0-0.0	.15	.15			
<b>Natchaug-----</b>	0-5	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	4	2	134
	5-18	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	18-40	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	40-60	43-85	15-45	2-10	1.40-1.70	2-6	0.05-0.07	0.0-2.9	0.0-0.0	.15	.15			
<b>DunB:</b>														
Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
<b>DunC:</b>														
Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
DunD: Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
DusB: Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
Udorthents, Dunellen substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.00-0.00	0.0-2.9	2.0-4.0	.43	.43	4	3	86
	12-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
DusC: Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
Udorthents, Dunellen substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.00-0.00	0.0-2.9	2.0-4.0	.43	.43	4	3	86
	12-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
DuuB: Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	---	---	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.15	.17			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
DuuB: (cont.) Urban land, Dunellen substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
DuuC: Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	---	---	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.15	.17			
Urban land, Dunellen substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
FmhAt: Fluvaquents, loamy, frequently flooded-	0-5	23-52	28-50	7-27	1.20-1.40	0.6-2	0.16-0.20	0.0-2.9	2.0-4.0	.32	.32	5	5	56
	5-12	20-50	50-80	12-27	1.30-1.50	0.6-2	0.16-0.20	0.0-2.9	0.0-0.5	.43	.43			
	12-18	45-80	5-25	20-35	1.20-1.50	0.6-2	0.12-0.18	3.0-5.9	0.0-0.5	.32	.37			
	18-24	45-80	5-25	20-35	1.20-1.50	0.6-2	0.12-0.18	3.0-5.9	0.0-0.5	.32	.37			
	24-60	43-85	10-45	5-15	1.20-1.70	2-6	0.04-0.08	0.0-2.9	0.0-0.5	.10	.17			
GrpA: Great Piece-----	0-1	0-52	0-50	0-27	0.30-0.50	6-20	0.55-0.65	0.0-0.0	65-90	.05	.05	4	8	0
	1-7	23-52	28-50	7-27	1.40-1.60	0.6-2	0.18-0.22	0.0-4.0	3.0-7.0	.43	.43			
	7-12	30-55	20-40	27-35	1.40-1.60	0.2-0.6	0.18-0.22	0.0-4.0	0.5-1.0	.43	.43			
	12-20	55-85	10-30	4-19	1.40-1.60	2-6	0.14-0.18	0.0-4.0	0.1-0.8	.43	.43			
	20-29	55-80	5-30	4-15	1.40-1.60	2-6	0.14-0.18	0.0-2.9	0.0-0.5	.43	.43			
	29-33	60-85	5-25	4-15	1.40-1.60	2-6	0.14-0.18	0.0-2.9	0.0-0.5	.28	.28			
	33-37	20-45	30-55	5-25	1.50-1.70	0.6-2	0.14-0.18	0.0-2.9	0.0-0.5	.28	.28			
	37-50	55-80	20-40	4-15	1.65-1.75	0.6-2	0.14-0.18	0.0-2.9	0.1-0.5	.28	.28			
	50-85	20-45	55-75	5-25	1.50-1.75	0.6-2	0.14-0.18	0.0-2.9	0.1-0.5	.28	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
HanB: Haledon-----	0-2	0-50	0-80	0-18	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	5	56
	2-8	20-50	50-80	12-18	1.10-1.45	0.6-2	0.18-0.22	0.0-2.9	2.0-4.0	.32	.32			
	8-15	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	15-22	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	22-27	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	27-30	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	30-60	45-85	5-45	5-10	1.55-1.80	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
HanBc: Haledon, extremely stony-----	0-2	0-50	0-80	0-18	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	5	56
	2-8	20-50	50-80	12-18	1.10-1.45	0.6-2	0.18-0.22	0.0-2.9	2.0-4.0	.32	.32			
	8-15	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	15-22	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	22-27	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	27-30	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	30-60	45-85	5-45	5-10	1.55-1.80	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
HanCc: Haledon, extremely stony-----	0-2	0-50	0-80	0-18	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	8	0
	2-8	20-50	50-80	12-18	1.10-1.45	0.6-2	0.18-0.22	0.0-2.9	2.0-4.0	.32	.32			
	8-15	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	15-22	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	22-27	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	27-30	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	30-60	45-85	5-45	5-10	1.55-1.80	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
HasB: Haledon-----	0-2	0-50	0-80	0-18	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	5	56
	2-8	20-50	50-80	12-18	1.10-1.45	0.6-2	0.18-0.22	0.0-2.9	2.0-4.0	.32	.32			
	8-15	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	15-22	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	22-27	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	30-60	45-85	5-45	5-10	1.55-1.80	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
Urban land, Haledon substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-30	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	30-60	45-85	5-45	5-10	1.55-1.65	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>HasC:</b>														
Haledon-----	0-2	0-50	0-80	0-18	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	8	0
	2-8	20-50	50-80	12-18	1.10-1.45	0.6-2	0.18-0.22	0.0-2.9	2.0-4.0	.32	.32			
	8-15	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	15-22	20-50	50-80	12-18	1.55-1.65	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	22-27	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	27-30	23-52	28-50	7-18	1.55-1.65	0.6-2	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28			
	30-60	45-85	5-45	5-10	1.55-1.80	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
<b>Urban land, Haledon substratum-----</b>	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-30	20-50	50-80	12-18	1.30-1.45	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.37	.43			
	30-60	45-85	5-45	5-10	1.55-1.65	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
<b>HctBc:</b>														
Hasbrouck, extremely stony-----	0-1	0-50	0-75	0-25	0.30-0.50	2-6	0.55-0.65	0.0-0.0	60-85	.05	.05	3	8	0
	1-2	0-50	0-75	0-25	0.30-0.50	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	2-5	20-50	50-75	15-25	1.40-1.60	0.6-2	0.15-0.22	0.0-2.9	3.0-5.0	.24	.32			
	5-10	23-52	30-50	3-20	1.40-1.60	0.6-2	0.15-0.22	0.0-2.9	3.0-5.0	.24	.32			
	10-17	43-75	25-40	8-15	1.40-1.60	0.6-2	0.15-0.22	0.0-2.9	3.0-5.0	.24	.32			
	17-25	23-52	32-52	20-30	1.50-1.65	0.6-2	0.08-0.18	0.0-2.9	0.0-0.0	.37	.43			
	25-34	30-45	32-52	20-30	1.50-1.65	0.6-2	0.08-0.18	0.0-2.9	0.0-0.0	.37	.43			
	34-36	43-50	30-50	5-15	1.65-1.85	0.06-0.2	0.06-0.10	0.0-2.9	0.0-0.0	.20	.28			
	36-39	30-45	32-52	10-20	1.65-1.85	0.06-0.2	0.05-0.12	0.0-2.9	0.0-0.0	.24	.32			
	39-50	45-80	25-40	5-15	1.65-1.85	0.06-0.2	0.05-0.12	0.0-2.9	0.0-0.0	.24	.32			
	50-60	60-85	10-25	3-20	1.65-1.85	2-6	0.05-0.12	0.0-2.9	0.0-0.0	.24	.32			
<b>HkrnB:</b>														
Hinckley-----	0-4	45-75	21-47	4-8	1.20-1.40	2-6	0.06-0.12	0.0-2.9	2.0-7.0	.20	.20	3	8	0
	4-10	45-75	21-47	4-8	1.20-1.40	2-6	0.06-0.12	0.0-2.9	2.0-7.0	.17	.17			
	10-15	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	1.0-2.0	.17	.17			
	15-26	75-90	9-20	1-5	1.30-1.50	6-20	0.01-0.10	0.0-2.9	1.0-2.0	.17	.17			
	26-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.10	0.0-2.9	0.5-1.0	.10	.17			
<b>HkrnC:</b>														
Hinckley-----	0-2	45-75	21-48	4-8	1.00-1.40	2-6	0.14-0.20	0.0-2.9	1.0-6.0	.20	.20	2	8	0
	2-5	45-75	21-48	4-8	1.00-1.40	2-6	0.06-0.12	0.0-2.9	1.0-6.0	.17	.17			
	5-7	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	0.5-3.0	.17	.17			
	7-19	72-90	9-27	1-5	1.20-1.40	6-20	0.01-0.10	0.0-2.9	0.5-2.0	.17	.17			
	19-26	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	26-36	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	36-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
HkruB: Hinckley-----	0-4	45-75	21-47	4-8	1.20-1.40	2-6	0.06-0.12	0.0-2.9	2.0-7.0	.20	.20	3	8	0
	4-10	45-75	21-47	4-8	1.20-1.40	2-6	0.06-0.12	0.0-2.9	2.0-7.0	.17	.17			
	10-15	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	1.0-2.0	.17	.17			
	15-26	75-90	9-20	1-5	1.30-1.50	6-20	0.01-0.10	0.0-2.9	1.0-2.0	.17	.17			
	26-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.10	0.0-2.9	0.5-1.0	.10	.17			
Urban land, Hinckley substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-26	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	1.0-2.0	.17	.17			
	26-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.10	0.0-2.9	0.5-1.0	.10	.17			
HkruC: Hinckley-----	0-2	45-75	21-48	4-8	1.00-1.40	2-6	0.14-0.20	0.0-2.9	2.0-6.0	.20	.20	2	8	0
	2-5	45-75	21-48	4-8	1.00-1.40	2-6	0.06-0.12	0.0-2.9	2.0-6.0	.17	.17			
	5-7	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	1.0-4.0	.17	.17			
	7-19	72-90	9-27	1-5	1.20-1.40	6-20	0.01-0.10	0.0-2.9	0.8-2.0	.17	.17			
	19-26	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	26-36	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	36-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
Urban land, Hinckley substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-19	45-75	22-48	3-7	1.20-1.40	2-6	0.01-0.10	0.0-2.9	1.0-4.0	.17	.17			
	19-26	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	26-36	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
	36-60	85-100	0-15	0-3	1.30-1.50	6-20	0.01-0.06	0.0-2.9	0.1-0.8	.10	.20			
HokCh: Holyoke, very rocky-	0-1	0-49	0-80	0-25	0.30-0.50	6-20	0.55-0.65	0.0-0.0	65-90	.05	.05	1	5	56
	1-3	0-49	0-80	0-25	0.30-0.50	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	20-49	50-80	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	2.0-4.0	.32	.37			
	5-14	20-49	50-80	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	14-18	30-52	30-45	8-25	1.35-1.60	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	>18	---	---	---	---	0.00-0.01	---	---	---	---	---			
HomC: Holyoke-----	0-1	0-49	0-80	0-25	0.30-0.50	6-20	0.55-0.65	0.0-0.0	65-90	.05	.05	1	5	56
	1-3	0-49	0-80	0-25	0.30-0.50	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	20-49	50-80	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	2.0-4.0	.32	.37			
	5-14	20-49	50-80	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	14-18	30-52	30-45	8-25	1.35-1.60	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	>18	---	---	---	---	0.00-0.01	---	---	---	---	---			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
Homc: (cont.) Rock outcrop-----	---	---	---	---	---	0.00-0.01	---	---	---	---	---	1	8	0
HotA: Horseneck-----	0-2	45-80	17-45	3-10	1.10-1.40	2-6	0.14-0.20	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	2-14	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	14-22	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	22-27	70-90	9-25	1-8	1.25-1.55	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.17			
	27-44	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.17			
	44-60	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.20			
HotuB: Horseneck-----	0-2	45-80	17-45	3-10	1.10-1.40	2-6	0.14-0.20	0.0-2.9	1.0-3.0	.28	.28	5	3	86
	2-14	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	14-22	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	22-27	70-90	9-25	1-8	1.25-1.55	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.17			
	27-44	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.17			
	44-60	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.20			
Urban land, Horseneck substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-44	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	44-55	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.20			
KneA: Knickerbocker-----	0-8	43-85	20-45	5-12	1.10-1.40	2-6	0.11-0.17	0.0-2.9	4.0-6.0	.20	.20	4	3	86
	8-23	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	23-34	43-85	15-40	4-10	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
KneB: Knickerbocker-----	0-8	43-85	20-45	5-12	1.10-1.40	2-6	0.11-0.17	0.0-2.9	4.0-6.0	.20	.20	4	3	86
	8-23	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	23-34	43-85	15-40	4-10	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>KneC:</b>														
Knickerbocker-----	0-8	43-85	20-45	5-12	1.10-1.40	2-6	0.11-0.17	0.0-2.9	4.0-6.0	.20	.20	4	3	86
	8-23	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	23-34	43-85	15-40	4-10	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
<b>KnuB:</b>														
Knickerbocker-----	0-8	43-85	20-45	5-12	1.10-1.40	2-6	0.11-0.17	0.0-2.9	4.0-6.0	.20	.20	4	3	86
	8-23	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	23-34	43-85	15-40	4-10	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
<b>Urban land, Knickerbocker substratum-----</b>	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-34	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
<b>NazA:</b>														
Natchaug-----	0-5	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	4	2	134
	5-18	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	18-40	0-85	0-45	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	40-60	43-85	15-45	2-10	1.40-1.70	2-6	0.05-0.07	0.0-2.9	0.0-0.0	.15	.15			
<b>PbpAt:</b>														
Parsippany, frequently flooded-	0-1	0-30	0-65	0-30	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	5	8	0
	1-4	20-30	45-65	20-30	1.28-1.44	0.6-2	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43			
	4-7	20-30	45-65	20-30	1.28-1.44	0.4-2	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43			
	7-11	5-15	45-65	27-40	1.35-1.55	0.2-0.6	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	11-17	5-15	45-65	27-40	1.35-1.55	0.2-0.6	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	17-22	5-15	45-65	35-45	1.35-1.55	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	22-32	5-15	45-65	35-45	1.35-1.55	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	32-36	5-15	45-65	35-45	1.35-1.55	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	36-41	35-85	10-50	5-20	1.35-1.55	2-6	0.14-0.18	3.0-5.9	0.5-1.0	.43	.43			
	41-53	35-95	3-25	5-20	1.30-1.55	2-6	0.03-0.08	3.0-5.9	0.5-1.0	.28	.28			
	53-64	35-95	3-15	5-20	1.30-1.55	2-6	0.03-0.08	3.0-5.9	0.5-1.0	.28	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
PecmB: Peckmantown-----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5	56
	2-8	23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
	8-14	23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
	14-27	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	27-37	20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
	37-40	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
	40-59	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
PecmBc: Peckmantown, extremely stony----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5	56
	2-8	23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
	8-14	23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
	14-27	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	27-37	20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
	37-40	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
	40-59	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
PecmC: Peckmantown-----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5	56
	2-8	23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
	8-14	23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
	14-27	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	27-37	20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
	37-40	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
	40-59	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
PecmCc: Peckmantown, extremely stony----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5	56
	2-8	23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
	8-14	23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
	14-27	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	27-37	20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
	37-40	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
	40-59	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	PecuuB: Peckmantown-----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5
2-8		23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
8-14		23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
14-27		20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
27-37		20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
37-40		20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
40-59		20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
59-63		70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
63-74		86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
74-88		86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
Urban land, Peckmantown substratum-----		0-12	---	---	---	---	---	---	---	---	---	---	--	8
	12-59	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
PecuuC: Peckmantown-----	0-2	20-50	50-80	2-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28	3	5	56
	2-8	23-52	28-50	7-18	1.10-1.30	0.6-2	0.16-0.22	0.0-2.9	4.0-9.0	.28	.28			
	8-14	23-52	28-50	7-18	1.30-1.50	0.6-2	0.16-0.22	0.0-2.9	2.0-6.0	.28	.28			
	14-27	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	27-37	20-50	45-80	2-18	1.40-1.65	0.06-0.2	0.11-0.17	0.0-2.9	0.8-2.0	.64	.64			
	37-40	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.12-0.18	0.0-2.9	0.8-2.0	.64	.64			
	40-59	20-50	50-80	2-18	1.40-1.65	0.06-0.2	0.17-0.23	0.0-2.9	0.8-2.0	.64	.64			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	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					
PecuuC: (cont.) Urban land, Peckmantown substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-59	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
PHG: Pits, sand and gravel-----	---	---	---	---	---	---	---	---	---	---	---	5	8	0
PohA: Pompton-----	0-2	0-80	0-45	0-18	0.10-0.20	2-6	0.48-0.55	0.0-0.0	60-85	.05	.05	4	3	86
	2-4	0-80	0-45	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	4-8	43-80	2-45	7-18	1.15-1.48	2-6	0.12-0.16	0.0-2.9	2.0-4.0	.28	.28			
	8-15	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	15-20	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	20-24	74-85	3-25	1-12	1.50-1.65	6-20	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	24-32	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	32-40	74-85	3-25	1-12	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.17	.20			
	40-47	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
	47-60	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
PokuB: Pompton-----	0-2	0-80	0-45	0-18	0.10-0.20	2-6	0.48-0.55	0.0-0.0	60-85	.05	.05	4	3	86
	2-4	0-80	0-45	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	4-8	43-80	2-45	7-18	1.15-1.48	2-6	0.12-0.16	0.0-2.9	2.0-4.0	.28	.28			
	8-15	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	15-20	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	20-24	74-85	3-25	1-12	1.50-1.65	6-20	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	24-32	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	32-40	74-85	3-25	1-12	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.17	.20			
	40-47	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
	47-60	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
Urban land, Pompton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-40	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	40-47	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
	47-60	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>PrgA:</b> Preakness, very poorly drained-----	0-6	0-85	0-45	0-10	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	4	8	0
	6-13	0-85	0-45	0-10	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	13-15	43-85	15-45	5-10	1.20-1.35	2-6	0.12-0.16	0.0-2.9	3.0-5.0	.24	.24			
	15-24	43-85	15-45	5-10	1.35-1.60	2-6	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	24-32	43-85	15-45	5-10	1.35-1.60	2-6	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	32-39	70-90	8-12	5-10	1.35-1.60	6-20	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	39-43	70-90	8-12	5-10	1.35-1.60	6-20	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	43-70	86-100	0-9	2-10	1.40-1.60	6-20	0.07-0.13	0.0-2.9	0.0-0.0	.24	.24			
	70-72	86-100	0-9	2-10	1.40-1.60	6-20	0.07-0.13	0.0-2.9	0.0-0.0	.24	.24			
<b>PrkA:</b> Preakness, poorly drained-----	0-1	0-85	0-45	0-10	0.05-0.15	6-20	0.35-0.45	0.0-0.0	65-90	.05	.05	4	8	0
	1-9	43-85	15-45	5-10	1.20-1.35	2-6	0.12-0.16	0.0-2.9	3.0-5.0	.24	.24			
	9-11	43-85	15-45	5-10	1.35-1.60	2-6	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	11-24	43-85	15-45	5-10	1.35-1.60	2-6	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	24-28	70-90	8-12	5-10	1.35-1.60	6-20	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	28-33	70-90	8-12	5-10	1.35-1.60	6-20	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
	33-55	86-100	0-9	2-10	1.40-1.60	6-20	0.07-0.13	0.0-2.9	0.0-0.0	.24	.24			
	55-60	86-100	0-9	2-10	1.40-1.60	6-20	0.07-0.13	0.0-2.9	0.0-0.0	.24	.24			
<b>QY:</b> Pits, quarry-----	---	---	---	---	---	---	---	---	---	---	---	1	8	0
<b>RkkcA:</b> Rikers-----	0-6	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.1-2.0	.17	.17	2	2	134
	6-11	90-100	1-12	1-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.1-1.0	.17	.17			
	11-20	90-100	1-12	1-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.1-1.0	.17	.17			
	20-71	90-100	1-12	1-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.1-1.0	.10	.15			
<b>RNAAC:</b> Rock outcrop-----	---	---	---	---	---	0.00-0.01	---	---	---	---	---	1	8	0
<b>RoeBc:</b> Rockaway, extremely stony-----	0-2	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37	3	8	0
	2-4	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37			
	4-8	23-52	28-50	5-15	1.24-1.47	0.6-2	0.09-0.14	0.0-2.9	2.0-5.0	.32	.37			
	8-15	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	15-24	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	24-31	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	31-36	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	36-60	43-85	10-45	2-10	1.20-1.55	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>RoeCc:</b>														
Rockaway, extremely stony-----	0-2	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37	3	8	0
	2-4	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37			
	4-8	23-52	28-50	5-15	1.24-1.47	0.6-2	0.09-0.14	0.0-2.9	2.0-5.0	.32	.37			
	8-15	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	15-24	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	24-31	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	31-36	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	36-60	43-85	10-45	2-10	1.20-1.55	2-6	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
<b>RonB:</b>														
Rockaway-----	0-2	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37	3	3	86
	2-4	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37			
	4-8	23-52	28-50	5-15	1.24-1.47	0.6-2	0.09-0.14	0.0-2.9	2.0-5.0	.32	.37			
	8-15	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	15-24	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	24-31	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	31-36	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	36-60	43-85	10-45	2-10	1.20-1.55	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
<b>Urban land, Rockaway substratum-----</b>	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-36	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	36-60	43-85	10-45	2-10	1.20-1.55	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
<b>RonC:</b>														
Rockaway-----	0-2	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37	3	3	86
	2-4	23-52	28-50	5-15	1.15-1.35	0.6-2	0.09-0.13	0.0-2.9	2.0-5.0	.28	.37			
	4-8	23-52	28-50	5-15	1.24-1.47	0.6-2	0.09-0.14	0.0-2.9	2.0-5.0	.32	.37			
	8-15	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	15-24	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	24-31	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	31-36	43-85	10-45	5-10	1.55-1.75	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
	36-60	43-85	10-45	2-10	1.20-1.55	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			
<b>Urban land, Rockaway substratum-----</b>	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-36	43-85	10-45	5-15	1.24-1.47	2-6	0.09-0.14	0.0-2.9	0.5-2.0	.32	.37			
	36-48	43-85	10-45	2-10	1.20-1.55	0.06-0.2	0.01-0.02	0.0-2.9	0.1-1.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
<b>TunkB:</b>														
Tunkhannock-----	0-3	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	3	86
	3-7	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32			
	7-18	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	18-28	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	28-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
<b>TunkC:</b>														
Tunkhannock-----	0-3	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	3	86
	3-7	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32			
	7-18	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	18-28	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	28-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
<b>TunkD:</b>														
Tunkhannock-----	0-3	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	3	86
	3-7	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32			
	7-18	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	18-28	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	28-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
<b>TunkE:</b>														
Tunkhannock-----	0-3	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	3	86
	3-7	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32			
	7-18	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	18-28	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	28-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
<b>TunudB:</b>														
Tunkhannock-----	0-3	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32	4	3	86
	3-7	43-85	5-45	5-19	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.24	.32			
	7-18	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	18-28	43-85	5-45	5-19	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.24			
	28-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
<b>Udorthents, Tunkhannock substratum-----</b>	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.00-0.00	0.0-2.9	2.0-4.0	.43	.43	2	5	56
	12-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
UcdAt: Udifluvents, frequently flooded-	0-3	43-85	5-45	2-12	1.30-1.50	6-20	0.11-0.17	0.0-2.9	3.0-5.0	.28	.28	2	3	86
	3-16	43-85	5-45	2-12	1.25-1.55	6-20	0.02-0.08	0.0-2.9	0.0-3.0	.28	.28			
	16-22	65-90	2-25	2-18	1.25-1.55	2-6	0.02-0.08	0.0-2.9	0.0-3.0	.24	.24			
	22-27	65-90	2-25	2-18	1.25-1.55	2-6	0.02-0.08	0.0-2.9	0.0-3.0	.24	.24			
	27-32	65-90	2-25	2-18	1.25-1.55	2-6	0.02-0.08	0.0-2.9	0.0-3.0	.24	.24			
	32-60	43-85	5-45	2-12	1.25-1.55	6-20	0.02-0.08	0.0-2.9	0.0-3.0	.28	.28			
UdbonB: Udorthents, Boonton substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	5	5	56
	12-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-2.9	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-2.9	0.5-1.0	.28	.32			
UdbooB: Udorthents, Boonton red sandstone lowland substratum-	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	5	56
	12-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
UddunB: Udorthents, Dunellen substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	4	5	56
	12-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
UdhalB: Udorthents, Haledon substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	5	3	86
	12-60	45-85	5-45	5-10	1.55-1.65	0.06-0.2	0.06-0.10	0.0-2.9	0.5-1.0	.32	.37			
UdhorB: Udorthents, Horseneck substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	5	3	86
	12-60	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.20			
UdkttB: Udorthents, loamy fill substratum----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	5	56
	12-60	5-18	40-60	40-60	1.65-1.85	0.06-0.2	0.08-0.18	0.0-2.9	0.0-0.5	.28	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
UdpecB: Udorthents, Peckmantown substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	5	3	86
	12-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
UdrkkB: Udorthents, Rikers substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	5	56
	12-20	90-100	1-12	1-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.1-1.0	.17	.17			
	20-71	90-100	1-12	1-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.1-1.0	.10	.15			
UdtunB: Udorthents, Tunkhannock substratum-----	0-12	23-52	28-50	7-27	1.30-1.50	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.43	.43	2	5	56
	12-60	43-85	5-45	5-19	1.40-1.60	2-6	0.01-0.08	0.0-2.9	0.0-0.5	.17	.24			
URBHGB: Urban land, Bigapple substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-26	85-100	1-10	1-8	1.45-1.65	6-20	0.02-0.08	1.0-6.0	0.1-2.0	.10	.15			
	26-38	70-90	10-25	3-12	1.45-1.65	6-20	0.06-0.08	3.0-10.4	0.1-2.0	.17	.17			
	38-60	70-90	10-25	3-12	1.45-1.65	6-20	0.02-0.08	3.0-10.4	0.1-2.0	.10	.15			
URBONB: Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
URBOOB: Urban land, Boonton red sandstone lowland substratum-	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-67	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	67-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
URDUNB: Urban land, Dunellen substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
URHORB: Urban land, Horseneck substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-44	45-80	17-45	3-10	1.25-1.55	2-6	0.09-0.14	0.0-2.9	0.2-1.0	.28	.28			
	44-60	70-90	9-25	1-8	1.45-1.65	6-20	0.03-0.08	0.0-2.9	0.5-1.0	.17	.20			
URKNKB: Urban land, Knickerbocker substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-34	43-85	20-45	5-12	1.25-1.55	2-6	0.11-0.17	0.0-2.9	0.0-1.0	.20	.20			
	34-42	70-90	10-35	2-8	1.45-1.65	6-20	0.06-0.08	0.0-2.9	0.0-1.0	.17	.17			
	42-51	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
	51-60	70-90	10-35	2-8	1.45-1.65	6-20	0.02-0.08	0.0-2.9	0.0-1.0	.10	.10			
URKTTB: Urban land, loamy fill substratum----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-41	20-45	15-53	27-40	1.40-1.65	0.6-2	0.18-0.24	0.0-2.9	0.0-0.5	.43	.43			
	41-60	5-18	40-60	40-60	1.65-1.85	0.06-0.2	0.08-0.18	0.0-2.9	0.0-0.5	.28	.28			
URPECB: Urban land, Peckmantown substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-59	20-50	50-80	2-18	1.30-1.50	0.6-2	0.10-0.16	0.0-2.9	0.8-2.0	.37	.37			
	59-63	70-90	10-20	2-12	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
	63-74	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.24			
	74-88	86-100	1-10	0-9	1.40-1.60	6-20	0.02-0.06	0.0-2.9	0.2-1.0	.20	.28			
URPOMB: Urban land, Pompton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-40	43-80	2-45	2-18	1.50-1.65	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.28	.32			
	40-47	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			
	47-53	90-100	0-9	1-8	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.0	.17	.20			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
USBONB: Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.0-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
USBONC: Urban land, Boonton substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-47	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
Boonton-----	0-5	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.0-1.5	2.0-4.0	.43	.43	3	5	56
	5-8	30-50	43-57	7-13	0.50-1.50	0.6-2	0.14-0.20	0.1-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	0.6-2	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
USBOOB: Urban land, Boonton red sandstone lowland substratum-	0-12	---	---	---	---	---	---	---	---	---	---	---	8	0
	12-67	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	67-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	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					
USBOOB: (cont.)														
Boonton, red sandstone lowland--														
	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
USBOOC:														
Urban land, Boonton red sandstone lowland substratum--														
	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-67	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	67-83	43-85	5-45	4-15	1.50-1.65	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
Boonton, red sandstone lowland--														
	0-1	0-50	0-80	0-18	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	20-50	50-80	11-18	1.10-1.30	0.6-2	0.11-0.18	0.0-2.9	2.0-5.0	.32	.37			
	3-10	23-52	28-50	7-15	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	10-27	23-52	28-50	7-15	1.20-1.60	0.6-2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	27-40	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.12-0.20	0.0-2.9	0.0-3.0	.37	.43			
	40-67	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
	67-83	43-85	5-45	4-15	1.50-1.90	0.06-0.2	0.05-0.12	0.0-2.9	0.0-3.0	.24	.28			
USDUNB:														
Urban land, Dunellen substratum-----														
	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
Dunellen-----														
	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
USDUNC:														
Urban land, Dunellen substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
Dunellen-----	0-8	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28	4	3	86
	8-14	43-85	5-45	5-18	1.10-1.30	2-6	0.13-0.16	0.0-2.9	2.0-4.0	.28	.28			
	14-20	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	20-31	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	31-42	43-85	5-45	5-18	1.20-1.40	2-6	0.10-0.20	0.0-2.9	0.5-1.0	.32	.37			
	42-70	70-90	2-25	5-15	1.30-1.50	6-20	0.05-0.10	0.0-2.9	0.5-1.0	.17	.20			
USYRRB:														
Urban land, Yalesville substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-45	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Yalesville-----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Rock outcrop-----	---	---	---	---	---	0.00-0.01	---	---	---	---	---	1	8	0
WaakAt:														
Wallkill, frequently flooded-----	0-4	20-45	50-75	10-27	1.15-1.40	0.6-2	0.16-0.21	0.0-2.9	15-35	.28	.28	5	8	0
	4-10	20-45	50-75	15-27	1.15-1.45	0.6-2	0.15-0.20	0.0-2.9	5.0-15	.43	.43			
	10-18	20-45	15-53	27-35	1.15-1.45	0.6-2	0.15-0.20	0.0-2.9	10-20	.43	.43			
	18-31	0-100	0-9	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	31-50	0-100	0-9	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	50-63	0-100	0-9	0-10	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	63-70	86-100	0-9	2-10	1.40-1.60	6-20	0.07-0.13	0.0-2.9	0.0-0.0	.24	.24			
WATER:														
Water-----	---	---	---	---	---	---	---	---	---	---	---	--	---	---

