United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Cornell University
Agricultural Experiment
Station

Soil Survey of Otsego County, New York

How To Use This Soil Survey

General Soil Map

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

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

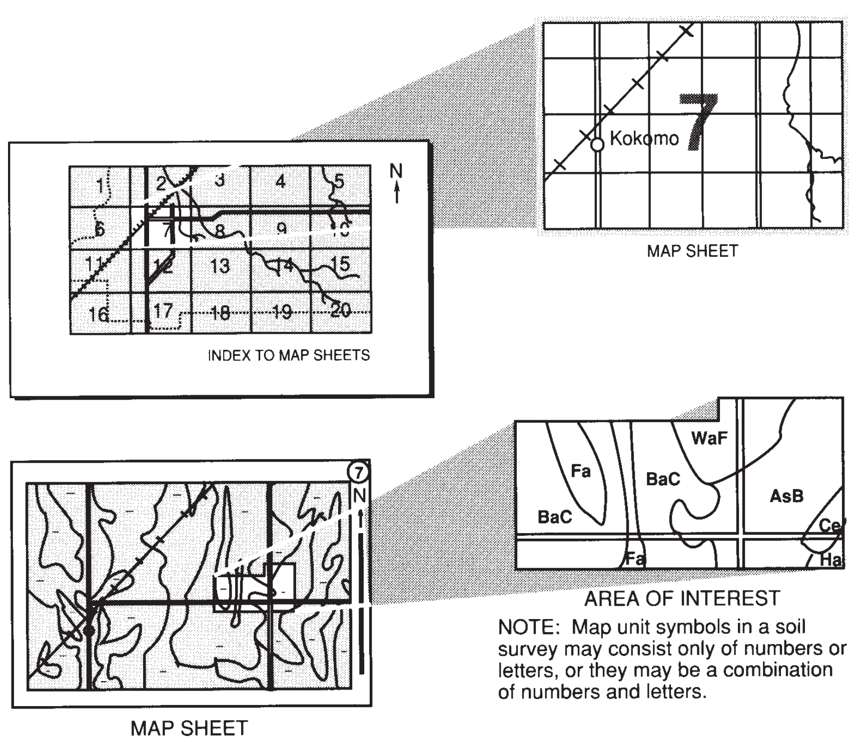
Detailed Soil Maps

The detailed soil maps 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 turn to that sheet.

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

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



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

Major fieldwork for this soil survey was completed in 1992. Soil names and descriptions were approved in 1993. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service and the Cornell University Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Otsego County Soil and Water Conservation District. Partial funding for this survey was provided by the Otsego County Soil and Water Conservation District and by the New York State Department of Agriculture and Markets.

Cover: Otsego Lake looking east in the Town of Springfield. Sleeping Lion Mountain is in the background. Soils that have a high content of lime, mainly Honeoye and Lima soils, are in the foreground.

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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Issued 2006

Foreword

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

This soil survey is designed for many different users. Farmers, ranchers, 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.

Joseph R. DelVecchio
State Conservationist
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Soil Survey of
Otsego County, New York

By Edward R. Stein, Natural Resources Conservation Service

Fieldwork by Steven E. Antes, Leslie Crandall, Kenneth Van Doren, Dale S. Gates, Matthew W. Havens, Stefan T. Seifried, and Edward R. Stein, Natural Resources Conservation Service, and C. Erwin Rice and Ron Blackmore, mapping under contract for Otsego County Soil and Water Conservation District and United States Department of Agriculture, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service
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Otsego County is in the south-central part of New York State (fig. 1). The county is bounded on the north by Herkimer, Oneida, and Montgomery Counties; on the east by Schoharie County; on the south by Delaware County; and on the west by Chenango and Madison Counties.

The county is mainly rural. It covers an area of 649,200 acres, or about 1,014 square miles (USDA, 1985). About 6,800 acres is census water and 3,016 acres is non-census water. Cooperstown is the county seat and is situated in the Susquehanna River Valley along the southern shore of Otsego Lake.

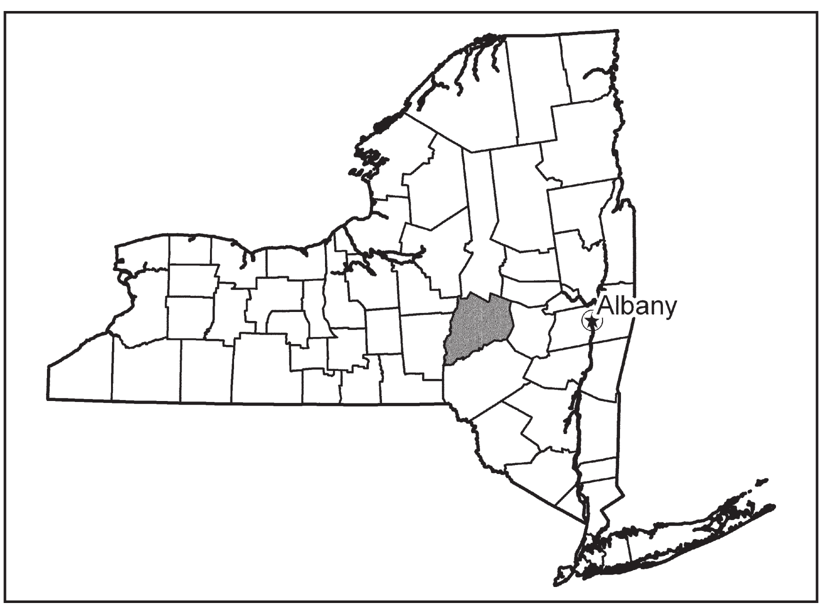

Figure 1.—Location of Otsego County in New York.

In 1990, the county had a population of about 60,517 and was growing (Otsego County Planning Department, 1993). The county probably had its largest population shortly after World War I. Later the population declined as farms on the uplands were abandoned. The farms were abandoned largely due to the exhaustion of timber and the lower crop yields caused by the less favorable soil conditions in many upland areas.

Tourism and farming are currently two of the most important industries in the county. Otsego County also has several hospitals that employ many people from the area. Tens of thousands of people visit the county yearly. The Baseball Hall of Fame in the Village of Cooperstown is a major attraction. Other favorite tourist spots include Otsego Lake (the “Glimmerglass” of James Fenimore Cooper’s novels), museums, several State parks, and the Soccer Hall of Fame in Oneonta. Most of the farms in the county are involved with dairy. Although the number of dairy farms has steadily declined since the mid-1980s, agriculture still remains one of the largest sources of income in the county.

Woodland, including small woodlots on farms, makes up over 50 percent of the survey area. Some stands of sugar maple are used for production of maple syrup. Most of the larger wooded areas are in the southern part of the county. Smaller woodland tracts are scattered throughout the remainder of the county on hillsides and hilltops. The State of New York and Otsego County own about 22,000 acres of woodland in various tracts throughout the county. These areas are managed for wildlife, the production of forest products, and recreational uses.

This survey updates an earlier soil survey of Otsego County published in 1940 (USDA, 1940). It provides additional information. It also has maps that show the soils in much greater detail and that are on an aerial photograph base.

General Nature of the Survey Area

This section describes some of the natural and cultural factors that affect land use in Otsego County. It provides general information about history and development; farming and transportation; physiography and geology; drainage; water supply and hydrogeology; and climate.

History and Development

From 1772 to 1784, the area that is now Otsego County was Tryon County. From 1784 to 1791, it was included in Montgomery County. In February 1791, Otsego County was formed from a portion of Montgomery County. Prior to 1797, the county included a part of what is now Delaware County, and prior to 1795 it included what is now the western part of Schoharie County. Cooperstown became the county seat in 1791 (Hurd, 1878).

The first European settler in the county was probably John Lindesay, who probably first visited the area around 1739 and moved into the area around 1740 (Hurd, 1878). He settled in the northwestern part of the county. Prior to that time, the area had been occupied for thousands of years by various Native Americans.

The most important inhabitants in historical times were the Mohawks, and to a lesser extent the Oneidas, both whom belonged to the Iroquois Confederacy. The Oneidas probably occupied sites in the extreme western part of the county along the Unadilla River. According to a travel and tourism map from the 1920s, the Oneidas also had camps at one time on Canadarago Lake in the north-central part of the county (Waldron, 1928). The Mohawks sporadically occupied most of the remainder of the county beginning somewhere around 1600. They continued to have a significant presence in the area up to the end of the Revolutionary War era.

Near the present-day city of Oneonta is an area of Otego and Hamplain soils adjacent to the Susquehanna River. This site appears to have once been a location where Native Americans met and traded. Members of various tribes apparently occupied or passed through this area for centuries. In the early- to mid-18th century, representatives from neighboring tribes probably came to trade with the Mohawk people living at the site. The Lenni Lenape of the Delaware Nation, the Susquehannock, and the Mahican are some of the groups that might have visited the area on occasion. There is at least one map that shows that the Susquehannock may have at one time also occupied areas within the Susquehanna River valley of Otsego County (Kent, 1989).

In 1765, some Mohawks from Onoquaqa (near the present-day village of Ouaquaga) wanted to build a permanent settlement at the foot of Lake Otsego (now the village of Cooperstown). They sought assistance from the settlers to learn agricultural and milling techniques (Taylor, 1995). Apparently, they never received the requested assistance and within a year returned to Onoquaqa and abandoned the idea of establishing a permanent settlement on Otsego Lake.

The first community settlement in the county was at the site of the present village at Cherry Valley where a group of Scotch-Irish settled around 1740 (Schull, 1980). This original settlement of Cherry Valley was largely destroyed by Native Americans and Tories during an attack on November 11, 1778. Many of the settlers were massacred. General George Washington visited what remained of the settlement in 1784 (Hurd, 1878).

Several other small settlements existed in the county in the mid-18th century. However, rapid settlement of the county did not begin until after the Revolutionary War and the cessation of difficulties with the Native Americans. The majority of the settlers came from the New England States. Between about 1784 and 1790, the State of New York extinguished the Native American's title to the lands of the county (Hurd, 1878).

The village of Cooperstown was founded in 1787 by Judge William Cooper at the foot of Otsego Lake. He also offered 40,000 acres to settlers along the west shore of Otsego Lake. The land was quickly bought up, mostly by small landholders (Cooper, 1810).

Judge Cooper was once asked about the quality and variety of soils of the lands, which at that time were part of the New York wilderness. He replied that the area was generally rough and hilly but produced good fruit trees and could grow good grass for pasture. Judge Cooper also stated that the bottom lands had excellent soils and were well suited to growing hemp with large yields (Cooper, 1810).

In 1786, the population of the county was estimated to be less than 1,000 people. By the start of the 19th century, however, the population had grown to about 21,000 (Schull, 1980). The population in the county continued to grow rapidly during the early part of the 19th century. It was estimated to be over 40,000 by 1820 and over 80,000 by 1840 (Schull, 1980).

Individual land ownership generally consisted of small parcels, except for a number of large patents, grants, and purchases that had been made prior to the period of general settlement. With the rapid increase in population during the first half of the 19th century came a burst of construction. New roads, homes, farmsteads, public buildings, and small industries sprung up throughout the county. By the end of the second decade of the 19th century, the wilderness nature that the first settlers of the county had encountered was mostly gone.

The first major road in the county was the First Western Turnpike built in 1799 from Albany to Cherry Valley (Waldron, 1928). In 1801, the Second Western Turnpike was built from Cherry Valley to Cooperstown then westward to Sherburne in Chenango County. The third turnpike in the county was completed in 1811 and connected the First Western Turnpike in Cherry Valley to the village of Manlius. This route from Albany to Manlius was commonly called the Cherry Valley Turnpike.