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
YamnB: Yalesville-----	0-1	0-40	0-50	0-18	0.30-0.55	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YamnBc: Yalesville, extremely stony----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YamnCc: Yalesville, extremely stony----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YaobBc: Yalesville, extremely stony----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
YaobBc:(cont.) Boonton, extremely stony-----	0-1	0-50	0-57	0-13	0.05-0.15	2-6	0.55-0.65	0.0-0.0	65-90	.05	.05	3	5	56
	1-3	0-50	0-57	0-13	0.10-0.30	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-50	43-57	7-13	0.50-1.50	2-6	0.14-0.20	0.0-1.5	2.0-4.0	.43	.43			
	5-8	30-50	43-57	7-13	0.50-1.50	2-6	0.14-0.20	0.0-1.5	2.0-4.0	.43	.43			
	8-17	30-50	43-57	7-13	1.00-1.30	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	17-30	30-50	41-54	9-16	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.37	.43			
	30-40	40-60	25-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	40-47	40-70	22-45	8-15	1.55-1.65	0.06-0.2	0.02-0.06	0.0-1.5	0.5-1.0	.28	.32			
	47-58	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
	58-72	75-90	7-17	3-8	1.55-1.65	2-6	0.08-0.19	0.0-1.5	0.5-1.0	.28	.32			
Holyoke, extremely stony-----	0-1	0-52	0-45	0-25	0.05-0.15	6-20	0.55-0.65	0.0-2.9	65-90	.05	.05	1	5	56
	1-3	0-52	0-45	0-25	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05			
	3-5	30-52	30-45	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	2.0-4.0	.32	.37			
	5-14	30-52	30-45	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	14-18	30-52	30-45	8-25	1.35-1.60	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	>18	---	---	---	---	0.00-0.01	---	---	---	---	---			
YaohEh: Yalesville, very rocky-----	0-1	0-40	0-50	0-18	0.30-0.55	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Holyoke, very rocky-	0-1	0-52	0-45	0-25	0.30-0.50	6-20	0.55-0.65	0.0-0.0	65-90	.05	.05	1	5	56
	1-3	0-52	0-45	0-25	0.30-0.50	0.6-2	0.35-0.45	0.0-0.0	30-80	.05	.05			
	3-5	30-52	30-45	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	2.0-4.0	.32	.37			
	5-14	30-52	30-45	8-25	1.00-1.30	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	14-18	30-52	30-45	8-25	1.35-1.60	0.6-2	0.15-0.20	0.0-2.9	0.0-0.5	.37	.43			
	>18	---	---	---	---	0.00-0.01	---	---	---	---	---			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
YaorCc: Yalesville, extremely stony----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Rock outcrop-----	---	---	---	---	---	0.00-0.01	---	---	---	---	---	1	8	0
YaotuB: Yalesville-----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Urban land, Yalesville substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-19	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YaotuC: Yalesville-----	0-1	0-40	0-50	0-18	0.10-0.30	0.6-2	0.35-0.45	0.0-2.9	30-80	.05	.05	2	5	56
	1-5	20-40	38-50	8-18	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	0.0-5.0	.28	.32			
	5-19	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	19-31	40-65	20-35	6-18	1.35-1.60	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-18	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Urban land, Yalesville substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-31	40-65	20-35	6-18	1.10-1.30	2-6	0.08-0.20	0.0-2.9	0.0-5.0	.28	.43			
	31-32	40-85	10-35	6-19	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.0-5.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			

Table 18. Physical Soil Properties--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	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					
YaouA: Yalesville, red sandstone lowland--	0-3	23-52	28-50	3-15	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	2.0-5.0	.28	.32	2	5	56
	3-17	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	1.0-3.0	.28	.43			
	17-22	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	0.8-2.0	.28	.43			
	22-32	43-85	10-45	1-15	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.5-1.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YaouB: Yalesville, red sandstone lowland--	0-3	23-52	28-50	3-15	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	2.0-5.0	.28	.32	2	5	56
	3-17	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	1.0-3.0	.28	.43			
	17-22	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	0.8-2.0	.28	.43			
	22-32	43-85	10-45	1-15	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.5-1.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
YaovB: Yalesville, red sandstone lowland--	0-3	23-52	28-50	3-15	1.10-1.30	0.6-2	0.12-0.22	0.0-2.9	2.0-5.0	.28	.32	2	5	56
	3-17	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	1.0-3.0	.28	.43			
	17-22	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	0.8-2.0	.28	.43			
	22-32	43-85	10-45	1-15	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.5-1.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			
Urban land, Yalesville substratum-----	0-12	---	---	---	---	---	---	---	---	---	---	--	8	0
	12-22	23-52	28-50	3-15	1.35-1.60	0.6-2	0.08-0.20	0.0-2.9	1.0-3.0	.28	.43			
	22-32	43-85	10-45	1-15	1.35-1.60	2-6	0.05-0.15	0.0-2.9	0.5-1.0	.24	.37			
	>32	---	---	---	---	0.00-0.01	---	---	---	---	---			