Construction of the Cherry Valley Turnpike was probably one of the most important events to occur during the early development of the county. The turnpike was heavily used to transport farm products, livestock, and needed supplies between Albany and the rapidly expanding settlement of the wilderness of central and western New York. It also brought settlers to the region. During the early part of the 19th century, the village of Cherry Valley became an important stop on the route and the village had numerous taverns to cater to the needs of the travelers.

By about 1860, the turnpikes had become public roads as their commercial use had dwindled. The construction of nearby canals and railroads provided faster means to get goods to markets than the turnpikes. The first railroad line in the county was built in 1865 by the Albany and Susquehanna Railroad Company. At that time, the line ran from Albany to Oneonta (Hurd, 1878). Within 5 years, at least three other railroad companies had constructed lines in the county (Hurd, 1878). The new lines provided rail service to Cooperstown, Cherry Valley, and Richfield Springs. By the beginning of the twentieth century, traffic was heavy on the rail lines throughout the county. Railroad traffic remained heavy until the 1950s.

For many years Oneonta was the center of railroad activity in the area. In 1906, the Delaware and Hudson Railway Company constructed what was then the world's largest roundhouse at Oneonta (Schull, 1980). It was in use for many years. As rail traffic diminished, however, its use was discontinued and the structure was demolished.

Butter and cheese were among the first important agricultural products exported from the county. Other important agricultural products during the early days of the county included sheep, cattle, horses, poultry, swine, wheat, oats, buckwheat, barley, Indian corn, potatoes, apples, and maple sugar.

Hops were the major cash crop grown in the county from about 1850 until the early 1900s. They had been grown in the county starting as early as the 1830s (Maine, no date), and at one time the county probably led the country in production. The selling price of hops reached a peak of $1.00 per pound in 1882, but by about 1915 disease and low prices had generally put an end to major cultivation of hops in the county (Maine, no date).

The production of hops was particularly important in the northern part of the county. Many people were employed seasonally in Otsego County during the peak of production. Most of the seasonal laborers were hired as pickers in the hops yards during the harvest period. Many hop pickers were local people looking for extra money, but some would travel considerable distances to work in Otsego County (Maine, no date). An area several miles south of Cooperstown was once known as "Hop City" by local residents due to the large amount of hops produced there and the large number of seasonal pickers staying there during the harvest. During the later part of the 19th century, hops dealers could be found in several communities in the county. The office of one such busy hops dealer once existed in the village of Milford (NY State Historical Society, 1978).

Holstein cows were probably first imported into the county during the 1870s from the Netherlands and were commonly know as "Dutch" or "North Holland" cows (Hurd, 1878). Prior to that time, dairy herds were mainly comprised of Ayrshires, Shorthorns, Durhams, and Devons. Holsteins are the most common and important breed of animal on dairy farms in the county today.

Farming and Transportation

In 1995, about 970 farms were in Otsego County (NY Agricultural Statistics Service, July 1995). The farms totaled approximately 231,200 acres, of which about 64 percent was cropland or pasture. This acreage amounts to about 36 percent of the county and includes 119,300 acres of cropland and 59,500 acres of pasture. The most extensive farm enterprise is dairying. Less extensive are growing vegetables and cash crops and raising beef and sheep.

The major transportation routes are Interstate 88 in the southern part of the county and U.S. Route 20 in the northern part. The Canadian Pacific rail line runs through the southern part of the county on former Delaware and Hudson rail routes. Most dairy products (mainly raw milk) are shipped out of the county by trucks.

Physiography and Geology

The northern part of Otsego County is in the Ontario Plain physiographic province, and the central and southern parts of the county are at the northern edge of the Allegheny Plateau province. The topography of the county ranges from nearly level to very steep. The steeper areas are commonly near drainageways or along the north-facing Helderberg and Onondaga Limestone escarpments in the northern part of the county. The escarpments rise about 600 feet above and south of the Mohawk Valley. The resistant Lower Devonian limestones of the escarpment form a cap rock over the much weaker Upper Silurian strata. The plateau is generally characterized by deeply dissected shales, siltstones, and sandstones of the Middle and Upper Devonian periods. The shales, siltstones, and sandstones are variable in resistance to weathering and erosion, causing numerous bedrock outcrops and benches along valley slopes and on hilltops.

The Susquehanna River and the Unadilla River are the two main rivers in the county. They have through valleys that are quite broad and commonly nearly level. The valley sides are steep in most areas. Other streams of importance are in the major non-through valleys. They are generally asymmetrical with a northeast to southwest trend and vary in width from quite broad to relatively narrow. The ridgetops between most of these valleys are commonly wide and have small, flat-topped hills. At the higher elevations, the ridgetops are typically underlain by hard shale or siltstone bedrock.

Elevations in the county range from a low of 970 feet above sea level to a high of 2,430 feet. The low point occurs where the Unadilla River joins the Susquehanna River in the southwestern part of the county. The high point occurs on an unnamed hill about 1$^1/_2$ miles east of East Worcester and $^1/_4$ mile west of the Schoharie County line. The eastern and central parts of the county have numerous areas where the elevation is above 1,750 feet. Elevations in the major stream valleys range from 1,000 to 1,350 feet and rise over short distances to 1,600 to 2,000 feet on the shoulder slopes of the valley sides and on ridgetops and summits. In the southern part of the county, many of the mountain summit elevations are accordant and may be indicative of an ancient peneplain that has since been dissected and glaciated.

Bedrock Geology

David S. Sullivan, geologist, Natural Resources Conservation Service, helped to prepare this section.

According to the 1970 Geologic Map of New York, Hudson-Mohawk sheet, Otsego County is underlain by a variety of bedrock (Fisher and others, 1970). In the northern part of the county, the bedrock is of the Middle Ordovician, Upper Silurian, and Lower Devonian periods. The remainder of the county is underlain by bedrock from the Middle and Upper Devonian periods. The oldest rock beds are in the northeastern and north-central parts of the county. The bedrock generally tends to get progressively younger moving southward in the county. The rock also exhibits a regional dip to the southwest that averages around 100 feet per mile (Rickard and Zenger, 1964). A generalized map of the bedrock geology of Otsego County is shown at the end of this document. This map is based upon the Geologic Map of New York (Fisher and others, 1970).

The following discussion of the bedrock geology in the county is based upon the information contained in “Geology of New York: A short account” (Broughton and others, 1966), “Geologic map of New York” (Fisher and others, 1970), “Geologic setting of Upper Susquehanna and adjacent Mohawk Region of New York” (Hutchison, no date), and “Stratigraphy and paleontology of the Richfield Springs and Cooperstown quadrangles, New York“ (Rickard and Zenger, 1964).

The oldest bedrock formations in the county are the Utica Shale and Frankfort Shale of the Middle to Upper Ordovician period of the Lorraine, Trenton, and Black River Groups. The rock is interbedded shale and siltstone. It is at the southern headwaters of the Canajoharie Creek Valley near Salt Springville.

The Utica Shale and Frankfort Shale are overlain by a narrow band of the Sauquoit Formation of the Middle Silurian period. The rock is shale, siltstone, sandstone, and conglomerate. It is limited to a small area directly west of Salt Springville.

The Brayman Shale of the Upper Silurian period overlies the Sauquoit Formation and the Frankfort Shale. The rock is calcareous shale, limestone, and dolomite. It occurs in small areas near Salt Springville and north of Summit Lake in the Town of Springfield.

The Brayman Shale is overlain by the Cobleskill Limestone, which is a band approximately 1/2 mile wide north of Route 20 to the Herkimer County line in the Towns of Springfield and Cherry Valley. It consists of limestone, dolostone, and shale.

South of the Cobleskill Limestone, and overlying it, is the Helderberg Group. The Helderberg Group is a band that varies in width from 1/4 mile to over 3 miles. The rock in this formation is mainly limestone and is exposed in numerous rock outcrops, road cuts, and stream beds. The waterfall known as Judd Falls (and Tarakarawa Falls), which is north of Cherry Valley, consists of Helderberg Limestone of the Lower Devonian period.

The Helderberg Group is overlain by the Onondaga Limestone and Ulster Group, which is directly south of the Helderberg Group in a wavy band that ranges in width from 1/2 mile to 5 miles. The Helderberg Group consists dominantly of limestone with localized areas of chert, shale, and sandstone. Exposures of this group can be seen at several locations along Route 20 between the Cherry Valley exit and the Herkimer County line. Remains of small quarries into this group exist north and west of Cherry Valley. A larger quarry directly north of Springfield Four Corners has taken rock from this group. Native Americans are reported to have used this site in Springfield in historic and prehistoric times as a source of chert for stone tools and projectiles. Fossils of corals and crinoids are common in the limestone of the Onondaga Limestone and are exposed in a road cut by the base of Mt. Tom in the Town of Springfield. This hill is the remains of an ancient coral reef.

Karst topography occurs in the northern part of the county in several bedrock-controlled areas that are underlain by the Helderberg, Onondaga, and Cherry Valley Limestones. Small sinkholes are common in some areas of these formations, and several small caverns are also in these formations. Farmington and Wassaic soils are in some areas having karst topography.

The Onondaga Limestone and Ulster Group is overlain by the extensive Hamilton Group of the Middle Devonian period. The Hamilton Group is in a band that is 15 miles wide from north to south and runs the entire length of the county from east to west. This group covers about 450 square miles of the county.

In the northern part of the county, the Hamilton Group consists of the Moscow, Panther Mountain, and Marcellus Formations. The Marcellus Formation contains Union Springs Shale and the Cherry Valley Limestone. Exposures of the Union Springs fissile black shales occur northwest of Springfield Four Corners and along the Continental Road in the Town of Springfield. The Union Springs Shale also occurs in the waterfall at Cox’s Ravine northwest of Cherry Valley. The Cherry Valley

Limestone is a thin, dark-colored argillaceous limestone. It forms the cap rock of the waterfall at Cox's Ravine and is also exposed in several locations along the Continental Road in the Town of Springfield.

In the southern part of the county, the Hamilton Group is overlain by the fairly extensive Genesee Group. Included in this group is the red Oneonta Formation, which is named for an exposure in this area of flaggy red shale and fine-grained sandstone. Also included in this group are the Unadilla, Laurens, New Lisbon, and Gilboa Formations, which are named for exposures of shale, siltstone, and sandstone in the southwestern part of the county. These bedrock strata are commonly discontinuous beds and lens. This group covers about 200 square miles of the county.

The youngest bedrock in the county belongs to the Soneya Group from the Upper Devonian period. It occurs in the southwestern and extreme south-central parts of the county. The Soneya Group includes the Enfield and Kattel Formations and consists of shale, siltstone, and sandstone.

Surficial Geology

Dr. P. Jay Fleisher, professor, State University of New York, College at Oneonta, helped prepare parts of this section.

A map of the surficial geologic deposits of Otsego County is shown at the end of this document. This map is a portion of the Surficial Geologic Map of New York, Hudson-Mohawk sheet, which was prepared by the New York State Museum as Geologic Survey Map and Chart Series #40 (Cadwell and Dineen, 1987). Additional information for this section was obtained from "Glacial Morphology of Upper Susquehanna Drainage" and "Preliminary Geological Investigation of Otsego Lake."