Table 19. Chemical Soil Properties

(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	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>BhgA:</b>								
Bigapple-----	0-3	1.0-7.5	0.7-5.6	4.5-5.0	0	0	0	0
	3-17	0.5-6.5	0.4-4.9	5.1-5.5	0	0	0	0
	17-26	0.5-6.5	0.4-4.9	5.1-5.5	0	0	0	0
	26-38	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
	38-60	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
<b>BhguA:</b>								
Bigapple-----	0-3	1.0-7.5	0.7-5.6	4.5-5.0	0	0	0	0
	3-17	0.5-6.5	0.4-4.9	5.1-5.5	0	0	0	0
	17-26	0.5-6.5	0.4-4.9	5.1-5.5	0	0	0	0
	26-38	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
	38-60	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
<b>Urban land, Bigapple substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-26	0.5-6.5	0.4-4.9	5.1-5.5	0	0	0	0
	26-38	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
	38-60	1.0-7.5	0.7-5.6	5.6-6.0	0	0	0	0
<b>BoeBc:</b>								
Boonton, terminal moraine, extremely stony-----	0-1	100-200	10-50	3.5-4.4	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0
<b>BoeCc:</b>								
Boonton, terminal moraine, extremely stony-----	0-1	100-200	10-50	3.5-4.4	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0
<b>BoeDc:</b>								
Boonton, terminal moraine, extremely stony-----	0-1	100-200	10-50	3.5-4.4	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>Inches</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
<b>BogB:</b>								
Boonton-----	0-1	50-100	10-50	4.5-5.0	0	0	0	0
	1-3	100-200	10-50	3.5-4.4	0	0	0	0
	3-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BogBc:</b>								
Boonton, extremely stony-----	0-1	50-100	10-50	4.5-5.0	0	0	0	0
	1-3	100-200	10-50	3.5-4.4	0	0	0	0
	3-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BogC:</b>								
Boonton-----	0-1	50-100	10-50	4.5-5.0	0	0	0	0
	1-3	100-200	10-50	3.5-4.4	0	0	0	0
	3-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BogCc:</b>								
Boonton, extremely stony-----	0-1	50-100	10-50	4.5-5.0	0	0	0	0
	1-3	100-200	10-50	3.5-4.4	0	0	0	0
	3-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>BogDc:</b> Boonton, extremely stony-----	0-1	50-100	10-50	4.5-5.0	0	0	0	0
	1-3	100-200	10-50	3.5-4.4	0	0	0	0
	3-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BooB:</b> Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BooBc:</b> Boonton, red sandstone lowland, extremely stony-----	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BooC:</b> Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BooCc:</b> Boonton, red sandstone lowland, extremely stony-----	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>BosB:</b>								
Boonton-----	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>Udorthents, Boonton substratum-----</b>	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BotB:</b>								
Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>Udorthents, Boonton red sandstone lowland substratum--</b>	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BotC:</b>								
Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>Udorthents, Boonton red sandstone lowland substratum--</b>	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BouB:</b>								
Boonton-----	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>Urban land, Boonton substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-47	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>BouC:</b>								
Boonton-----	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-47	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BouD:</b>								
Boonton-----	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-47	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>BowrB:</b>								
Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
Urban land, Boonton red sandstone lowland substratum--	0-12	---	---	---	0	---	0	0
	12-67	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
<b>BowrC:</b>								
Boonton, red sandstone lowland---	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
BowrC: (cont.)								
Urban land, Boonton red sandstone lowland substratum--	0-12	---	---	---	0	---	0	0
	12-67	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
BowtB:								
Boonton, terminal moraine-----	0-1	68-183	51-137	3.5-4.5	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-42	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	42-60	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
BowtC:								
Boonton, terminal moraine-----	0-1	68-183	51-137	3.5-4.5	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-42	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	42-60	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
BowtD:								
Boonton, terminal moraine-----	0-1	68-183	51-137	3.5-4.5	0	0	0	0
	1-2	5.0-21	3.8-16	3.5-4.4	0	0	0	0
	2-12	1.6-5.2	1.2-3.9	3.5-4.4	0	0	0	0
	12-24	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	24-42	1.0-6.1	0.8-4.6	4.5-5.5	0	0	0	0
	42-60	1.0-5.6	0.8-4.2	4.5-5.5	0	0	0	0
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-42	1.0-7.2	0.8-5.4	4.0-5.0	0	0	0	0
	42-60	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
CatcA:								
Catden-----	0-3	77-143	58-107	5.6-6.0	0	0	0	0
	3-16	77-143	58-107	5.6-6.0	0	0	0	0
	16-24	30-75	23-56	5.1-5.5	0	0	0	0
	24-32	30-75	23-56	5.1-5.5	0	0	0	0
	32-53	81-148	61-111	6.1-6.5	0	0	0	0
	53-64	81-148	61-111	6.6-7.3	0	0	0	0
	64-72	1.0-2.1	0.8-1.6	6.6-7.3	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>CatnA:</b>								
Catden-----	0-3	77-143	58-107	5.6-6.0	0	0	0	0
	3-16	77-143	58-107	5.6-6.0	0	0	0	0
	16-24	30-75	23-56	5.1-5.5	0	0	0	0
	24-32	30-75	23-56	5.1-5.5	0	0	0	0
	32-53	81-148	61-111	6.1-6.5	0	0	0	0
	53-64	81-148	61-111	6.6-7.3	0	0	0	0
	64-72	1.0-2.1	0.8-1.6	6.6-7.3	0	0	0	0
<b>Natchaug:</b>								
Natchaug-----	0-5	82-148	62-111	5.6-6.0	0	0	0	0
	5-18	82-148	62-111	5.6-6.0	0	0	0	0
	18-40	41-95	31-71	5.1-5.5	0	0	0	0
	40-60	1.0-2.1	0.8-1.6	6.1-6.5	0	0	0	0
<b>DunB:</b>								
Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
<b>DunC:</b>								
Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
<b>DunD:</b>								
Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
<b>DusB:</b>								
Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
<b>Udorthents, Dunellen substratum-----</b>	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
<b>DusC:</b>								
Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
DusC: (cont.) Udorthents, Dunellen substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
DuuB: Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.7-8.1	2.0-6.1	5.1-6.0	0	0	0	0
Urban land, Dunellen substratum-----	0-12	---	---	---	0	---	0	0
	12-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
DuuC: Dunellen-----	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.7-8.1	2.0-6.1	5.1-6.0	0	0	0	0
Urban land, Dunellen substratum-----	0-12	---	---	---	0	---	0	0
	12-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
FmhAt: Fluvaquents, loamy, frequently flooded--	0-5	6.0-21	4.5-16	5.1-6.5	0	0	0	0
	5-12	6.6-18	5.0-13	5.1-6.5	0	0	0	0
	12-18	10-22	7.8-16	5.1-7.3	0	0	0	0
	18-24	10-22	7.8-16	5.1-7.3	0	0	0	0
	24-60	3.1-11	2.3-7.9	5.1-7.3	0	0	0	0
GrpA: Great Piece-----	0-1	146-209	110-157	3.5-4.4	0	0	0	0
	1-7	8.5-22	6.4-17	4.5-5.0	0	0	0	0
	7-12	7.9-12	5.9-9.2	4.5-5.0	0	0	0	0
	12-20	1.2-6.4	0.9-4.8	5.6-6.0	0	0	0	0
	20-29	1.0-4.9	0.8-3.7	5.6-6.0	0	0	0	0
	29-33	1.0-4.9	0.8-3.7	6.6-7.3	0	0	0	0
	33-37	1.2-7.4	0.9-5.5	6.6-7.3	0	0	0	0
	37-50	1.2-4.9	0.9-3.7	7.4-7.8	0	0	0	0
	50-85	1.5-7.4	1.1-5.5	7.4-7.8	0	0	0	0
HanB: Haledon-----	0-2	100-200	75-150	3.5-4.4	0	0	0	0
	2-8	3.7-6.5	2.8-4.9	3.5-4.4	0	0	0	0
	8-15	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	15-22	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	22-27	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	27-30	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	30-60	2.7-5.4	2.0-4.1	6.1-6.5	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>HanBc:</b>								
Haledon, extremely stony-----	0-2	100-200	75-150	3.5-4.4	0	0	0	0
	2-8	3.7-6.5	2.8-4.9	3.5-4.4	0	0	0	0
	8-15	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	15-22	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	22-27	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	27-30	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	30-60	2.7-5.4	2.0-4.1	6.1-6.5	0	0	0	0
<b>HanCc:</b>								
Haledon, extremely stony-----	0-2	100-200	75-150	3.5-4.4	0	0	0	0
	2-8	3.7-6.5	2.8-4.9	3.5-4.4	0	0	0	0
	8-15	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	15-22	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	22-27	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	27-30	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	30-60	2.7-5.4	2.0-4.1	6.1-6.5	0	0	0	0
<b>HasB:</b>								
Haledon-----	0-2	100-200	75-150	3.5-4.4	0	0	0	0
	2-8	3.7-6.5	2.8-4.9	3.5-4.4	0	0	0	0
	8-15	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	15-22	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	22-27	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	27-30	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	30-60	2.7-5.4	2.0-4.1	6.1-6.5	0	0	0	0
<b>Urban land, Haledon substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-30	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	30-60	2.4-4.8	1.8-3.6	6.1-6.5	0	0	0	0
<b>HasC:</b>								
Haledon-----	0-2	100-200	75-150	3.5-4.4	0	0	0	0
	2-8	3.7-6.5	2.8-4.9	3.5-4.4	0	0	0	0
	8-15	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	15-22	4.4-7.6	3.3-5.7	5.1-5.5	0	0	0	0
	22-27	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	27-30	3.8-9.7	2.9-7.3	5.6-6.0	0	0	0	0
	30-60	2.7-5.4	2.0-4.1	6.1-6.5	0	0	0	0
<b>Urban land, Haledon substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-30	4.4-7.6	3.3-5.7	4.5-5.0	0	0	0	0
	30-60	2.4-4.8	1.8-3.6	6.1-6.5	0	0	0	0
<b>HctBc:</b>								
Hasbrouck, extremely stony-----	0-1	100-150	13-38	3.5-4.4	0	0	0	0
	1-2	50-100	8.2-43	4.5-5.0	0	0	0	0
	2-5	40-50	8.6-18	3.5-4.4	0	0	0	0
	5-10	2.7-15	2.0-11	5.1-5.5	0	0	0	0
	10-17	4.6-14	3.5-10	6.1-6.5	0	0	0	0
	17-25	14-20	10-15	6.1-6.5	0	0	0	0
	25-34	13-20	9.9-15	6.1-6.5	0	0	0	0
	34-36	4.1-11	3.1-8.2	6.6-7.3	0	0	0	0
	36-39	7.6-14	5.7-11	6.6-7.3	0	0	0	0
	39-50	4.1-11	3.1-8.2	6.6-7.3	0	0	0	0
	50-60	2.6-14	2.0-11	6.6-7.3	0	0	0	0



Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
HomC: (cont.)								
Rock outcrop-----	---	---	---	---	---	---	---	---
HotA:								
Horseneck-----	0-2	3.0-9.2	2.2-6.9	4.5-5.0	0	0	0	0
	2-14	1.3-4.8	1.0-3.6	4.5-5.0	0	0	0	0
	14-22	1.1-4.8	0.8-3.6	6.1-6.5	0	0	0	0
	22-27	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
	27-44	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
	44-60	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
HotuB:								
Horseneck-----	0-2	3.0-9.2	2.2-6.9	4.5-5.0	0	0	0	0
	2-14	1.3-4.8	1.0-3.6	4.5-5.0	0	0	0	0
	14-22	1.1-4.8	0.8-3.6	6.1-6.5	0	0	0	0
	22-27	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
	27-44	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
	44-60	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
Urban land, Horseneck substratum-----	0-12	---	---	---	0	---	0	0
	12-44	1.3-4.8	1.0-3.6	4.5-5.0	0	0	0	0
	44-55	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
KneA:								
Knickerbocker-----	0-8	10-16	7.7-12	5.1-5.5	0	0	0	0
	8-23	1.2-5.2	0.9-3.9	5.1-5.5	0	0	0	0
	23-34	0.9-4.8	0.7-3.6	5.6-6.0	0	0	0	0
	34-42	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	42-51	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	51-60	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
KneB:								
Knickerbocker-----	0-8	10-16	7.7-12	5.1-5.5	0	0	0	0
	8-23	1.2-5.2	0.9-3.9	5.1-5.5	0	0	0	0
	23-34	0.9-4.8	0.7-3.6	5.6-6.0	0	0	0	0
	34-42	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	42-51	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	51-60	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
KneC:								
Knickerbocker-----	0-8	10-16	7.7-12	5.1-5.5	0	0	0	0
	8-23	1.2-5.2	0.9-3.9	5.1-5.5	0	0	0	0
	23-34	0.9-4.8	0.7-3.6	5.6-6.0	0	0	0	0
	34-42	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	42-51	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	51-60	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
KnuB:								
Knickerbocker-----	0-8	10-16	7.7-12	5.1-5.5	0	0	0	0
	8-23	1.2-5.2	0.9-3.9	5.1-5.5	0	0	0	0
	23-34	0.9-4.8	0.7-3.6	5.6-6.0	0	0	0	0
	34-42	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	42-51	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	51-60	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	<i>Inches</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
<b>KnuB: (cont.)</b>								
Urban land, Knickerbocker substratum-----	0-12	---	---	---	0	---	0	0
	12-34	1.2-5.2	0.9-3.9	5.1-5.5	0	0	0	0
	34-42	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	42-51	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
	51-60	0.5-4.2	0.4-3.2	5.6-6.0	0	0	0	0
<b>NazA:</b>								
Natchaug-----	0-5	82-148	62-111	5.6-6.0	0	0	0	0
	5-18	82-148	62-111	5.6-6.0	0	0	0	0
	18-40	41-95	31-71	5.1-5.5	0	0	0	0
	40-60	1.0-2.1	0.8-1.6	6.1-6.5	0	0	0	0
<b>PbpAt:</b>								
Parsippany, frequently flooded--	0-1	146-210	110-158	5.1-6.0	0	0	0	0
	1-4	7.2-14	5.4-11	5.1-6.0	0	0	0	0
	4-7	7.2-14	5.4-11	5.1-6.0	0	0	0	0
	7-11	7.9-12	5.9-9.2	5.1-6.5	0	0	0	0
	11-17	7.9-12	5.9-9.2	5.1-6.5	0	0	0	0
	17-22	9.9-14	7.4-10	5.1-6.5	0	0	0	0
	22-32	9.9-14	7.4-10	5.1-6.5	0	0	0	0
	32-36	9.9-14	7.4-10	5.1-6.5	0	0	0	0
	36-41	2.4-7.2	1.8-5.4	5.1-6.5	0	0	0	0
	41-53	2.4-7.2	1.8-5.4	6.1-7.3	0	0	0	0
	53-64	2.4-7.2	1.8-5.4	6.1-7.3	0	0	0	0
<b>PecmB:</b>								
Peckmantown-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>PecmBc:</b>								
Peckmantown, extremely stony-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>PecmC:</b>								
Peckmantown-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>PecmCc:</b>								
Peckmantown, extremely stony-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>PecuuB:</b>								
Peckmantown-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>Urban land, Peckmantown substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-59	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>PecuuC:</b>								
Peckmantown-----	0-2	9.5-25	7.1-19	4.2-6.4	0	0	0	0
	2-8	11-27	8.1-20	4.0-6.4	0	0	0	0
	8-14	6.2-20	4.7-15	5.1-5.5	0	0	0	0
	14-27	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	27-37	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	37-40	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	40-59	2.2-9.5	1.6-7.1	5.6-6.0	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
PecuuC: (cont.)								
Urban land, Peckmantown substratum-----	0-12	---	---	---	0	---	0	0
	12-59	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
PHG:								
Pits, sand and gravel	---	---	---	---	---	---	---	---
PohA:								
Pompton-----	0-2	135-196	101-147	5.1-5.5	0	0	0	0
	2-4	68-185	51-139	5.1-5.5	0	0	0	0
	4-8	6.2-14	4.7-10	4.5-5.5	0	0	0	0
	8-15	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	15-20	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	20-24	0.2-4.1	0.2-3.1	5.1-5.5	0	0	0	0
	24-32	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	32-40	0.2-4.1	0.2-3.1	4.5-5.5	0	0	0	0
	40-47	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
	47-60	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
PokuB:								
Pompton-----	0-2	135-196	101-147	5.1-5.5	0	0	0	0
	2-4	68-185	51-139	5.1-5.5	0	0	0	0
	4-8	6.2-14	4.7-10	4.5-5.5	0	0	0	0
	8-15	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	15-20	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	20-24	0.2-4.1	0.2-3.1	5.1-5.5	0	0	0	0
	24-32	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	32-40	0.2-4.1	0.2-3.1	4.5-5.5	0	0	0	0
	40-47	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
	47-60	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
Urban land, Pompton substratum-----	0-12	---	---	---	0	---	0	0
	12-40	0.5-5.6	0.4-4.2	5.1-5.5	0	0	0	0
	40-47	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
	47-60	0.2-2.0	0.2-1.5	4.5-5.5	0	0	0	0
PrgA:								
Preakness, very poorly drained-----	0-6	68-185	51-139	5.1-5.5	0	0	0	0
	6-13	68-185	51-139	5.1-5.5	0	0	0	0
	13-15	8.0-14	6.0-10	5.1-5.5	0	0	0	0
	15-24	2.4-4.8	1.8-3.6	5.1-5.5	0	0	0	0
	24-32	2.4-4.8	1.8-3.6	5.6-6.0	0	0	0	0
	32-39	2.4-4.8	1.8-3.6	5.6-6.0	0	0	0	0
	39-43	2.4-4.8	1.8-3.6	5.6-6.0	0	0	0	0
	43-70	0.5-2.5	0.4-1.9	5.6-6.0	0	0	0	0
	70-72	0.5-2.5	0.4-1.9	5.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>PrkA:</b>								
Preakness, poorly drained-----	0-1	150-200	112-150	4.5-5.0	0	0	0	0
	1-9	2.0-40	7.0-14	5.1-5.5	0	0	0	0
	9-11	2.0-40	3.0-6.0	5.1-5.5	0	0	0	0
	11-24	2.0-40	3.0-6.0	5.6-6.0	0	0	0	0
	24-28	2.0-40	3.0-6.0	5.6-6.0	0	0	0	0
	28-33	2.0-40	3.0-6.0	5.6-6.0	0	0	0	0
	33-55	2.0-40	1.0-4.0	5.6-6.0	0	0	0	0
	55-60	2.0-40	1.0-4.0	5.6-6.0	0	0	0	0
<b>QY:</b>								
Pits, quarry-----	---	---	---	---	---	---	---	---
<b>RkkcA:</b>								
Rikers-----	0-6	1.0-7.5	0.7-5.6	6.6-7.3	0	0	0	0
	6-11	0.5-4.2	0.4-3.2	6.6-7.3	0	0	0	0
	11-20	0.5-4.2	0.4-3.2	6.1-6.5	0	0	0	0
	20-71	0.5-4.2	0.4-3.2	6.1-6.5	0	0	0	0
<b>RNAAC:</b>								
Rock outcrop-----	---	---	---	---	---	---	---	---
<b>RoeBc:</b>								
Rockaway, extremely stony-----	0-2	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	2-4	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	4-8	5.8-51	4.3-11	4.5-5.0	0	0	0	0
	8-15	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	15-24	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	24-31	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	31-36	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	36-60	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0
<b>RoeCc:</b>								
Rockaway, extremely stony-----	0-2	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	2-4	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	4-8	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	8-15	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	15-24	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	24-31	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	31-36	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	36-60	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0
<b>RonB:</b>								
Rockaway-----	0-2	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	2-4	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	4-8	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	8-15	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	15-24	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	24-31	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	31-36	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	36-60	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0
<b>Urban land, Rockaway substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-36	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	36-60	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>RonC:</b>								
Rockaway-----	0-2	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	2-4	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	4-8	5.8-15	4.3-11	4.5-5.0	0	0	0	0
	8-15	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	15-24	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	24-31	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	31-36	1.5-4.8	1.1-3.6	5.1-5.5	0	0	0	0
	36-60	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0
<b>Urban land, Rockaway substratum-----</b>	0-12	---	---	---	0	---	0	0
	12-36	2.4-8.2	1.8-6.2	4.5-5.0	0	0	0	0
	36-48	0.7-4.8	0.5-3.6	5.1-5.5	0	0	0	0
<b>TunkB:</b>								
Tunkhannock-----	0-3	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	3-7	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	7-18	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	18-28	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	28-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
<b>TunkC:</b>								
Tunkhannock-----	0-3	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	3-7	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	7-18	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	18-28	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	28-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
<b>TunkD:</b>								
Tunkhannock-----	0-3	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	3-7	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	7-18	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	18-28	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	28-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
<b>TunkE:</b>								
Tunkhannock-----	0-3	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	3-7	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	7-18	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	18-28	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	28-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
<b>TunudB:</b>								
Tunkhannock-----	0-3	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	3-7	5.8-14	4.3-10	3.6-6.0	0	0	0	0
	7-18	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	18-28	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
	28-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0
<b>Udorthents, Tunkhannock substratum-----</b>	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-60	1.2-5.9	0.9-4.4	3.6-6.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	<i>Inches</i>	<i>meq/100 g</i>	<i>meq/100 g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
UcdAt: Udifluents, frequently flooded--	0-3	7.2-14	5.4-11	4.5-6.0	0	0	0	0
	3-16	0.5-9.8	0.4-7.3	5.0-6.0	0	0	0	0
	16-22	0.5-11	0.4-8.4	5.0-6.0	0	0	0	0
	22-27	0.5-11	0.4-8.4	5.0-6.0	0	0	0	0
	27-32	0.5-11	0.4-8.4	5.0-6.0	0	0	0	0
	32-60	0.5-9.8	0.4-7.3	5.0-6.0	0	0	0	0
UdbonB: Udorthents, Boonton substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-58	2.0-40	0.5-12	5.1-5.5	0	0	0	0
	58-72	2.0-40	0.5-12	5.6-6.0	0	0	0	0
UdbooB: Udorthents, Boonton red sandstone lowland substratum--	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
UddunB: Udorthents, Dunellen substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
UdhalB: Udorthents, Haledon substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-60	2.4-4.8	1.8-3.6	6.1-6.5	0	0	0	0
UdhorB: Udorthents, Horseneck substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-60	1.4-4.2	1.0-3.2	6.1-6.5	0	0	0	0
UdkttB: Udorthents, loamy fill substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-60	10-16	7.5-12	3.6-5.5	0	0	0	0
UdpecB: Udorthents, Peckmantown substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
UdrkkB: Udorthents, Rikers substratum-----	0-12	6.2-16	4.7-12	5.0-6.0	0	0	0	0
	12-20	0.5-4.2	0.4-3.2	6.1-6.5	0	0	0	0
	20-71	0.5-4.2	0.4-3.2	6.1-6.5	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
UdtunB: Udorthents, Tunkhannock substratum-----	0-12 12-60	6.2-16 1.2-5.9	4.7-12 0.9-4.4	5.0-6.0 3.6-6.0	0 0	0 0	0 0	0 0
URBHGB: Urban land, Bigapple substratum-----	0-12 12-26 26-38 38-60	--- 0.5-6.5 1.0-7.5 1.0-7.5	--- 0.4-4.9 0.7-5.6 0.7-5.6	--- 5.1-5.5 5.6-6.0 5.6-6.0	0 0 0 0	--- 0 0 0	0 0 0 0	0 0 0 0
URBONB: Urban land, Boonton substratum-----	0-12 12-47 47-58 58-72	--- 2.0-40 2.0-40 2.0-40	--- 0.5-12 0.5-12 0.5-12	--- 4.5-5.0 5.1-5.5 5.6-6.0	0 0 0 0	--- 0 0 0	0 0 0 0	0 0 0 0
URBOOB: Urban land, Boonton red sandstone lowland substratum--	0-12 12-67 67-83	--- 1.8-10 1.0-10	--- 1.3-7.9 0.8-7.9	--- 4.5-5.0 4.5-5.0	0 0 0	--- 0 0	0 0 0	0 0 0
URDUNB: Urban land, Dunellen substratum-----	0-12 12-31 31-42 42-70	--- 2.4-6.8 2.4-6.8 2.4-6.0	--- 1.8-5.1 1.8-5.1 1.8-4.5	--- 4.5-5.5 4.5-5.5 5.1-6.0	0 0 0 0	--- 0 0 0	0 0 0 0	0 0 0 0
URHORB: Urban land, Horseneck substratum-----	0-12 12-44 44-60	--- 1.3-4.8 1.4-4.2	--- 1.0-3.6 1.0-3.2	--- 4.5-5.0 6.1-6.5	0 0 0	--- 0 0	0 0 0	0 0 0
URKNKB: Urban land, Knickerbocker substratum-----	0-12 12-34 34-42 42-51 51-60	--- 2.0-20 2.0-20 2.0-20 2.0-20	--- 9.0-15 3.0-10 2.0-7.0 2.0-7.0	--- 5.1-5.5 5.6-6.0 5.6-6.0 5.6-6.0	0 0 0 0 0	--- 0 0 0 0	0 0 0 0 0	0 0 0 0 0
URKTB: Urban land, loamy fill substratum-----	0-12 12-41 41-60	--- 8.0-13 10-16	--- 6.0-9.8 7.5-12	--- 3.6-5.5 3.6-5.5	0 0 0	--- 0 0	0 0 0	0 0 0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
<b>URPECB:</b>								
Urban land, Peckmantown substratum-----	0-12	---	---	---	0	---	0	0
	12-59	2.2-9.5	1.6-7.1	5.1-5.5	0	0	0	0
	59-63	1.1-5.2	0.8-3.9	5.6-6.0	0	0	0	0
	63-74	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
	74-88	0.6-4.5	0.4-3.4	5.6-6.0	0	0	0	0
<b>URPOMB:</b>								
Urban land, Pompton substratum-----	0-12	---	---	---	0	---	0	0
	12-40	2.0-5.0	1.0-4.0	5.1-5.5	0	0	0	0
	40-47	1.0-4.0	0.0-2.0	4.5-5.5	0	0	0	0
	47-53	1.0-4.0	0.0-2.0	4.5-5.5	0	0	0	0
<b>USBONB:</b>								
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-47	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>Boonton-----</b>								
	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>USBONC:</b>								
Urban land, Boonton substratum-----	0-12	---	---	---	0	---	0	0
	12-47	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>Boonton-----</b>								
	0-5	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	5-8	6.2-12	4.7-9.2	3.5-4.4	0	0	0	0
	8-17	2.9-5.5	2.2-4.1	4.5-5.0	0	0	0	0
	17-30	3.4-6.2	2.5-4.7	4.5-5.0	0	0	0	0
	30-40	3.1-6.0	2.3-4.5	4.5-5.0	0	0	0	0
	40-47	3.1-6.0	2.3-4.5	5.1-5.5	0	0	0	0
	47-58	1.9-4.2	1.4-3.2	5.1-5.5	0	0	0	0
	58-72	1.9-4.2	1.4-3.2	5.6-6.0	0	0	0	0
<b>USBOOB:</b>								
Urban land, Boonton red sandstone lowland substratum--	0-12	---	---	---	0	---	0	0
	12-67	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0

Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate	Gypsum	Salinity	Sodium adsorp- tion ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
USBOOB: (cont.)								
Boonton, red sandstone lowland---								
	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
USBOOC:								
Urban land, Boonton red sandstone lowland substratum--								
	0-12	---	---	---	0	---	0	0
	12-67	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
Boonton, red sandstone lowland---								
	0-1	146-209	110-157	3.9-4.4	0	0	0	0
	1-3	7.2-18	5.4-14	4.0-5.0	0	0	0	0
	3-10	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	10-27	1.8-10	1.3-7.9	4.5-5.0	0	0	0	0
	27-40	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	40-67	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
	67-83	1.0-10	0.8-7.9	4.5-5.0	0	0	0	0
USDUNB:								
Urban land, Dunellen substratum-----								
	0-12	---	---	---	0	---	0	0
	12-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
Dunellen-----								
	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
USDUNC:								
Urban land, Dunellen substratum-----								
	0-12	---	---	---	0	---	0	0
	12-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
Dunellen-----								
	0-8	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	8-14	5.8-14	4.3-10	4.5-5.5	0	0	0	0
	14-20	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	20-31	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	31-42	2.4-6.8	1.8-5.1	4.5-5.5	0	0	0	0
	42-70	2.4-6.0	1.8-4.5	5.1-6.0	0	0	0	0
USYRRB:								
Urban land, Yalesville substratum-----								
	0-12	---	---	---	0	---	0	0
	12-31	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	31-32	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	>32	---	---	---	0	---	0	0