Otsego County is commonly thought to have been completely glaciated during the last ice age. It is covered by a variety of glacial deposits from the Pleistocene Epoch. Glaciers markedly affected the surface features of the county as much of the county is covered with glacial till. Till is an unsorted mixture of sand, silt, clay, and rock fragments. The depth of this material varies from a just a few inches on some hilltops to several hundred feet on toeslopes of some valleys. The Mardin, Wellsboro, and Lewbath series are examples of soils that formed in glacial till.

The Pleistocene era began around 500,000 years ago and ended in Otsego County around 12,000 years ago. The Laurentide was the major ice sheet that affected New York. It had moved south out of Canada. Smaller advance ice fields developed in higher elevations ahead of the main ice sheet and eventually coalesced with the major sheet. There appears to have been four major advances of the ice during the Pleistocene. These advances alternated with warm interglacial stages. There were also numerous localized advances and retreats.

The last major ice sheet that existed in Otsego County was during the Wisconsin stage of the Pleistocene. The ice from this stage obliterated any deposits in Otsego County from the earlier glaciers. Thus, only the deposits from the last sheet are known to exist in the county. There were substages and interglacial stages within the Wisconsin stage. The county has areas of both depositional and erosional features associated with mid-Wisconsin to late-Wisconsin deglaciation. Many of the valley floors have depositional landforms that are associated with a particular environment of deglaciation processes. The uplands and divides are commonly the result of both erosional and depositional environments that were different from those that occurred in the valleys.

The moving mass of ice caused major changes in the landscape it overrode. Hills were rounded off and soil material was removed from ancient land surfaces. Rocks were pulverized and commonly transported great distances. Valleys were enlarged and typically deepened before being filled by deposits from the receding ice. River valleys parallel to the direction of the ice flow were transformed into the typical glacial U-shaped valleys.

Parts of the Schenevus Creek and Susquehanna River valleys have drainage systems that remain as vestiges of their pre-glacial character. Glacial erosion modified the valleys, but remnant large stream meander can still be recognized. Some of the most pronounced meander remnants in the Susquehanna River occur near the villages of Otego and Milford Center. Wakeville, Wayland, and Otego soils and Fluvaquents-Udifluvents are in these stream meanders.

Many lakes were formed during the deglaciation period. Melt water was trapped between the retreating glacier and morainic deposits left behind in valleys at former ice margins. Many of the glacial deposits were reworked by later meltwaters and fluvial action. Glaciolacustrine deposits are commonly deep in valleys that contained these lakes. The fine sand, silt, and clay particles carried by meltwater and local streams settled out in the still waters offered by the lakes. Small areas of lacustrine soils can be found scattered throughout many areas of the county. Extensive areas of lacustrine soils exist in the valleys of the Cherry Valley Creek near the village of Middlefield, the Susquehanna River near the village of Milford, and the Schenevus Creek west of Cooperstown Junction. The Scio, Raynham, and Fonda series are examples of soils that can be found in these glaciolacustrine areas filled with mineral sediments.

Some shallow lakes gradually filled with partially decomposed organic material. The remnants of these glacial lakes are now filled with muck and peat. Some areas still contain shallow water during much of the year. Carlisle, Palms, and Carbondale soils and Saprists and Aquents formed in these deposits.

The breached moraine in the Susquehanna River valley near the village of Wells Bridge was once an impoundment for an ice-contact lake that extended up-valley to the area of the present-day city of Oneonta. Otsego Lake and Canadarago Lake are also examples of ice-contact lakes that were once much larger. The spillways of both lakes breached their impounding moraines, and the lakes then receded to their present positions. Chenango, Howard, and Tunkhannock soils formed in these impounding moraine deposits.

Many of the valleys in the county contain relic alluvial fans and deltas. Early post-glacial streams brought sediment loads to the mouth of a stream where deposition occurred because of a decrease in velocity. The velocity change probably was a result of ice remaining in the valley or the valley containing a meltwater lake. After the ice melted or the lake drained, the streams feeding into these valleys established a new gradient and became more deeply incised. As a result, the former alluvial fans and deltas became inactive and were left hanging. Some areas of soils mapped as Chenango-fan, Herkimer, Riverhead, Valois, or Unadilla soils are on these old fan and delta landforms.

A cross-sectional representation relating selected soils in Otsego County, landscape position, and soil parent material, which includes glacial till, outwash, and water-deposited silts, is shown in figure 2.

Drainage

Most of Otsego County is drained by the Susquehanna River or its tributaries. A small area in the northeastern part of the county flows into the Mohawk River drainage system. The Unadilla River drains most of the western part of the county. The river flows southward along the boundary between Madison and Chenango Counties. It eventually enters the Susquehanna River in the extreme southwestern part of the county along the boundary with Delaware and Chenango Counties.

Other major streams in the county include Cherry Valley Creek, Otego Creek, Wharton Creek, Butternuts Creek, Schenevus Creek, and Charlotte Creek.

Cherry Valley Creek flows in a south to slightly southwesterly direction and drains the southern part of the Town of Cherry Valley and parts of the towns of Roseboom,

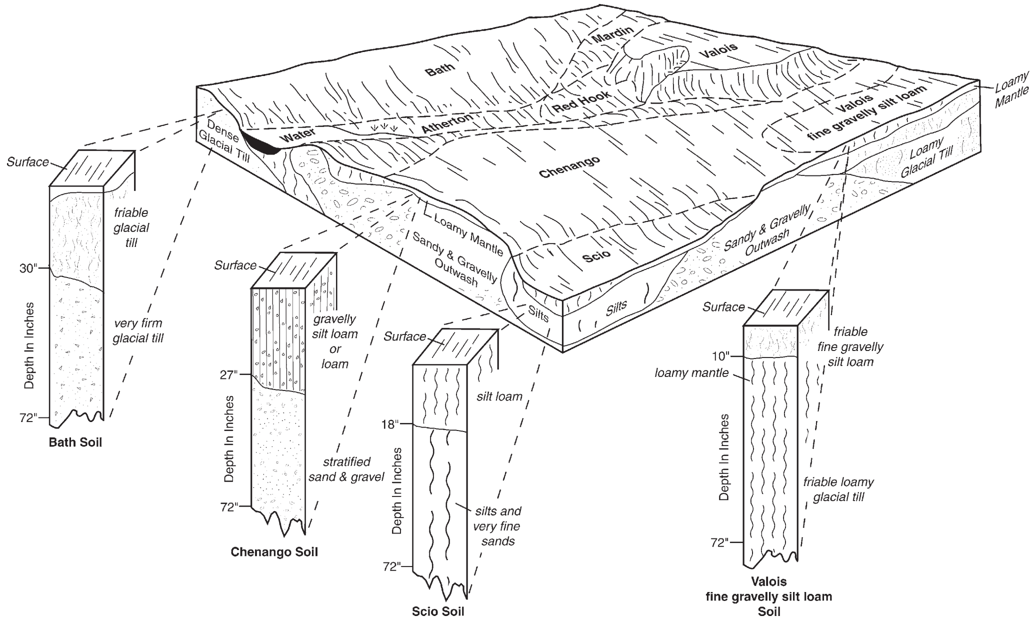

Figure 2.—Relationships between landscape and parent material for selected soils in Otsego County.

Middlefield, Westford, and Milford. Just east of the village of Milford, the creek enters the Susquehanna River.

Otego Creek drains much of the central and south-central parts of the county. It flows through the towns of Hartwick, Laurens, and Oneonta. It enters the Susquehanna River directly west of the city of Oneonta.

Wharton Creek flows in a generally southwesterly direction and drains parts of the towns of Exeter, Burlington, Edmeston, and Pittsfield. It enters the Unadilla River near the village of New Berlin.

Butternuts Creek generally flows in a southwesterly direction. It drains parts of the towns of Burlington, New Lisbon, Morris, and Butternuts. It enters the Unadilla River near the village of Mount Upton.

Schenevus Creek drains much of the eastern and southeastern parts of the county. This stream enters the Susquehanna River near Colliersville. It flows in a generally west-southwesterly direction.

Charlotte Creek drains the extreme southeastern part of the county along the boundary with Delaware County. It flows in a west-northwest direction and enters into the Susquehanna River directly east of the City of Oneonta.

Generally, most of the streams in Otsego County, especially the smaller and medium-sized streams, have cut deeply into the landscape and have steep valley sides and relatively narrow flood plains. The valley of the Susquehanna River in Otsego County tends to get wider after the river changes from a southerly flow to a more southwesterly flow in the Town of Oneonta.

The major tributary stream valleys are generally asymmetrical with a northeast to southwest trend. They vary in width from quite broad to relatively narrow. The streams of the county occupy one of two types of valleys. There are non-through valleys that have a headward climb to upland divides, and there are through valleys that have low longitudinal profiles within open-ended glacial troughs.

Landforms produced by downwasting ice during deglaciation are common in non-through valleys. Stagnant ice downwasted to form ablation landforms in these valleys. The ice margin retreated in a series of lobes that downwasted along the valley floors.

Soil deposits in parts of these valleys are poorly sorted, indicating that the large volumes of meltwater needed to allow for sorting were not present during the ice retreat.

The Schenevus Creek valley and Wharton Creek valley are examples of areas that show stagnation rather than backwasting of the ice. Kame-and-kettle landforms commonly dominate these valleys. Blocks of ice stranded in the valley were buried by outwash and fluvial deposits. Sometimes the deposits were washed into a valley from the adjacent upland divides and valley walls. When the buried ice blocks finally melted away, a depression was left. The depressions are now commonly known as a kettles or kettle-holes. Where large blocks of ice became detached and entirely buried by outwash or other deposits, “dead-ice sinks” formed. They are similar to a massive-sized kettle on the valley floor. They are thought to be a site for continuous deposition during the melting of the buried block of ice and appear to commonly be associated with tight stream meanders. As a result, these sinks contain varying types and stratification of sediments that reflect changes in the environment of deposition. Some soils in dead-ice sinks include the Raynham, Canandaigua, Palms, and Wayland series.

In the through valleys, large gravelly deposits of outwash on terraces and moraines are common. The ice in through valleys was active and backwasted during retreat, providing for both a continuous supply and larger volume of meltwater and sediment than in the valleys that had stagnant ice. Howard, Tunkhannock, and Chenango soils are dominant on these valley terraces.

Water Supply and Hydrogeology

This section was largely prepared by Larry Day, soil resource specialist, Delaware County Soil and Water Conservation District.

This section incorporates information regarding water supply, geology, and soil moisture regime into a model of landscape and hydrology.

In general, ground water is the most important source of water for residents of Otsego County. Ground water is drawn from three kinds of aquifers: bedrock, glacial till, and glacial outwash. The glacial outwash commonly yields the greatest amount of water and provides several smaller communities with public water supplies. Some individual homeowners in valleys have wells drilled in outwash aquifers. The bedrock aquifer, however, is the most commonly used and widely available source of water for individual homeowners in Otsego County. Surface water from lakes, reservoirs, or rivers is an important supply of water for some villages and communities in the county, including Cooperstown and Richfield Springs.

Knowing how water moves through soils is important to the understanding of soil formation, soil suitability for various uses, and ground water quality and quantity. The occurrence and depth of water tables determine the drainage class of each soil and thus affect classification and mapping of the soils.

Compared with ground water, the movements of surface water are more visible and thus more commonly understood. Ground water behaves somewhat differently than surface water depending upon 1) soil and bedrock characteristics, such as structure and porosity, and 2) hydraulic gradient, which gives direction to water flow and can even move water upwards against the pull of gravity. In addition, the chemistry of ground water can be distinctly different from that of surface water.