Table 19. Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
YaotuB: (cont.)								
Urban land, Yalesville substratum-----	0-12	---	---	---	0	---	0	0
	12-31	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	31-32	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	>32	---	---	---	0	---	0	0
YaotuC:								
Yalesville-----	0-1	68-186	51-139	5.1-7.3	0	0	0	0
	1-5	2.0-17	1.5-13	5.1-5.5	0	0	0	0
	5-19	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	19-31	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	31-32	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	>32	---	---	---	---	---	---	---
Urban land, Yalesville substratum-----	0-12	---	---	---	0	---	0	0
	12-31	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	31-32	1.5-16	1.1-12	5.1-5.5	0	0	0	0
	>32	---	---	---	0	---	0	0
YaouA:								
Yalesville, red sandstone lowland---	0-3	5.2-15	3.9-11	4.5-5.0	0	0	0	0
	3-17	3.0-10	2.2-7.9	3.5-4.4	0	0	0	0
	17-22	2.4-8.2	1.8-6.2	3.5-4.4	0	0	0	0
	22-32	1.4-6.0	1.0-4.5	3.5-4.4	0	0	0	0
	>32	---	---	---	---	---	---	---
YaouB:								
Yalesville, red sandstone lowland---	0-3	5.2-15	3.9-11	4.5-5.0	0	0	0	0
	3-17	3.0-10	2.2-7.9	3.5-4.4	0	0	0	0
	17-22	2.4-8.2	1.8-6.2	3.5-4.4	0	0	0	0
	22-32	1.4-6.0	1.0-4.5	3.5-4.4	0	0	0	0
	>32	---	---	---	---	---	---	---
YaovB:								
Yalesville, red sandstone lowland---	0-3	5.2-15	3.9-11	4.5-5.0	0	0	0	0
	3-17	3.0-10	2.2-7.9	3.5-4.4	0	0	0	0
	17-22	2.4-8.2	1.8-6.2	3.5-4.4	0	0	0	0
	22-32	1.4-6.0	1.0-4.5	3.5-4.4	0	0	0	0
	>32	---	---	---	---	---	---	---
Urban land, Yalesville substratum-----	0-12	---	---	---	0	---	0	0
	12-22	3.0-10	2.2-7.9	3.5-4.4	0	0	0	0
	22-32	1.4-6.0	1.0-4.5	3.5-4.4	0	0	0	0
	>32	---	---	---	0	---	0	0

Table 20. 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			
BhgA: Bigapple-----	---	---	---	---	0	0	Low	Low	Moderate
BhguA: Bigapple-----	---	---	---	---	0	0	Low	Low	Moderate
Urban land, Bigapple substratum-----	---	---	---	---	0	0	Low	Low	Low
BoeBc: Boonton, terminal moraine, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BoeCc: Boonton, terminal moraine, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BoeDc: Boonton, terminal moraine, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BogB: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BogBc: Boonton, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BogC: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BogCc: Boonton, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
BogDc: Boonton, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High

Table 20. 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			
BooB: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
BooBc: Boonton, red sandstone lowland, extremely stony-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
BooC: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
BooCc: Boonton, red sandstone lowland, extremely stony-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
BosB: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Udorthents, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
BotB: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
Udorthents, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
BotC: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
Udorthents, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate

Table 20. 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			
BBouB: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
BouC: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
BouD: Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
BowrB: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
Urban land, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
BowrC: Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
Urban land, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
BowtB: Boonton, terminal moraine-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High

Table 20. 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			
BowtC: Boonton, terminal moraine-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
BowtD: Boonton, terminal moraine-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
CatcA: Catden-----	---	---	---	---	4-18	4-18	High	High	Low
CatnA: Catden-----	---	---	---	---	4-18	4-18	High	High	Low
Natchaug-----	---	---	---	---	4-17	29-33	High	High	Moderate
DunB: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
DunC: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
DunD: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
DusB: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
Udorthents, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
DusC: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
Udorthents, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate

Table 20. 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			
DuuB: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
Urban land, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
DuuC: Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
Urban land, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
FmhAt: Fluvaquents, loamy, frequently flooded----	---	---	---	---	0	0	High	High	Moderate
GrpA: Great Piece-----	---	---	---	---	0	0	High	High	High
HanB: Haledon-----	Fragipan	24-36	6-40	Noncemented	0	0	High	Moderate	Moderate
HanBc: Haledon, extremely stony-----	Fragipan	24-36	6-40	Noncemented	0	0	High	Moderate	Moderate
HanCc: Haledon, extremely stony-----	Fragipan	24-36	6-40	Noncemented	0	0	High	Moderate	Moderate
HasB: Haledon-----	Fragipan	24-36	6-40	Noncemented	0	0	High	Moderate	Moderate
Urban land, Haledon substratum-----	---	---	---	---	0	0	High	Moderate	Moderate
HasC: Haledon-----	Fragipan	24-36	6-40	Noncemented	0	0	High	Moderate	Moderate
Urban land, Haledon substratum-----	---	---	---	---	0	0	High	Moderate	Moderate

Table 20. 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			
HctBc: Hasbrouck, extremely stony-----	Fragipan	16-34	11-30	Noncemented	0	0	High	High	Moderate
HkrnB: Hinckley-----	---	---	---	---	0	0	Low	Low	High
HkrnC: Hinckley-----	---	---	---	---	0	0	Low	Low	High
HkruB: Hinckley-----	---	---	---	---	0	0	Low	Low	High
Urban land, Hinckley substratum-----	---	---	---	---	0	0	Low	Low	High
HkruC: Hinckley-----	---	---	---	---	0	0	Low	Low	High
Urban land, Hinckley substratum-----	---	---	---	---	0	0	Low	Low	High
HokCh: Holyoke, very rocky----	Lithic bedrock	10-20	0-0	Strongly cemented	0	0	Moderate	Low	High
HomC: Holyoke-----	Lithic bedrock	10-20	0-0	Strongly cemented	0	0	Moderate	Low	High
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	0	None	---	---
HotA: Horseneck-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
HotuB: Horseneck-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
Urban land, Horseneck substratum-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
KneA: Knickerbocker-----	---	---	---	---	0	0	Low	Low	Moderate
KneB: Knickerbocker-----	---	---	---	---	0	0	Low	Low	Moderate

Table 20. 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			
KneC: Knickerbocker-----	---	---	---	---	0	0	Low	Low	Moderate
KnuB: Knickerbocker-----	---	---	---	---	0	0	Low	Low	Moderate
Urban land, Knickerbocker substratum-----	---	---	---	---	0	0	Low	Low	Moderate
NazA: Natchaug-----	---	---	---	---	4-17	29-33	High	High	Moderate
PbpAt: Parsippany, frequently flooded-----	---	---	---	---	0	0	High	High	Moderate
PecmB: Peckmantown-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
PecmBc: Peckmantown, extremely stony-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
PecmC: Peckmantown-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
PecmCc: Peckmantown, extremely stony-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
PecuuB: Peckmantown-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
Urban land, Peckmantown substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
PecuuC: Peckmantown-----	Fragipan	20-40	15-44	Noncemented	0	0	Moderate	Moderate	High
Urban land, Peckmantown substratum-----	---	---	---	---	0	0	Moderate	Moderate	High

Table 20. 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			
PHG: Pits, sand and gravel--	---	---	---	---	0	0	---	Low	High
PohA: Pompton-----	---	---	---	---	0	0	High	Moderate	High
PokuB: Pompton-----	---	---	---	---	0	0	High	Moderate	High
Urban land, Pompton substratum-----	---	---	---	---	0	0	High	Moderate	High
PrgA: Preakness, very poorly drained-----	---	---	---	---	0	0	High	High	High
PrkA: Preakness, poorly drained-----	---	---	---	---	0	0	High	High	High
QY: Pits, quarry-----	Lithic bedrock	0-0	0-0	Very strongly cemented	0	0	---	---	---
RkkcA: Rikers-----	---	---	---	---	0	0	Low	Low	Low
RNAAC: Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	0	None	---	---
RoeBc: Rockaway, extremely stony-----	Fragipan	18-40	12-36	Noncemented	0	0	Moderate	Low	High
RoeCc: Rockaway, extremely stony-----	Fragipan	18-40	12-36	Noncemented	0	0	Moderate	Low	High
RonB: Rockaway-----	Fragipan	18-40	12-36	Noncemented	0	0	Moderate	Low	High
Urban land, Rockaway substratum-----	---	---	---	---	0	0	Moderate	Low	High

Table 20. 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			
RonC: Rockaway-----	Fragipan	18-40	12-36	Noncemented	0	0	Moderate	Low	High
Urban land, Rockaway substratum-----	---	---	---	---	0	0	Moderate	Low	High
TunkB: Tunkhannock-----	---	---	---	---	0	0	Low	Low	High
TunkC: Tunkhannock-----	---	---	---	---	0	0	Low	Low	High
TunkD: Tunkhannock-----	---	---	---	---	0	0	Low	Low	High
TunkE: Tunkhannock-----	---	---	---	---	0	0	Low	Low	High
TunudB: Tunkhannock-----	---	---	---	---	0	0	Low	Low	High
Udorthents, Tunkhannock substratum-----	---	---	---	---	0	0	Low	Low	High
UcdAt: Udifluents, frequently flooded-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
UdbonB: Udorthents, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
UdbooB: Udorthents, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
UddunB: Udorthents, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
UdhalB: Udorthents, Haledon substratum-----	---	---	---	---	0	0	High	Moderate	Moderate

Table 20. 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			
UdhorB: Udorthents, Horseneck substratum-----	---	---	---	---	0	0	Moderate	Moderate	Moderate
UdkttB: Udorthents, loamy fill substratum-----	---	---	---	---	0	0	High	High	Moderate
UdpecB: Udorthents, Peckmantown substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
UdrkkB: Udorthents, Rikers substratum-----	---	---	---	---	0	0	Low	Low	Low
UdtunB: Udorthents, Tunkhannock substratum-----	---	---	---	---	0	0	Low	Low	High
URBHGB: Urban land, Bigapple substratum-----	---	---	---	---	0	0	Low	Low	Low
URBONB: Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
URBOOB: Urban land, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
URDUNB: Urban land, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
URHORB: Urban land, Horseneck substratum-----	---	---	---	---	0	0	Moderate	Moderate	Moderate

Table 20. 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			
URKNKB: Urban land, Knickerbocker substratum-----	---	---	---	---	0	0	Low	Low	Moderate
URKTTB: Urban land, loamy fill substratum-----	---	---	---	---	0	0	High	Moderate	Moderate
URPECB: Urban land, Peckmantown substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
URPOMB: Urban land, Pompton substratum-----	---	---	---	---	0	0	High	Moderate	High
USBONB: Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
USBONC: Urban land, Boonton substratum-----	---	---	---	---	0	0	Moderate	Moderate	High
Boonton-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
USBOOB: Urban land, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate
USBOOC: Urban land, Boonton red sandstone lowland substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
Boonton, red sandstone lowland-----	Fragipan	20-36	10-103	Noncemented	0	0	Moderate	Low	Moderate

Table 20. 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			
USDUNB: Urban land, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
USDUNC: Urban land, Dunellen substratum-----	---	---	---	---	0	0	Moderate	Low	Moderate
Dunellen-----	---	---	---	---	0	0	Moderate	Low	Moderate
USYRRB: Urban land, Yalesville substratum-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Low	Low	Moderate
Yalesville-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	0	None	---	---
WaakAt: Wallkill, frequently flooded-----	---	---	---	---	0	0	High	Moderate	Moderate
WATER: Water-----	---	---	---	---	---	---	---	---	---
YamnB: Yalesville-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
YamnBc: Yalesville, extremely stony-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
YamnCc: Yalesville, extremely stony-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
YaobBc: Yalesville, extremely stony-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate

Table 20. 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		
YaobBc: (cont.) Boonton, extremely stony-----	Fragipan	20-36	10-46	Noncemented	0	0	Moderate	Moderate	High
Holyoke, extremely stony-----	Lithic bedrock	10-20	0-0	Strongly cemented	0	0	Moderate	Low	High
YaohEh: Yalesville, very rocky-	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Holyoke, very rocky----	Lithic bedrock	10-20	0-0	Strongly cemented	0	0	Moderate	Low	High
YaorCc: Yalesville, extremely stony-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Rock outcrop-----	Lithic bedrock	0-0	---	Indurated	0	0	None	---	---
YaotuB: Yalesville-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Urban land, Yalesville substratum-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Low	Low	Moderate
YaotuC: Yalesville-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Urban land, Yalesville substratum-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Low	Low	Moderate
YaouA: Yalesville, red sandstone lowland----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
YaouB: Yalesville, red sandstone lowland----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
YaovB: Yalesville, red sandstone lowland----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Moderate	Low	Moderate
Urban land, Yalesville substratum-----	Lithic bedrock	20-40	0-0	Strongly cemented	0	0	Low	Low	Moderate

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
BhgA: Bigapple-----	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
BhguA: Bigapple-----	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
Urban land, Bigapple substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BoeBc: Boonton, terminal moraine, extremely stony-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
BoeCc: Boonton, terminal moraine, extremely stony-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
BoeDc: Boonton, terminal moraine, extremely stony-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
BogB: Boonton-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
BogBc: Boonton, extremely stony--	C	Low	Jan-Dec	---	---	---	---	None	---	None
BogC: Boonton-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BogCc: Boonton, extremely stony--	C	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
BogDc: Boonton, extremely stony--	C	High	Jan-Dec	---	---	---	---	None	---	None
BooB: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BooBc: Boonton, red sandstone lowland, extremely stony-	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BooC: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BooCc: Boonton, red sandstone lowland, extremely stony-	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BosB: Boonton-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Boonton substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
BotB: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Boonton red sandstone lowland substratum-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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				
BotC: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Boonton red sandstone lowland substratum-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
BouB: Boonton-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BouC: Boonton-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BouD: Boonton-----	C	High	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BowrB: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton red sandstone lowland substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
BowrC: Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton red sandstone lowland substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BowtB: Boonton, terminal moraine-	D	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BowtC: Boonton, terminal moraine-	D	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
BowtD: Boonton, terminal moraine-	D	Low	Jan-Dec	---	---	---	---	None	---	None
Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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				
CatcA: Catden-----	B/D	Negligible	January	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			February	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			March	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			April	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			May	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			June	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			October	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			November	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			December	0.0	>6.0	0.0-0.5	Very long	Frequent	---	None
			CatnA: Catden-----	B/D	Negligible	January	0.0	>6.0	0.0-0.5	Very long
February	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
March	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
April	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
May	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
June	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
July	---	---				---	---	None	---	None
August	---	---				---	---	None	---	None
September	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
October	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
November	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
December	0.0	>6.0				0.0-0.5	Very long	Frequent	---	None
Natchaug-----	B/D	Negligible				January	0.0	>6.0	0.0-0.5	Long
			February	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			March	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			April	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			May	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			June	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			October	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			November	0.0	>6.0	0.0-0.5	Long	Frequent	---	None
			December	0.0	>6.0	0.0-0.5	Long	Frequent	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
DunB: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
DunC: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
DunD: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
DusB: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Dunellen substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
DusC: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Dunellen substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
DuuB: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Dunellen substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
DuuC: Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Dunellen substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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							
FmhAt: Fluvaquents, loamy, frequently flooded-----	B/D	Negligible	January	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			February	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			March	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			April	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			May	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			September	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			October	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			November	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			December	0.5-1.5	>6.0	0.0-0.5	Brief	Frequent	Brief	Frequent			
			GrpA: Great Piece-----	C/D	Negligible	January	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Rare
						February	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Rare
						March	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Rare
April	0.0-0.5	>6.0				0.0-0.3	Long	Frequent	Brief	Rare			
May	0.0-0.5	>6.0				0.0-0.3	Long	Frequent	Brief	Rare			
June	---	---				---	---	None	---	None			
July	---	---				---	---	None	---	None			
August	---	---				---	---	None	---	None			
September	---	---				---	---	None	---	None			
October	0.0-0.5	>6.0				0.0-0.3	Long	Frequent	Brief	Rare			
November	0.0-0.5	>6.0				0.0-0.3	Long	Frequent	Brief	Rare			
December	0.0-0.5	>6.0				0.0-0.3	Long	Frequent	Brief	Rare			
HanB: Haledon-----	C	Low	January	0.6-1.5	>6.0	---	---	None	---	None			
			February	0.6-1.5	>6.0	---	---	None	---	None			
			March	0.6-1.5	>6.0	---	---	None	---	None			
			April	0.6-1.5	>6.0	---	---	None	---	None			
			May	0.6-1.5	>6.0	---	---	None	---	None			
			June	---	---	---	---	None	---	None			
			July	---	---	---	---	None	---	None			
			August	---	---	---	---	None	---	None			
			September	---	---	---	---	None	---	None			
			October	---	---	---	---	None	---	None			
			November	---	---	---	---	None	---	None			
			December	0.6-1.5	>6.0	---	---	None	---	None			

Table 21. 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				
HanBc: Haledon, extremely stony--	C	Low	January	0.6-1.5	>6.0	---	---	None	---	None
			February	0.6-1.5	>6.0	---	---	None	---	None
			March	0.6-1.5	>6.0	---	---	None	---	None
			April	0.6-1.5	>6.0	---	---	None	---	None
			May	0.6-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-1.5	>6.0	---	---	None	---	None
HanCc: Haledon, extremely stony--	C	Medium	January	0.6-1.5	>6.0	---	---	None	---	None
			February	0.6-1.5	>6.0	---	---	None	---	None
			March	0.6-1.5	>6.0	---	---	None	---	None
			April	0.6-1.5	>6.0	---	---	None	---	None
			May	0.6-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-1.5	>6.0	---	---	None	---	None
HasB: Haledon-----	C	Medium	January	0.6-1.5	>6.0	---	---	None	---	None
			February	0.6-1.5	>6.0	---	---	None	---	None
			March	0.6-1.5	>6.0	---	---	None	---	None
			April	0.6-1.5	>6.0	---	---	None	---	None
			May	0.6-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-1.5	>6.0	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
HasB: (cont.) Urban land, Haledon substratum-----	D	Very high	January	0.6-4.0	>6.0	---	---	None	---	None
			February	0.6-4.0	>6.0	---	---	None	---	None
			March	0.6-4.0	>6.0	---	---	None	---	None
			April	0.6-4.0	>6.0	---	---	None	---	None
			May	0.6-4.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-4.0	>6.0	---	---	None	---	None
HasC: Haledon-----	C	Medium	January	0.6-1.5	>6.0	---	---	None	---	None
			February	0.6-1.5	>6.0	---	---	None	---	None
			March	0.6-1.5	>6.0	---	---	None	---	None
			April	0.6-1.5	>6.0	---	---	None	---	None
			May	0.6-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-1.5	>6.0	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
HasC:(cont.) Urban land, Haledon substratum-----	D	Very high	January	0.6-4.0	>6.0	---	---	None	---	None
			February	0.6-4.0	>6.0	---	---	None	---	None
			March	0.6-4.0	>6.0	---	---	None	---	None
			April	0.6-4.0	>6.0	---	---	None	---	None
			May	0.6-4.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-4.0	>6.0	---	---	None	---	None
			HctBc: Hasbrouck, extremely stony	D	Medium	January	0.0-0.5	>6.0	0.0-0.3	Brief
February	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
March	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
April	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
May	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
June	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
July	---	---				---	---	None	---	None
August	---	---				---	---	None	---	None
September	---	---				---	---	None	---	None
October	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
November	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
December	0.0-0.5	>6.0				0.0-0.3	Brief	Occasional	---	None
HkrnB: Hinckley-----	A	Medium				Jan-Dec	---	---	---	---
			Jan-Dec	---	---	---	---	None	---	None
HkrnC: Hinckley-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
			Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
HkruB: Hinckley-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Hinckley substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
HkruC: Hinckley-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Hinckley substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
HokCh: Holyoke, very rocky-----	D	High	Jan-Dec	---	---	---	---	None	---	None
HomC: Holyoke-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	---	---	Jan-Dec	---	---	---	---	None	---	---
HotA: Horseneck-----	B	Low	January	1.5-3.3	>6.0	---	---	None	---	None
			February	1.5-3.3	>6.0	---	---	None	---	None
			March	1.5-3.3	>6.0	---	---	None	---	None
			April	1.5-3.3	>6.0	---	---	None	---	None
			May	1.5-3.3	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.5-3.3	>6.0	---	---	None	---	None
			November	1.5-3.3	>6.0	---	---	None	---	None
			December	1.5-3.3	>6.0	---	---	None	---	None

Table 21. 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				
HotuB: Horseneck-----	B	Low	January	1.5-3.3	>6.0	---	---	None	---	None
			February	1.5-3.3	>6.0	---	---	None	---	None
			March	1.5-3.3	>6.0	---	---	None	---	None
			April	1.5-3.3	>6.0	---	---	None	---	None
			May	1.5-3.3	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.5-3.3	>6.0	---	---	None	---	None
			November	1.5-3.3	>6.0	---	---	None	---	None
			December	1.5-3.3	>6.0	---	---	None	---	None
Urban land, Horseneck substratum-----	D	Very high	January	1.5-4.0	>6.0	---	---	None	---	None
			February	1.5-4.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.5-4.0	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	1.5-4.0	>6.0	---	---	None	---	None
			October	1.5-4.0	>6.0	---	---	None	---	None
			November	1.5-4.0	>6.0	---	---	None	---	None
			December	1.5-4.0	>6.0	---	---	None	---	None
KneA: Knickerbocker-----	A	Low	January	3.5-6.0	>6.0	---	---	None	---	None
			February	3.5-6.0	>6.0	---	---	None	---	None
			March	3.5-6.0	>6.0	---	---	None	---	None
			April	3.5-6.0	>6.0	---	---	None	---	None
			May	3.5-6.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	3.5-6.0	>6.0	---	---	None	---	None

Table 21. 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				
KneB: Knickerbocker-----	A	Low	January	3.5-6.0	>6.0	---	---	None	---	None
			February	3.5-6.0	>6.0	---	---	None	---	None
			March	3.5-6.0	>6.0	---	---	None	---	None
			April	3.5-6.0	>6.0	---	---	None	---	None
			May	3.5-6.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	3.5-6.0	>6.0	---	---	None	---	None
			KneC: Knickerbocker-----	A	Low	January	3.5-6.0	>6.0	---	---
February	3.5-6.0	>6.0				---	---	None	---	None
March	3.5-6.0	>6.0				---	---	None	---	None
April	3.5-6.0	>6.0				---	---	None	---	None
May	3.5-6.0	>6.0				---	---	None	---	None
June	---	---				---	---	None	---	None
July	---	---				---	---	None	---	None
August	---	---				---	---	None	---	None
September	---	---				---	---	None	---	None
October	---	---				---	---	None	---	None
November	---	---				---	---	None	---	None
December	3.5-6.0	>6.0				---	---	None	---	None
KnuB: Knickerbocker-----	A	Low				January	3.5-6.0	>6.0	---	---
			February	3.5-6.0	>6.0	---	---	None	---	None
			March	3.5-6.0	>6.0	---	---	None	---	None
			April	3.5-6.0	>6.0	---	---	None	---	None
			May	3.5-6.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	3.5-6.0	>6.0	---	---	None	---	None

Table 21. 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				
KnuB: (cont.) Urban land, Knickerbocker substratum-----	D	Very high	January	3.5-6.0	>6.0	---	---	None	---	None
			February	3.5-6.0	>6.0	---	---	None	---	None
			March	3.5-6.0	>6.0	---	---	None	---	None
			April	3.5-6.0	>6.0	---	---	None	---	None
			May	3.5-6.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	3.5-6.0	>6.0	---	---	None	---	None
			NazA: Natchaug-----	B/D	Negligible	January	0.0	>6.0	0.0-0.5	Long
February	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
March	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
April	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
May	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
June	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
July	---	---				---	---	None	---	None
August	---	---				---	---	None	---	None
September	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
October	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
November	0.0	>6.0				0.0-0.5	Long	Frequent	---	None
December	0.0	>6.0				0.0-0.5	Long	Frequent	---	None

Table 21. 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				
PbpAt: Parsippany, frequently flooded-----	D	Negligible	January	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			February	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			March	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			April	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			May	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			November	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
			December	0.0-0.5	>6.0	0.0-0.3	Long	Frequent	Brief	Frequent
PecmB: Peckmantown-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
PecmBc: Peckmantown, extremely stony-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
PecmC: Peckmantown-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
PecmCc: Peckmantown, extremely stony-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
PecuuB: Peckmantown-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Peckmantown substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
PecuuC: Peckmantown-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Peckmantown substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
PHG: Pits, sand and gravel----	---	---	Jan-Dec	---	---	---	---	None	---	None
PohA: Pompton-----	B/D	Low	January	0.5-1.5	>6.0	---	---	None	---	None
			February	0.5-1.5	>6.0	---	---	None	---	None
			March	0.5-1.5	>6.0	---	---	None	---	None
			April	0.5-1.5	>6.0	---	---	None	---	None
			May	0.5-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.5-1.5	>6.0	---	---	None	---	None
			October	0.5-1.5	>6.0	---	---	None	---	None
			November	0.5-1.5	>6.0	---	---	None	---	None
			December	0.5-1.5	>6.0	---	---	None	---	None
PokuB: Pompton-----	B/D	Low	January	0.5-1.5	>6.0	---	---	None	---	None
			February	0.5-1.5	>6.0	---	---	None	---	None
			March	0.5-1.5	>6.0	---	---	None	---	None
			April	0.5-1.5	>6.0	---	---	None	---	None
			May	0.5-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.5-1.5	>6.0	---	---	None	---	None
			October	0.5-1.5	>6.0	---	---	None	---	None
			November	0.5-1.5	>6.0	---	---	None	---	None
			December	0.5-1.5	>6.0	---	---	None	---	None

Table 21. 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				
PokuB: (cont.) Urban land, Pompton substratum-----	D	Very high	January	0.5-4.0	>6.0	---	---	None	---	None
			February	0.5-4.0	>6.0	---	---	None	---	None
			March	0.5-4.0	>6.0	---	---	None	---	None
			April	0.5-4.0	>6.0	---	---	None	---	None
			May	0.5-4.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.5-4.0	>6.0	---	---	None	---	None
			October	0.5-4.0	>6.0	---	---	None	---	None
			November	0.5-4.0	>6.0	---	---	None	---	None
			December	0.5-4.0	>6.0	---	---	None	---	None
			PrgA: Preakness, very poorly drained-----	D	Low	January	0.0	>6.0	0.0-0.4	Long
February	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
March	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
April	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
May	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
June	---	---				---	---	None	---	None
July	---	---				---	---	None	---	None
August	---	---				---	---	None	---	None
September	---	---				---	---	None	---	None
October	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
November	0.0	>6.0				0.0-0.4	Long	Frequent	---	None
December	0.0	>6.0				0.0-0.4	Long	Frequent	---	None