Once precipitation contacts the soil surface it may evaporate, transpire through plants, run off over the surface, or infiltrate into the soil (fig. 3). Each of these processes affects the moisture content of soils, and each may dominate at different times of the year. Evaporation and transpiration are most effective during the summer, and water tables tend to drop noticeably at that time and then rise after forests lose their leaves in autumn. Runoff can occur at any time of year but is most intense when

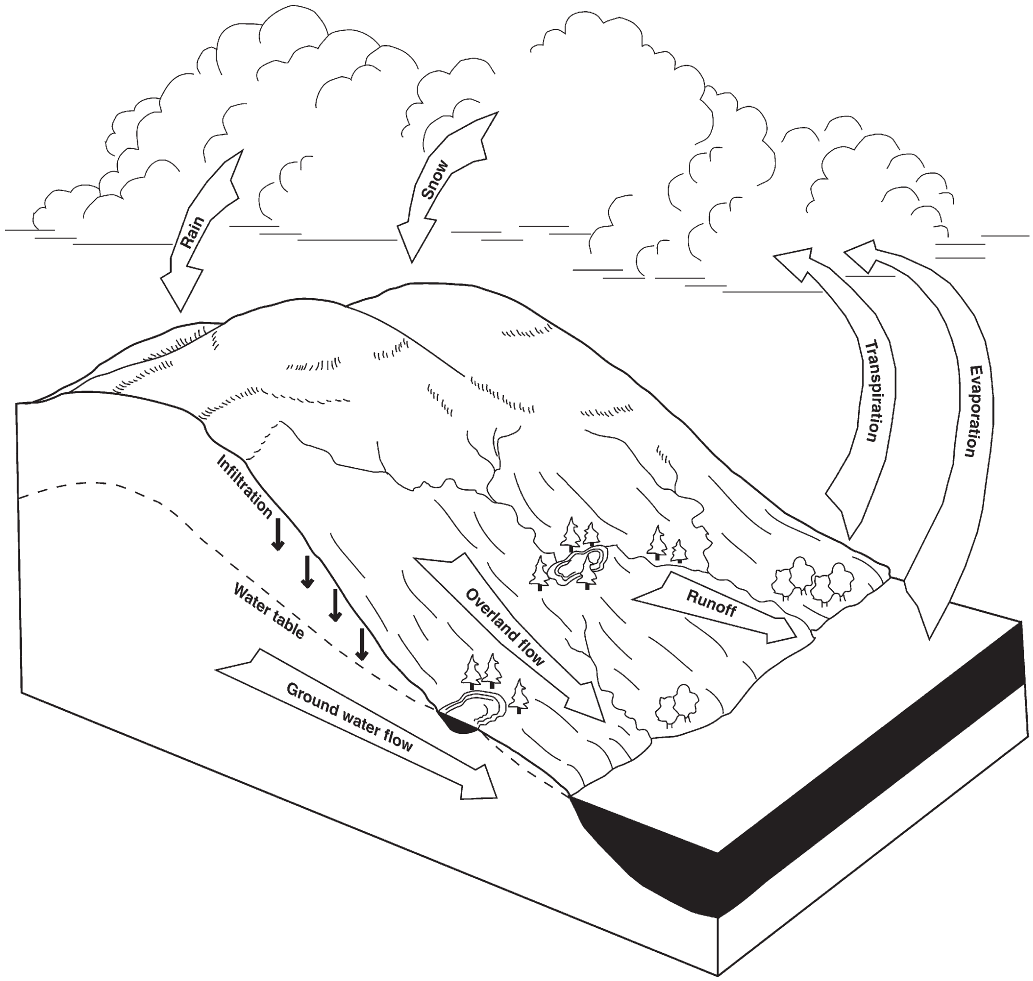

Figure 3.—The hydrologic cycle.

the soil is near saturation from previous precipitation or when the surface of the soil is frozen. As runoff increases, the hazard of erosion increases and recharge or infiltration to ground water decreases. The proportion of runoff to infiltration is greatly affected by soil characteristics. Each soil is classified into one of four hydrologic soil groups according to its tendency to produce runoff or infiltration.

Water that infiltrates into the soil does not flow downward forever but rather enters a flow pattern and eventually rejoins surface water as springs, wet spots, and streams. After infiltrating from the surface, water percolates through unsaturated soil until arriving at the water table, below which the soil or fractured bedrock is saturated. The water table may be fairly flat but is usually not level. It slopes in some direction, generally toward the nearest stream, creating the water table gradient. There can be a number of water tables separated by layers of unsaturated sediments or rock. For example, a saturated zone about 1 foot thick is commonly perched above slowly permeable subsoil layers (fragipan horizons) during the fall and spring. A saturated zone that would be more permanent, and therefore useful for a well, typically is deeper by many tens of feet to a few hundred feet.

As shown in figure 4, the water table is commonly a muted reflection of surface topography: its surface elevation is higher beneath hills and lower in valley areas. In terms of ground water flow, certain parts of the landscape tend to function differently after infiltration occurs. Hilltops and upper hillsides tend to absorb and transmit water

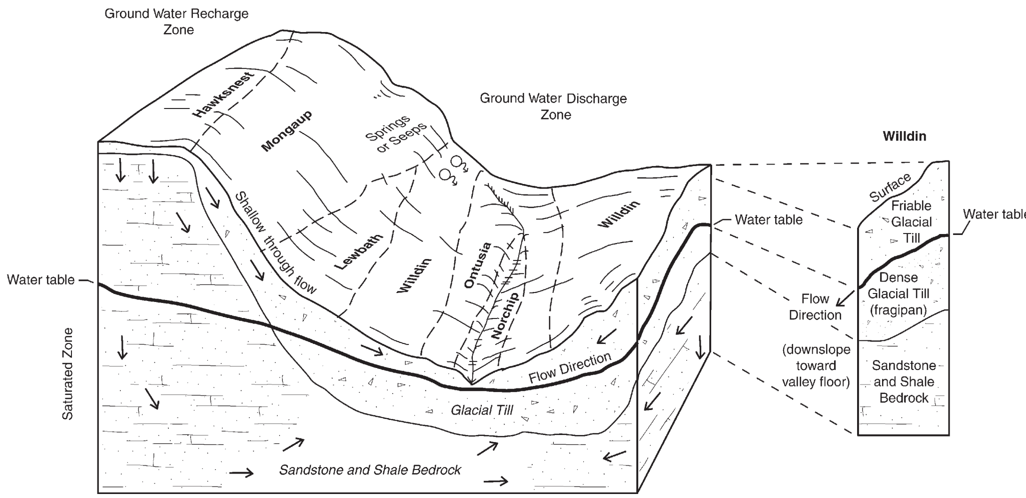

Figure 4.—Ground water flow pattern and typical landscape pattern of upland soils that formed in glacial till. The arrows show the general direction of flow.

downward into the bedrock. This proceeds most rapidly in soils that are thin and do not have a dense and restricting subsoil and where the bedrock is highly fractured. Lordstown, Mongaup, and Vly soils are examples. Soils on hilltops are commonly well drained and may be droughty. These areas provide large contributions to ground water and are important recharge zones because they recharge both local and regional water tables.

In uplands where soils are thick and have dense fragipan horizons, water that has infiltrated into the soil is largely prevented from percolating deep into the bedrock. Instead, a thin saturation zone forms just above the fragipan and the perched water flows downslope. This situation is common in Wellsboro, Mardin, Willowemoc, and Willdin soils, which comprise much of the county's farmland and building lots. In depressions and level areas, this shallow through flow may surface as a seep, causing the formation of wetter soils, such as Morris, Volusia, Onteora, and Ontusia soils. In some cases, water is obtained from wells dug or drilled into the dense glacial till. These wells are generally not a reliable source of water because yields are low and water tables commonly disappear during droughty periods. Shallow water supplies in glacial till are also vulnerable to contamination. Where more permeable and gravelly soils, such as Chenango or Valois soils, occur downslope, the runoff and through flow can infiltrate more deeply and recharge the local water table.

Lower hillsides and footslopes tend to have a surplus of water. Soils in these areas receive water from precipitation plus runoff and shallow through flow from upslope. Also, ground water that is pushed upward by the pressure of water in nearby higher areas is discharged. Hydric soils, which are common in wetlands, occur in the lowest parts of the landscape on toeslopes and in depressions. Norchip and Alden soils are examples.

The shallow ground-water flow paths described above contrast with the portion of infiltrated water that follows much deeper flow paths. The rate and direction of movement and the chemistry of dissolved minerals in water in deep flow paths are commonly substantially different from those of the shallower ground water.

The local bedrock is not especially porous; however, it tends to have fractures and cracks that give it a kind of secondary porosity. These cracks tend to be larger and more numerous nearer the surface, and water can travel more rapidly through wider cracks. Therefore, faster ground water movement occurs within the near-surface cracks while the ground water hundreds of feet below the surface tends to travel very slowly through the smaller and fewer cracks. Bedrock zones that have many water-filled and interconnected cracks are the aquifers usually tapped by wells for domestic drinking water supplies. Yields are variable between wells but typically are only 1 to 5 gallons per minute.

In areas having karst topography, surface water commonly either accumulates in depressions or drains into sinkholes in the limestone bedrock. The water then enters a series of connected underground voids, fractures, or conduits and may eventually become part of a flowing underground stream. In places, such streams may be several hundred feet below the surface. Discharge areas in karst topography occur as springs, streams, or seeps at elevations below the recharge area. The discharge may occur at a considerable distance from the initial recharge area. Waters originating in karst topography are vulnerable to contamination as a result of animal or human activities at or near the surface.

Because of its slow movement, deep ground water is in contact with the surrounding bedrock for very long periods and is therefore able to dissolve various minerals. The deep wells necessary to reach bedrock aquifers are usually less subject to contamination from human activities at the surface (e.g. harmful bacteria or chemical pollutants) but may have significant levels of undesirable minerals from natural sources. Although not physically harmful, undesirably high levels of dissolved iron and manganese are not uncommon. High contents of salt, sulfur, and methane gas can also occur, especially in bedrock wells drilled within larger valleys. In Otsego County, the southern part of the county usually has “soft” water; that is, water having low to moderate amounts of dissolved calcium and magnesium carbonates. The northern part of the county typically has “hard” water; that is, water having high amounts of dissolved calcium carbonate and commonly having significant amounts of iron and sulfur. These minerals are especially common in areas associated with the limestone bedrock. Generally, the bedrock aquifers provide minimally adequate supplies of good-quality water for domestic and light industry uses.

Artesian wells occur both in bedrock aquifers and sand and gravel aquifers. They occur where a well penetrates a confining layer of soil or bedrock, allowing water under pressure to rise directly to an elevation near or above the land surface. Artesian wells that flowed when first installed commonly cease flowing after the flow reduces the hydraulic pressure.

Many springs and smaller seeps occur in the county on hillsides, at the base of hills, or along valley walls where glacial deposits come in contact with bedrock. Springs occur where 1) the water table intersects the land surface, 2) the overlying soil is relatively porous (allowing water to flow freely to the surface), and 3) fractures in the bedrock reach the water table. Springs were a very valuable water source for the early development of Otsego County, and they continue to supply drinking water for some farms and rural homes. Yields of individual springs are commonly 5 to 10 gallons per minute. Much higher yields have been reported in areas of similar soils, bedrock, and landscapes in adjacent Delaware County (Soren, 1963). Spring water can be easily contaminated if the water table is close to the surface in the discharge area and catch basins are not adequately protected. Many springs are not a reliable source of year-round water because yields vary greatly from season to season.

Ground water discharge contributes not only to springs and seeps on hillsides but also directly to surface streams. Most streams are therefore “gaining,” their flows increasing with distance downstream. In the summer, evapotranspiration uses up most of the precipitation and less runoff contributes to stream flows. Streams then decline to base flow levels, and ground water discharge creates nearly all the stream flow.

Although most streams gain in flow downstream, an important exception occurs where streams cross alluvial fan deposits. These areas are mapped as Herkimer gravelly silt loam, fan, or Chenango channery loam, fan, soils. Tributary streams that gain flow over their length in the uplands can abruptly lose flow as they travel over the fan deposit. Streams may simply dry up, soaking into the gravelly soils before they join the main streams, especially when flows are low. This steady infiltration of surface water directly recharges local ground water on fan deposits. The large well yields (over 100 gallons per minute) required by municipalities and larger industries have been successfully developed within or close to these deposits.

The location, duration, and type of water table have an important influence on soil development. For example, the types of plant and animal life that inhabit a soil are related to the soil's drainage class. Decomposition of organic matter is incomplete and rates of decomposition are slowed in areas that have saturated soil conditions. The formation of horizons and color patterns in the soil may be subtly or profoundly influenced by the recurring presence of saturated conditions. Prolonged conditions of either soil saturation (which causes an oxygen poor environment) or soil drying (which causes an oxygen rich environment) cause the chemical processes of reduction and oxidation to occur, respectively. Over thousands of years these chemical changes become manifested as "redoximorphic" features that become visible in the soil profile and are important to the soil classification system.

Two types of saturated zones, perched and apparent, are of primary importance in the soils of Otsego County. A perched water tables occur where downward flow of water is impeded, such as in soils that have a fragipan. Morris or Volusia soils are examples. The saturated zone is perched above a dense but unsaturated subsoil. An apparent water table occurs in soils that do not have a restricting subsoil. Examples are Red Hook and Atherton soils. Soil saturation continues with increasing depth below the top of the water table. When describing either type of saturated zone within a soil profile, it is important to understand that at greater depths, i.e. below 6 or 7 feet, additional saturated zones can occur. The deeper zones can function separately from the shallower ones.

Soil classification reflects the kind and depth of the seasonal high water table. Table 24 shows the kind and depth of the seasonal high water table for each soil in Otsego County, and table 26 shows the classification of each soil.

Climate

The higher elevations, generally above 1,750 feet, in the county are markedly cooler than the main agricultural areas, which are at the lower elevations and in valleys. Precipitation is well distributed throughout the year and is usually adequate for all crops. In winter, snow occurs frequently and covers the ground much of the time. The northern part of the county and the higher elevations of most of the rest county receive slightly more snowfall than the other parts of the county in most years. The climatic data in table 1 from the Cherry Valley station are more representative of the climatic conditions that occur in the northern part of the county, and to some extent, the higher elevations of the rest of the county.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Cooperstown and Cherry Valley for the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring at these two stations. Table 3 provides data on the length of the growing season in the county. An examination of table 1 shows that the Cherry Valley station has an average of about 80 less growing degree days than the Cooperstown station.

Areas that have elevations above approximately 1,750 feet and some areas in the northeastern part of the county above the Helderberg Escarpment have cooler average annual air and soil temperatures than the lower elevations or other parts of the county. As a result, many of these cooler areas have a shorter growing season and fewer growing degree days. Soil temperature data collected for a period of about

4 years in the county supports the temperature data. Elevation, aspect, and presence of a seasonal water table in the soil were all shown to have a significant effect on the average annual soil temperature.

In winter, the average temperature is 22.8 degrees F at Cooperstown and 21.4 degrees F at Cherry Valley. The average daily minimum temperature is 13.1 degrees F at Cooperstown and 13.0 degrees F at Cherry Valley. January is the coldest month. It has an average temperature of 20 degrees F at Cooperstown and 19 degrees F at Cherry Valley. The lowest temperatures during the period of record were -30 degrees F at Cooperstown and -26 degrees F at Cherry Valley. In July, which is the hottest month, the average temperature is 68 degrees F. The highest recorded temperatures during the period of record were 97 degrees F at Cooperstown and 93 degrees F at Cherry Valley.

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 (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first frost in the fall.

The average total annual precipitation at Cooperstown is 39.26 inches. Of this, 18.68 inches, or 47 percent, usually falls in May through September. The average total annual precipitation at Cherry Valley is 42.97 inches. Of this, 19.98 inches, or 46 percent, usually falls in May through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall for May through September is less than 10.84 inches or more than 25.63 inches at Cooperstown. In 2 years out of 10, the rainfall for May through September is less than 11.82 inches or more than 27.26 inches at Cherry Valley. Thunderstorms occur on about 26 days each year, and most occur in July.

The average annual snowfall is 85.7 inches at Cooperstown and 118 inches at Cherry Valley. On the average, at least 1 inch of snow is on the ground for 103 days at Cooperstown and for 93 days at Cherry Valley. The number of such days varies greatly from year to year.

The average relative humidity in Cooperstown is about 70 percent. The average relative humidity in mid-afternoon is about 57 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 61 percent of the time possible in summer and 46 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 10.6 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in Otsego County, New York. 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.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

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

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

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

The general soil map units of Otsego County join with similar map units in Delaware, Herkimer, Oneida, Montgomery, and Schoharie Counties. The general soil map units, which cover broad areas, are named for the dominant soils in those areas. In some areas along the borders of Otsego County, the names of the general soil map units do not match those of adjacent counties. These discrepancies exist because of differences in the detail of mapping, scale of the general soils map, changes in soil classification, and differences in the proportions of major soils in adjoining counties. These areas have units that contain soils that are similar to those in the adjacent counties.

Madison and Chenango Counties are also adjacent to Otsego County. The general soil map units for these counties do not join directly with those for Otsego County because the Unadilla River forms a natural boundary between the survey areas. Many of the soils mapped in Otsego County are in these counties. Because the proportion of major soils are different; however, the names of the units are different.

Dominantly Sloping, Somewhat Excessively Drained to Somewhat Poorly Drained Soils That Formed in Glacial Till

The seven general soil map units in this group make up about 78.7 percent of the county. These soils are mainly in the uplands and formed in glacial till. About 67.2 percent of the soils formed in glacial till derived from sandstone, siltstone, and shale, and about 11.5 percent of the soils formed in till derived from limestone and calcareous shale. The soils range from shallow to very deep. Most areas are used as forestland, pasture, or cropland.

1. Mardin-Lordstown-Bath

Dominantly nearly level to very steep, moderately deep and very deep, well drained and moderately well drained, medium textured soils; in glaciated uplands that are commonly bedrock-controlled

This unit consists of soils that formed in glacial till that is dominantly brownish or olive and derived from sandstone, siltstone, or shale. The landscape consists of footslopes, hilltops, ridges, and hillsides. Some areas have been deeply incised by streams. Slopes range from 1 to 50 percent. They are dominantly 3 to 15 percent on footslopes and hilltops and are as steep as 50 percent on hillsides and narrow valley walls.

This map unit makes up about 37 percent of the county. It is about 42 percent Mardin soils, 37 percent Lordstown soils, 15 percent Bath soils, and 6 percent soils of minor extent (fig. 5 and fig. 15).

The Mardin soils are gently sloping to moderately steep and are on footslopes and hillsides in uplands. They are very deep and moderately well drained. Typically, they have a surface layer of channery silt loam. The subsoil and substratum are medium textured. A dense, very firm fragipan layer is at a depth of about 21 inches. The seasonal high water table is at a depth of 14 to 24 inches from November through May. Permeability is moderate in the surface layer and the upper part of the subsoil and is slow or very slow in the lower part of the subsoil and in the substratum.

The Lordstown soils are nearly level to very steep and are mostly on oblong or broad, bedrock-controlled hilltops, steep hillsides, or narrow valley walls. They are moderately deep and well drained. Typically, they have a surface layer of channery silt loam. The subsoil and substratum are medium textured. Hard, fine-grained sandstone bedrock is at a depth of about 28 inches. Permeability is moderate throughout.

The Bath soils are gently sloping to very steep and are on hillsides and hilltops in uplands. They are very deep and well drained. Typically, they have a surface layer of channery silt loam. The subsoil and substratum are medium textured. A dense, very firm fragipan layer is at a depth of about 30 inches. The seasonal high water table is at a depth of 24 to 38 inches from November through March. Permeability is moderate in the surface layer and the upper part of the subsoil and is slow or very slow in the lower part of the subsoil and in the substratum.

The soils of minor extent include Volusia, Chippewa, Valois, Chadakoin, Manlius,

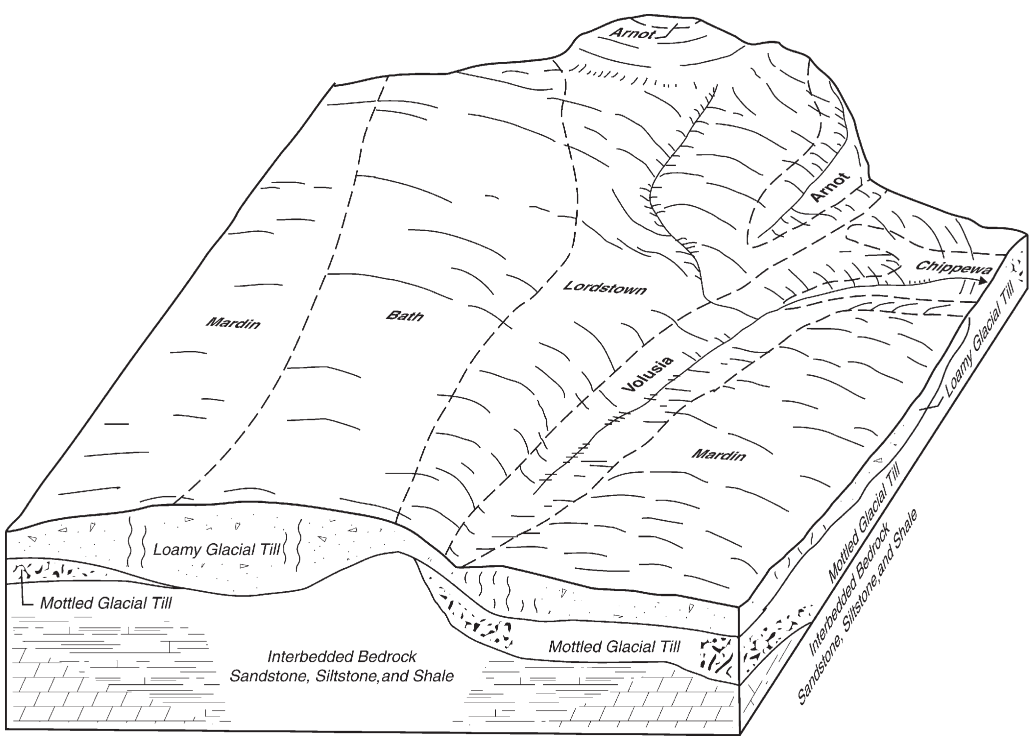

Figure 5.—Typical pattern of soils and underlying material in the Mardin-Lordstown-Bath general soil map unit.