Table 21. 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				
PrkA: Preakness, poorly drained-	B/D	Low	January	0.0-0.5	>6.0	---	---	None	---	None
			February	0.0-0.5	>6.0	---	---	None	---	None
			March	0.0-0.5	>6.0	---	---	None	---	None
			April	0.0-0.5	>6.0	---	---	None	---	None
			May	0.0-0.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	0.0-0.5	>6.0	---	---	None	---	None
			November	0.0-0.5	>6.0	---	---	None	---	None
			December	0.0-0.5	>6.0	---	---	None	---	None
QY: Pits, quarry-----	---	---	Jan-Dec	---	---	---	---	None	---	---
RkkaA: Rikers-----	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
RNAAC: Rock outcrop-----	---	---	Jan-Dec	---	---	---	---	None	---	---
RoeBc: Rockaway, extremely stony-	C	Medium	Jan-Dec	---	---	---	---	None	---	None
RoeCc: Rockaway, extremely stony-	C	Medium	Jan-Dec	---	---	---	---	None	---	None
RonB: Rockaway-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Rockaway substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
RonC: Rockaway-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Rockaway substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
TunkB: Tunkhannock-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
TunkC: Tunkhannock-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
TunkD: Tunkhannock-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
TunkE: Tunkhannock-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
TunudB: Tunkhannock-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
Udorthents, Tunkhannock substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
UcdAt: Udifluvents, frequently flooded-----	A/D	Negligible	January	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			February	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			March	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			April	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			May	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			June	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			December	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
UdbonB: Udorthents, Boonton substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
UdbooB: Udorthents, Boonton red sandstone lowland substratum-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
UddunB: Udorthents, Dunellen substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
UdhalB: Udorthents, Haledon substratum-----	C	Medium	January	0.6-1.5	>6.0	---	---	None	---	None
			February	0.6-1.5	>6.0	---	---	None	---	None
			March	0.6-1.5	>6.0	---	---	None	---	None
			April	0.6-1.5	>6.0	---	---	None	---	None
			May	0.6-1.5	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	0.6-1.5	>6.0	---	---	None	---	None
UdhorB: Udorthents, Horseneck substratum-----	B	Medium	January	1.5-3.3	>6.0	---	---	None	---	None
			February	1.5-3.3	>6.0	---	---	None	---	None
			March	1.5-3.3	>6.0	---	---	None	---	None
			April	1.5-3.3	>6.0	---	---	None	---	None
			May	1.5-3.3	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.5-3.3	>6.0	---	---	None	---	None
			November	1.5-3.3	>6.0	---	---	None	---	None
			December	1.5-3.3	>6.0	---	---	None	---	None
UdkttB: Udorthents, loamy fill substratum-----	B	Medium	Jan-Dec	4.0 10.2	>6.0	---	---	None	---	None
UdpecB: Udorthents, Peckmantown substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
UdrkkB: Udorthents, Rikers substratum-----	A	Low	Jan-Dec	---	---	---	---	None	---	None
UdtunB: Udorthents, Tunkhannock substratum-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
URBHGB: Urban land, Bigapple substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
URBONB: Urban land, Boonton substratum-----	D	Very high	Janu-Dec	---	---	---	---	None	---	None
URBOOB: Urban land, Boonton red sandstone lowland substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
URDUNB: Urban land, Dunellen substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
URHORB: Urban land, Horseneck substratum-----	D	Very high	January	1.5-3.3	>6.0	---	---	None	---	None
			February	1.5-3.3	>6.0	---	---	None	---	None
			March	1.5-3.3	>6.0	---	---	None	---	None
			April	1.5-3.3	>6.0	---	---	None	---	None
			May	1.5-3.3	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	1.5-3.3	>6.0	---	---	None	---	None
			October	1.5-3.3	>6.0	---	---	None	---	None
			November	1.5-3.3	>6.0	---	---	None	---	None
			December	1.5-3.3	>6.0	---	---	None	---	None
URKNKB: Urban land, Knickerbocker substratum-----	D	Very high	January	3.5-6.0	>6.0	---	---	None	---	None
			February	3.5-6.0	>6.0	---	---	None	---	None
			March	3.5-6.0	>6.0	---	---	None	---	None
			April	3.5-6.0	>6.0	---	---	None	---	None
			May	3.5-6.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	3.5-6.0	>6.0	---	---	None	---	None
URKTTB: Urban land, loamy fill substratum-----	D	Very high	Jan-Dec	4.0-	>6.0	---	---	None	---	None
URPECB: Urban land, Peckmantown substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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				
URPOMB: Urban land, Pompton substratum-----	D	Very high	January	0.5-4.0	>6.0	---	---	None	---	None
			February	0.5-4.0	>6.0	---	---	None	---	None
			March	0.5-4.0	>6.0	---	---	None	---	None
			April	0.5-4.0	>6.0	---	---	None	---	None
			May	0.5-4.0	>6.0	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.5-4.0	>6.0	---	---	None	---	None
			October	0.5-4.0	>6.0	---	---	None	---	None
			November	0.5-4.0	>6.0	---	---	None	---	None
			December	0.5-4.0	>6.0	---	---	None	---	None
USBONB: Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Boonton-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
USBONC: Urban land, Boonton substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Boonton-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
USBOOB: Urban land, Boonton red sandstone lowland substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
USBOOC: Urban land, Boonton red sandstone lowland substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Boonton, red sandstone lowland-----	C	Medium	Jan-Dec	---	---	---	---	None	---	None
USDUNB: Urban land, Dunellen substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
USDUNC: Urban land, Dunellen substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Dunellen-----	A	Medium	Jan-Dec	---	---	---	---	None	---	None
USYRRB: Urban land, Yalesville substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Yalesville-----	B	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	---	---	Jan-Dec	---	---	---	---	None	---	---

Table 21. 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				
WaakAt: Wallkill, frequently flooded-----	D	Low	January	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			February	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			March	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			April	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			May	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			June	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			October	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			November	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
			December	0.0	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
WATER: Water-----	---	---	Jan-Dec	---	---	---	---	None	---	---
YamB: Yalesville-----	B	High	Jan-Dec	---	---	---	---	None	---	None
YamBc: Yalesville, extremely stony-----	B	High	Jan-Dec	---	---	---	---	None	---	None
YamCc: Yalesville, extremely stony-----	B	High	Jan-Dec	---	---	---	---	None	---	None
YaobBc: Yalesville, extremely stony-----	B	High	Jan-Dec	---	---	---	---	None	---	None
Boonton, extremely stony--	C	High	Jan-Dec	---	---	---	---	None	---	None
Holyoke, extremely stony--	D	High	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
YaohEh: Yalesville, very rocky----	B	High	Jan-Dec	---	---	---	---	None	---	None
Holyoke, very rocky-----	D	High	Jan-Dec	---	---	---	---	None	---	None
YaorCc: Yalesville, extremely stony-----	B	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	---	---	Jan-Dec	---	---	---	---	None	---	---
YaotuB: Yalesville-----	B	High	Jan-Dec	---	---	---	---	None	---	None
Urban land, Yalesville substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
YaotuC: Yalesville-----	B	High	Jan-Dec	---	---	---	---	None	---	None
Urban land, Yalesville substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
YaouA: Yalesville, red sandstone lowland-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
YaouB: Yalesville, red sandstone lowland-----	B	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 21. 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
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>				
YaovB: Yalesville, red sandstone lowland-----	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land, Yalesville substratum-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Table 22. Taxonomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Bigapple-----	Mixed, mesic Typic Udipsamments
Boonton-----	Coarse-loamy, mixed, active, mesic Typic FragiudalFs
*Boonton-----	Coarse-loamy, mixed, active, mesic Typic Fragiudepts
Catden-----	Euic, mesic Typic Haplosaprists
Dunellen-----	Coarse-loamy, mixed, active, mesic Typic Hapludults
Fluvaquents-----	Fluvaquents
Great Piece-----	Fine-loamy, mixed, superactive, mesic Aeric Endoaqualfs
Haledon-----	Coarse-loamy, mixed, active, mesic Aquic FragiudalFs
*Hasbrouck-----	Fine-loamy, mixed, superactive, mesic Typic Fragiaqualfs
Hinckley-----	Sandy-skeletal, mixed, mesic Typic Udorthents
Holyoke-----	Loamy, mixed, superactive, mesic Lithic Dystrudepts
Horseneck-----	Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts
Knickerbocker-----	Sandy, mixed, mesic Typic Dystrudepts
Natchaug-----	Loamy, mixed, euic, mesic Terric Haplosaprists
Parsippany-----	Fine, mixed, active, mesic Aeric Endoaqualfs
Peckmantown-----	Coarse-silty, mixed, semiactive, mesic Typic FragiudalFs
Pompton-----	Coarse-loamy, mixed, active, mesic Aquic Dystrudepts
Preakness-----	Coarse-loamy, mixed, active, acid, mesic Typic Humaquepts
Rikers-----	Sandy-skeletal, mixed, mesic Typic Udorthents
Rockaway-----	Coarse-loamy, mixed, semiactive, mesic Typic Fragiudults
Tunkhannock-----	Loamy-skeletal, mixed, superactive, mesic Typic Dystrudepts
Udifluvents-----	Udifluvents
Udorthents-----	Udorthents
*Wallkill-----	Fine-loamy, mixed, superactive, nonacid, mesic Fluvaquentic Humaquepts
Yalesville-----	Coarse-loamy, mixed, active, mesic Typic Dystrudepts

Table 23. Relationship Between Soil Series, Their Parent Material, and Drainage

Soil characteristics and parent material	Excessively and somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
TILL DEPOSITS						
Very deep, moderately coarse-texture derived mainly from basalt and red sandstone with a fragipan.		Boonton	Boonton	Haledon		
Very deep, medium-texture derived mainly from basalt and red sandstone with a fragipan.					Hasbrouck	
Moderately deep, moderately coarse-texture derived mainly from basalt and red sandstone.		Yalesville				
Moderately deep, moderately coarse-texture derived mainly from red sandstone and shale with small amount of basalt.		Yalesville, red sandstone bedrock phase				
Shallow, medium-texture derived mainly from basalt and red sandstone.		Holyoke				
Very deep, moderately coarse-texture derived mainly from granitic gneiss with small amount of sandstone and basalt with a fragipan.		Rockaway				
Very deep, moderately coarse-texture derived mainly from red sandstone and shale with small amount of basalt with a fragipan.		Boonton, red sandstone lowland phase	Boonton, red sandstone lowland phase			
GLACIAL OUTWASH DEPOSITS						
Very deep, coarse-texture derived mainly from granitic gneiss with small amount of sandstone and basalt.	Hinckley					

Table 23. Relationship Between Soil Series, Their Parent Material, and Drainage--Continued

Soil characteristics and parent material	Excessively and somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
GLACIAL OUTWASH DEPOSITS (cont.)						
Very deep, coarse-texture coarse derived mainly from granitic gneiss and basalt.		Knickerbocker				
Very deep, moderately coarse-texture derived mainly from granitic gneiss, basalt, and other materials.			Horseneck	Pompton	Preakness	Preakness
Very deep, medium-texture derived mainly from basalt, sandstone, and granitic gneiss with a fragipan.		Peckmantown				
Very deep, medium-texture derived mainly from granitic gneiss, basalt, and sandstone.					Great Piece	
Very deep, fine-texture derived mainly from basalt, shale, and granitic gneiss.					Parsippany	
Very deep, moderately coarse-texture derived mainly from red sandstone, shale, and other materials.		Dunellen				
Very deep, moderately coarse-texture derived mainly from red sandstone, shale, and other materials.	Tunkhannock					
ALLUVIAL DEPOSITS						
Very deep, medium-texture derived in alluvium overlying organic soil material.						Wallkill
Very deep, medium textured to fine textured mixed soil material.			Udifuvents	Fluvaquents		

Table 23. Relationship Between Soil Series, Their Parent Material, and Drainage--Continued

Soil characteristics and parent material	Excessively and somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
ORGANIC DEPOSITS						
Very deep soils formed in well decomposed organic material, more than 51 inches thick.						Catden
Very deep soils formed in well decomposed organic material 16 to 51 inches thick with loamy substratum.						Natchaug
GLACIAL TILL AND OUTWASH DEPOSITS DISTURBED						
Very deep, medium textured to fine textured mixed soil material.	Udorthents	Udorthents	Udorthents	Udorthents		
FILL MATERIALS						
Very deep, coarse-texture derived mainly from dredge material.	Bigapple					
Very deep, coarse-texture derived from coal ash.	Rikers					

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