Arnot, and Greene soils. The very deep, somewhat poorly drained Volusia soils and poorly drained Chippewa soils are in depressions and along small drainageways on the lowest parts of the landscape. The very deep, well drained Valois soils are on toeslopes and sides of valleys. The deep, well drained Chadakoin soils are on toeslopes and hillsides of bedrock-controlled uplands. The well drained, moderately deep Manlius soils and somewhat excessively drained, shallow Arnot soils are on hilltops, summits, shoulder slopes, and benches that are bedrock-controlled. The somewhat poorly drained, moderately deep Greene soils are on bedrock-controlled summits and benches.

The land use of this unit varies widely. The restricted depth to bedrock and slopes over 15 percent are the main limitations affecting land use. The less sloping areas of this unit are used for corn, hay, or pasture. The more sloping areas are used for hay, pasture, or forestland. Some areas are idle and have a cover of brush or non-woody plants. Most of the steep and very steep areas of this unit are forestland. The nearly level and gently sloping areas are well suited to agriculture. Streams that have steep banks and narrow, steep-sided valleys are common in this unit. Some areas of this unit are managed for firewood and timber. Other areas are used for recreation.

The depth to bedrock in areas of the Lordstown soils, the depth to the seasonal water table (wetness), permeability, and frost action in areas of the Mardin and Bath soils are the main limitations affecting community development. The slope and rock outcrops are also limitations in some areas.

2. Mongaup-Willdin-Lewbath

Dominantly nearly level to very steep, moderately deep and very deep, well drained and moderately well drained, medium textured soils; at elevations over 1,750 feet in glaciated uplands that are commonly bedrock-controlled

This unit consists of soils that formed in glacial till that is dominantly brownish or olive and derived from sandstone, siltstone, or shale. The landscape consists of footslopes, hilltops, ridges, and hillsides. Some areas have been deeply incised by streams. Slopes range from 1 to 50 percent. They are dominantly 3 to 15 percent on footslopes and hilltops and are as steep as 50 percent on hillsides and narrow valley walls.

This map unit makes up about 19.8 percent of the county. It is about 58 percent Mongaup soils, 30 percent Willdin soils, 9 percent Lewbath soils, and 3 percent soils of minor extent (fig. 6).

The Mongaup soils are nearly level to very steep and are on mostly oblong or broad hilltops, on steep hillsides, and on sides of valleys in bedrock-controlled uplands. They are moderately deep and well drained. Typically, they have layers of channery silt loam throughout. Massive shale bedrock is at a depth of about 34 inches. Permeability is moderate throughout.

The Willdin soils are gently sloping to moderately steep and are on footslopes and hillsides in uplands. They are very deep and moderately well drained. Typically, they have a surface layer of channery silt loam. The subsoil, subsurface layer, and substratum are medium textured. A dense, firm fragipan layer is at a depth of about 17 inches. The seasonal high water table is at a depth of 14 to 24 inches from November through May. Permeability is moderate in the surface layer, subsurface layer, and upper part of the subsoil and is slow or very slow in the lower part of the subsoil and in the substratum.

The Lewbath soils are gently sloping to steep and are on hillsides and hilltops in uplands. They are very deep and well drained. Typically, they have a surface layer of channery silt loam. The subsoil and substratum are medium textured. A dense, firm fragipan layer is at a depth of about 21 inches. The seasonal high water table is at a depth of 19 to 36 inches from November through March. Permeability is moderate in

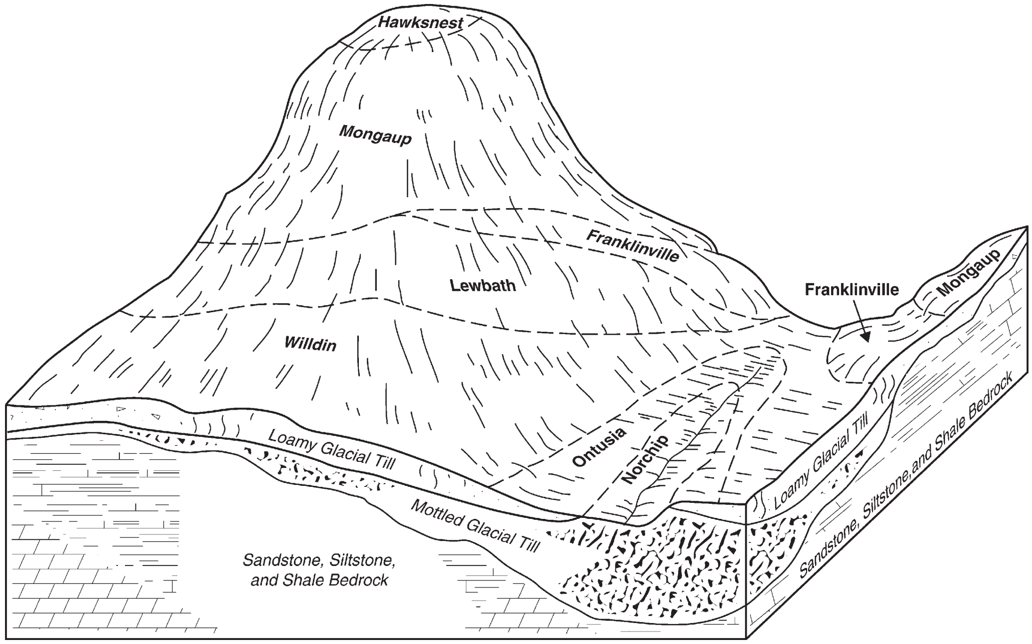

Figure 6.—Typical pattern of soils and underlying material in the Mongaup-Willdin-Lewbath general soil map unit.

the surface layer and the upper part of the subsoil and is slow or very slow in the lower part of the subsoil and in the substratum.

The soils of minor extent include Ontusia, Norchip, Franklinville, Hawksnest, Torull, and Gretor soils. The very deep, somewhat poorly drained Ontusia soils and poorly drained Norchip soils are in depressions and along small drainageways on the lowest parts of the landscape. The deep, well drained Franklinville soils are on toeslopes and hillsides of bedrock-controlled uplands. The shallow, somewhat excessively drained Hawksnest soils; the shallow, poorly drained Torull soils; and the moderately deep, somewhat poorly drained Gretor soils are on ridgetops, hilltops, and benches that are bedrock-controlled.

The land use of this unit varies widely. The slope and restricted depth to bedrock are the main limitations affecting land use. The less sloping areas of this unit are used for corn, hay, or pasture. The more sloping areas are used for pasture or forestland. Some areas are idle and have a cover of brush or non-woody plants. Most of the steep and very steep areas are forestland. The nearly level and gently sloping areas are well suited to agriculture. Streams that have steep banks and narrow, steep-sided valleys are common in this unit. Some areas of this unit are managed for firewood and timber. Other areas are used for recreation.

The depth to bedrock in areas of the Mongaup soils, the depth to the seasonal high water table (wetness), permeability, and frost action in areas of the Willdin and Lewbath soils are the main limitations affecting community development. The slope and rock outcrops are also limitations in some areas.

3. Vly-Willowemoc-Lewbeach

Dominantly nearly level to very steep, moderately deep and very deep, well drained and moderately well drained, medium textured soils that formed in reddish till; at elevations over 1,750 feet in glaciated uplands that are commonly bedrock-controlled

This unit consists of soils that formed in glacial till that is dominantly reddish and derived from sandstone, siltstone, or shale. It occurs predominantly in the south-central and southwestern parts of the county. The landscape consists of footslopes, hilltops, ridges, and hillsides. Some areas have been deeply incised by streams. Slopes range from 1 to 45 percent. They are dominantly 1 to 8 percent on hilltops and 3 to 15 percent on footslopes and are as steep as 45 percent on hillsides and narrow valley walls.

This map unit makes up about 1.6 percent of the county. It is about 63 percent Vly soils, 30 percent Willowemoc soils, 5 percent Lewbeach soils, and 2 percent soils of minor extent (fig. 7).

The Vly soils are nearly level to very steep and are mostly on oblong or irregularly shaped bedrock-controlled benches, ridgetops, and hillsides. They are moderately deep and well drained. Typically, they have a surface layer of channery silt loam. The subsoil is medium textured. Massive reddish sandstone bedrock is at a depth of about 23 inches. Permeability is moderate throughout.

The Willowemoc soils are gently sloping to strongly sloping and are on footslopes and hillsides in uplands. They are very deep and moderately well drained. Typically, they have a surface layer of channery silt loam. The subsurface and subsoil layers are medium textured. A dense, very firm fragipan layer is at a depth of about 25 inches. The seasonal high water table is at a depth of 18 to 24 inches from November through May. Permeability is moderate in the surface layer, subsurface layer, and upper part of the subsoil and is slow or very slow in the lower part of the subsoil.

The Lewbeach soils are strongly sloping and are on hillsides in uplands. They are very deep and well drained. Typically, they have a surface layer of channery silt loam. The subsurface and subsoil layers are dominantly medium textured. A dense, very firm fragipan layer is at a depth of about 27 inches. The seasonal high water table is at a depth of about 24 to 35 inches from November through March. Permeability is moderate in the surface layer, moderate or moderately slow in the upper part of the subsoil and in the subsurface layer, and slow or very slow in the lower part of the subsoil.

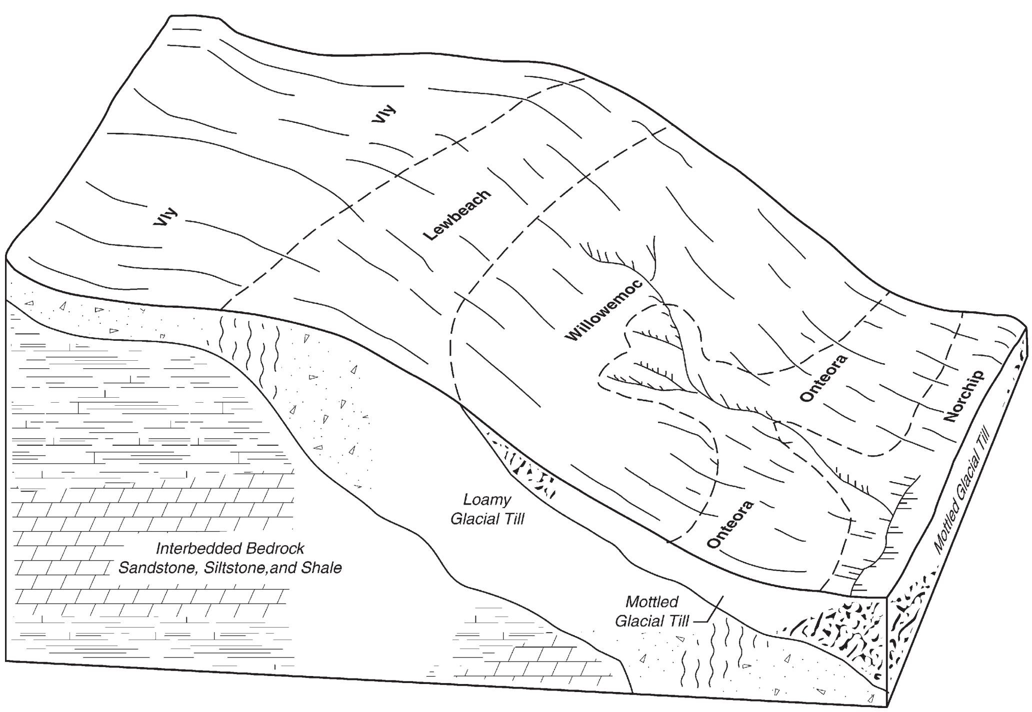

Figure 7.—Typical pattern of soils and underlying material in the Vly-Willowemoc-Lewbeach general soil map unit.

The soils of minor extent include Onteora, Norchip, Franklinville, Hawksnest, Torull, and Gretor soils. The very deep, somewhat poorly drained Onteora soils and poorly drained Norchip soils are in depressions and along small drainageways on the lowest parts of the landscape. The deep, well drained Franklinville soils are on footslopes and backslopes of bedrock-controlled uplands. The shallow, somewhat excessively drained Hawksnest soils are on the hilltops, shoulder slopes, and benches that are bedrock-controlled. The shallow, poorly drained Torull soils and the moderately deep, somewhat poorly drained Gretor soils are also on hilltops and benches that are bedrock-controlled.

The land use of this unit varies widely. The slope and restricted depth to bedrock are the main limitations affecting land use. The less sloping areas of this unit are used for corn, hay, or pasture. The more sloping areas are used for pasture or forestland. Some areas are idle and have a cover of brush or non-woody plants. Most of the steep and very steep areas are forestland. The nearly level and gently sloping areas are well suited to agriculture. Streams that have steep banks and narrow, steep-sided valleys are common in this unit. Some areas of this unit are managed for firewood and timber. Other areas are used for recreation.

The depth to bedrock in areas of the Vly soils, the depth to the seasonal high water table (wetness), permeability, and frost action in areas of the Willowemoc and Lewbeach soils are the main limitations affecting community development. The slope and rock outcrops are also limitations in some areas.

4. Wellsboro-Oquaga-Lackawanna

Dominantly nearly level to very steep, moderately deep and very deep, well drained and moderately well drained, medium textured soils that formed in reddish till; in glaciated uplands that are commonly bedrock-controlled

This unit consists of soils that formed in glacial till that is dominantly reddish and derived from sandstone, siltstone, or shale. It occurs predominantly in the southwestern and south-central parts of the county. The landscape consists of footslopes, hilltops, ridges, and hillsides. Some areas have been deeply incised by streams. Slopes range from 1 to 45 percent. They are dominantly 1 to 8 percent on hilltops and 3 to 15 percent on footslopes and are as steep as 45 percent on hillsides and narrow valley walls.

This map unit makes up about 8.8 percent of the county. It is about 47 percent Wellsboro soils, 32 Oquaga percent soils, 17 percent Lackawanna soils, and 4 percent soils of minor extent (fig. 8).

The Wellsboro soils are gently sloping to moderately steep and are on broad or oblong till plains, footslopes, and hillsides. They are very deep and moderately well drained. Typically, they have a surface layer of channery silt loam. The subsoil is medium textured. A dense, firm fragipan layer begins at a depth of about 23 inches. The seasonal high water table is at a depth of 18 to 24 inches from November through May. Permeability is moderate in the surface layer and the upper part of the subsoil and is slow or very slow in the lower part of the subsoil.

The Oquaga soils are nearly level to very steep and are mostly on oblong or irregularly shaped, bedrock-controlled ridgetops, hillsides, and sides of valleys. They are moderately deep and well drained. Typically, they have a surface layer and subsoil of channery silt loam and a substratum of very channery silt loam or extremely channery silt loam. Reddish shale bedrock begins at a depth of 28 inches. Permeability is moderate throughout.

The Lackawanna soils are gently sloping to steep and are on broad, irregular and oblong hillsides and hilltops and on long and narrow footslopes of valleys. They are very deep and well drained. Typically, they have a surface layer of channery silt loam.

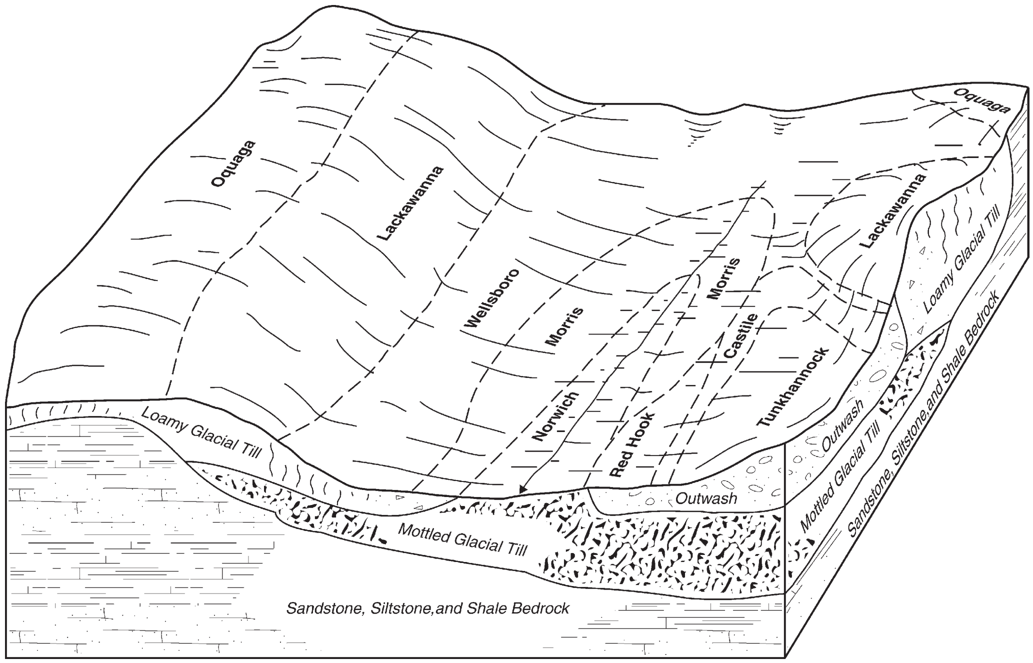

Figure 8.—Typical pattern of soils and underlying material in the Wellsboro-Oquaga-Lackawanna general soil map unit.

The subsurface layer and subsoil are medium textured. A dense, firm fragipan layer begins at a depth of about 26 inches. The seasonal high water table is at a depth of 24 to 35 inches from November through March. Permeability is moderate in the surface layer, upper part of the subsoil, and subsurface layer and is slow or very slow in the lower part of the subsoil.

The soils of minor extent include Morris, Red Hook, Norwich, Valois, Arnot, Greene, Castile, and Tunkhannock soils. The very deep, somewhat poorly drained Morris soils and the very deep, poorly drained Norwich soils are in slightly concave depressional areas and along small drainageways on the lowest parts of the landscape. The very deep, well drained Valois soils are on toeslopes, footslopes, and sides of valleys. The shallow, somewhat excessively drained Arnot soils and the moderately deep, somewhat poorly drained Greene soils are on the summits, shoulder slopes, and benches that are bedrock-controlled. The very deep, somewhat poorly drained Red Hook soils, moderately well drained Castile soils, and well drained Tunkhannock soils are in valleys on glacial outwash deposits.

The land use of this unit varies widely. The slope and the depth to bedrock are the main limitations affecting land use. The less sloping areas of this unit are used for corn, hay, or pasture. The more sloping areas are used for hay, pasture, or forestland. Some areas are idle and have a cover of brush or non-woody plants. Most of the steep and very steep areas of this unit are forestland. The nearly level and gently sloping soils in this map unit are well suited to agriculture. Streams with steep banks and narrow, steep-sided valleys are common in this unit. Some areas of this unit are managed for firewood and timber. Other areas are used for recreation.

The depth to bedrock in areas of the Oquaga soils, the depth to the seasonal water table (wetness), permeability, and frost action in areas of the Wellsboro and Lackawanna soils are the main limitations affecting community development. The slope and rock outcrops are also limitations in some areas.

5. Lansing-Conesus-Manheim

Dominantly nearly level to very steep, very deep, well drained to somewhat poorly drained, medium textured soils that formed in calcareous till; in glaciated uplands in the northern part of the county

This unit consists of soils that formed in calcareous glacial till derived mainly from limestone and calcareous shale. It occurs predominantly in the northern part of the county. The landscape consists of drumlins, hilltops, hillsides, and footslopes. Slopes range from 0 to 50 percent. They are dominantly 3 to 15 percent on footslopes and hilltops and are as steep as 50 percent on hillsides.

This map unit makes up about 9.2 percent of the county. It is about 48 percent Lansing soils, 29 percent Conesus soils, 19 percent Manheim soils, and 4 percent soils of minor extent (fig. 9 and fig. 10).

The Lansing soils are gently sloping to very steep and are mostly in oblong or irregularly shaped areas of till plains, footslopes, drumlins, hilltops, and hillsides. They are very deep and well drained. Typically, they have a surface layer of silt loam. The subsurface layer, subsoil, and substratum are medium textured. Permeability is moderate in the surface layer, subsurface layer, and subsoil and is slow in the substratum.

The Conesus soils are gently sloping and strongly sloping and are mostly on oblong or irregularly shaped areas of till plains, footslopes, drumlins, hilltops, and hillsides. They are very deep and moderately well drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are medium textured. The seasonal high water table is at a depth of 18 to 24 inches from March through May. Permeability is moderate in the surface layer and subsoil and is slow or very slow in the substratum.

The Manheim soils are nearly level and strongly sloping and are mostly in oblong or irregularly shaped areas of drumlins, hilltops, and hillsides. They are very deep and somewhat poorly drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are medium textured. The seasonal high water

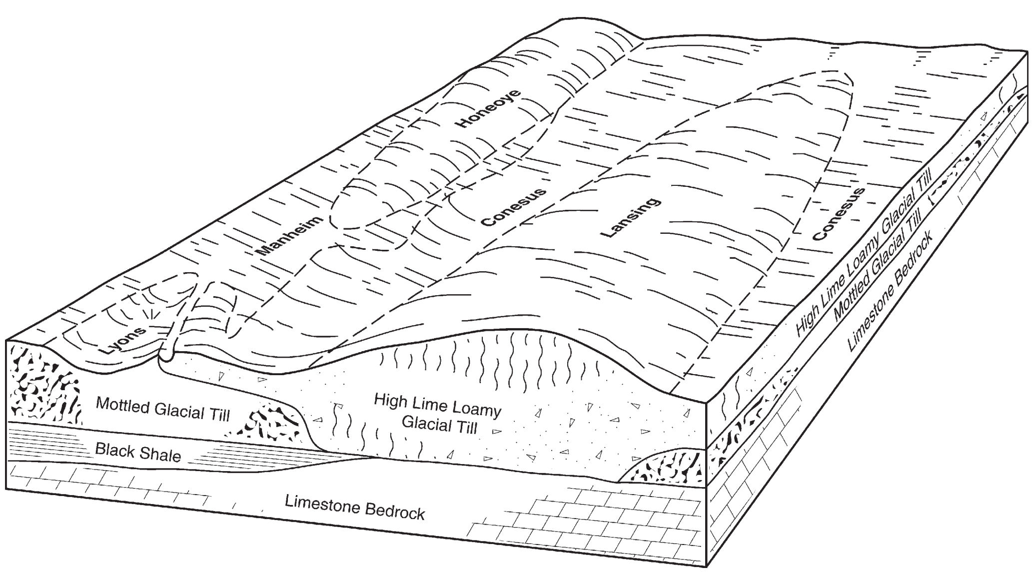

Figure 9.—Typical pattern of soils and underlying material in the Lansing-Conesus-Manheim general soil map unit.

Figure 10.—A landscape in the Lansing-Conesus-Manheim general soil map unit. The Lansing soils generally have a convex slope. The Manheim soils have a more gentle, concave slope. The Conesus soils are in intermediate positions between the Lansing and Manheim soils.

table is at a depth of 6 to 18 inches from November through May. Permeability is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum.

The soils of minor extent include Lyons, Honeoye, Lima, Manlius, Towerville, Farmington, and Wassaic soils. The very deep, poorly drained Lyons soils are in depressions and along small drainageways on the lowest parts of the landscape. The very deep, well drained Honeoye soils are on drumlins and hilltops where the solum is thinner. The very deep, moderately well drained Lima soils are in slightly concave landscapes and shallow depressions. The moderately deep, well drained Manlius soils and moderately well drained Towerville soils are on some summits and shoulder slopes that are bedrock controlled. The shallow, somewhat excessively drained Farmington soils and the moderately deep, well drained Wassaic soils are on limestone bedrock-controlled benches in upland areas.

This unit is mainly used for farming. The less sloping areas are mainly used for corn and hay crops. Some areas are used for vegetable crops. The steeper areas are used for pasture or forestland. A few areas of this unit are managed for firewood and timber.

Frost action and slow or very slow permeability are the main limitations affecting community development. Wetness due to the seasonal high water table in areas of the Manheim and Conesus soils is also a limitation. The slope, depth to bedrock, and rock outcrops are limitations in some areas.

6. Farmington-Wassaic

Dominantly nearly level to very steep, shallow and moderately deep, somewhat excessively drained and well drained, medium textured soils that formed in calcareous till; in the northern part of the county in glaciated uplands that are typically bedrock controlled

This unit consists of soils that formed in shallow or moderately deep, calcareous glacial till derived mainly from limestone and calcareous shale. It occurs exclusively in the northern part of the county. The landscape consists of hilltops, hillsides, ridges, drumlins, and footslopes. Slopes range from 0 to 60 percent. They are dominantly 0 to 8 percent on footslopes, hilltops, and broad, bedrock-controlled benches and uplands. They are as steep as 60 percent on hillsides and valley walls.

This map unit makes up about 1.7 percent of the county. It is about 52 percent Farmington soils, 40 percent Wassaic soils, and 8 percent soils of minor extent (fig. 11).

The Farmington soils are nearly level to very steep and are mostly on broad, bedrock-controlled upland till plains, benches, ridges, and hillsides. They are shallow and somewhat excessively drained. Typically, they have a surface layer of silt loam. The subsoil is gravelly silt loam. Hard limestone bedrock is at a depth of about 18 inches. Permeability is moderate throughout.

The Wassaic soils are nearly level to moderately steep and are mostly on broad, bedrock-controlled upland till plains, benches, and hillsides. They are moderately deep and well drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are medium textured. Hard limestone bedrock is at a depth of about 31 inches. The seasonal high water table is at a depth of 19 to 36 inches during March and April. Permeability is moderate in the surface layer and is moderate or moderately slow in the subsoil and substratum.

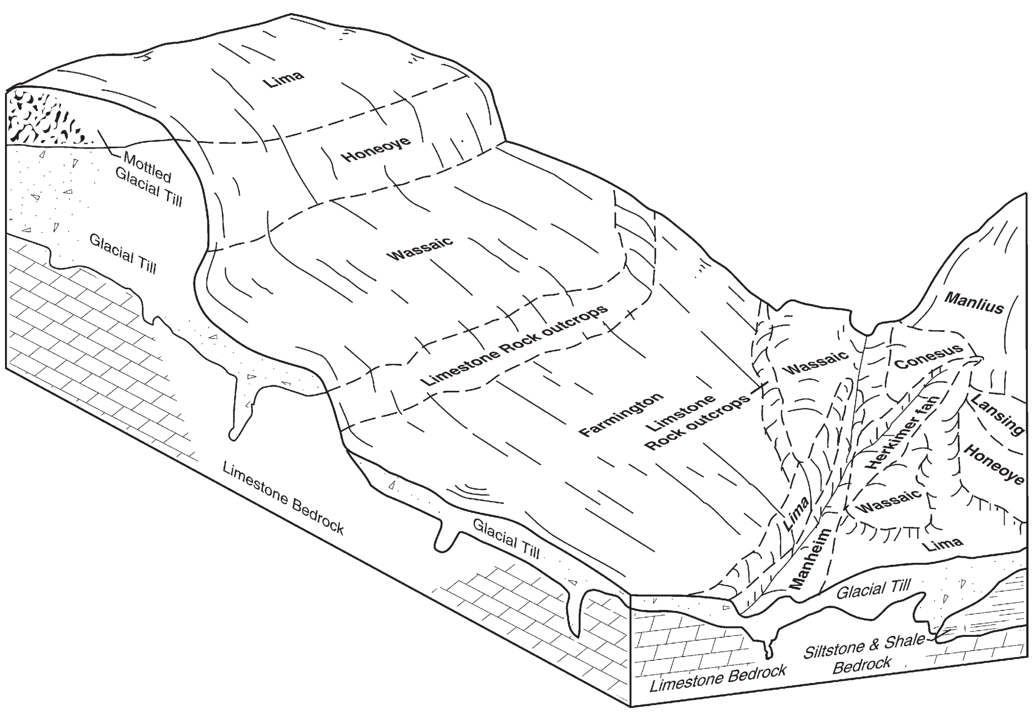

Figure 11.—Typical pattern of soils and underlying material in the Farmington-Wassaic general soil map unit.

The soils of minor extent include Manheim, Lyons, Conesus, Lima, Lansing, Honeoye, Manlius, Towerville, and Herkimer soils. Also included are outcrops of limestone bedrock. The very deep, somewhat poorly drained Manheim soils and poorly drained Lyons soils are in depressions and along small drainageways on the lowest parts of the landscape. The very deep, moderately well drained Conesus and Lima soils are in slightly concave areas of footslopes and on the lower parts of backslopes. The very deep, well drained Lansing and Honeoye soils are in the slightly higher, convex areas of the landscape. The moderately deep, well drained Manlius soils and moderately well drained Towerville soils are on some noncalcareous bedrock-controlled shoulder slopes and summits. The very deep, well drained Herkimer soils are on alluvial fans and are subject to rare flooding.

This unit is used mainly for farming. The less sloping areas are used for corn, hay, or pasture. The steeper areas are used for pasture or forestland. Most of the nearly level and gently sloping areas are well suited to agriculture. However, shallow depth to bedrock, droughtiness, and rock outcrops are problems in some areas dominated by the Farmington soils.

The depth to bedrock in areas of the Farmington and Wassaic soils and frost action in areas of the Wassaic soils are the main limitations affecting community development. The slope and rock outcrops are also limitations in some areas.

7. Danley-Darien-Nunda

Dominantly nearly level to moderately steep, very deep, moderately well drained and somewhat poorly drained, medium textured and moderately fine textured soils that formed in calcareous till; in glaciated uplands in the northeastern part of the county

This unit consists of soils that formed in calcareous glacial till that is dominantly brownish or olive and derived from limestone and calcareous shale. It occurs predominantly in the northeastern part of the county. The landscape consists of glacial till plains, drumlins, hilltops, hillsides, and footslopes. Slopes range from 1 to 25 percent. They are dominantly 1 to 15 percent on footslopes and hilltops and are as steep as 25 percent on hillsides.

This map unit makes up about 0.6 percent of the county. It is about 38 percent Danley soils, 33 percent Darien soils, 14 percent Nunda soils, and 15 percent soils of minor extent.

The Danley soils are gently sloping to moderately steep and are mostly in oblong or irregularly shaped areas on till plains, footslopes, drumlins, hilltops, hillsides, and dissected valley walls. They are very deep and moderately well drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are moderately fine textured. The seasonal high water table is at a depth of 18 to 24 inches from March through May. Permeability is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum.

The Darien soils are nearly level to strongly sloping and are mostly in oblong or irregularly shaped, slightly concave areas on till plains, footslopes, drumlins, hilltops, and hillsides. They are very deep and somewhat poorly drained. Typically, they have a surface layer of channery silt loam. The subsoil and substratum are moderately fine textured. The seasonal high water table is at a depth of 6 to 18 inches from November through May. Permeability is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum.

The Nunda soils are gently sloping to moderately steep and are mostly on oblong or irregularly shaped till plains, footslopes, drumlins, hilltops, hillsides, and dissected valley walls. They are very deep and moderately well drained. They have a silty surface mantle that ranges from 13 to 30 inches in thickness. Typically, they have a surface layer and subsurface layer of silt loam. The subsoil and substratum are moderately fine textured. The seasonal high water table is at a depth of 18 to 24 inches from March through May. Permeability is moderate in the surface layer, subsurface layer, and upper part of the subsoil; moderately slow in the lower part of the subsoil; and slow or very slow in the substratum.

The soils of minor extent include Burdett, Lyons, Honeoye, Lansing, Howard, Farmington, and Wassaic soils. The very deep, somewhat poorly drained Burdett soils and poorly drained Lyons soils are in slightly concave depressional areas and along small drainageways. The very deep, well drained Honeoye and Lansing soils are in areas where the water table is deeper. The very deep, well drained Howard soils are in valleys on glacial outwash deposits. The shallow, somewhat excessively drained Farmington soils and the moderately deep, well drained Wassaic soils are on limestone bedrock-controlled benches in upland areas.

This unit is used mainly for farming. The less sloping areas are used for corn and hay crops. The steeper areas are used for pasture or are idle. A few areas are used for forestland. The nearly level and gently sloping areas of this unit are suited to agriculture. Some areas of this unit are used for recreation.

Wetness due to the seasonal high water table, frost action, and the slow or very slow permeability in the substratum are the main limitations affecting community development in many areas. Other limitations include the slope in some areas, small areas of bedrock outcrops, and shallow depth to bedrock on limestone bedrock-controlled landforms.

Dominantly Well Drained to Poorly Drained Soils That Formed in Glacial Outwash or Ablation Till

The two general soil map units in this group make up about 12.8 percent of the county. These very deep soils are mainly in valleys and formed in glacial outwash and ablation till. Most areas have been cleared and are used as cropland or pasture. Most of the less sloping soils meet the requirements for prime farmland.

8. Chenango-Valois-Howard

Dominantly nearly level to very steep, very deep, well drained, moderately coarse textured and medium textured soils that formed in glacial outwash and inwash deposits and in ablation till; on terraces, outwash plains, kames, eskers, and moraines and along valley walls

This unit consists of soils that formed in glacial outwash, inwash deposits, ablation till, and colluvium. The landscape consists of alluvial fans, kames, terraces, valley sides, eskers, moraines, and some toeslopes and footslopes. Slopes range from 0 to 55 percent. They are dominantly 3 to 15 percent on outwash plains and are as steep as 55 percent on sides of terraces and valley walls.

This map unit makes up about 11.7 percent of the county. It is about 44 percent Chenango soils, 43 percent Valois soils, 7 percent Howard soils, and 6 percent soils of minor extent (fig. 12).

The Chenango soils are nearly level to very steep and are mostly on kames, eskers, moraines, terraces, and alluvial fans. They are very deep and well drained. They formed in glacial outwash, alluvial fan deposits, and inwash deposits that consist of water-sorted, stratified sand and gravel derived from brownish or olive sandstone, siltstone, and shale bedrock. Typically, Chenango soils have a surface layer of gravelly silt loam. The subsoil is medium textured. The substratum is coarse textured. Permeability is moderate or moderately rapid in the surface layer and subsoil and is rapid in the substratum.

The Valois soils are gently sloping to very steep and are mostly on colluvial toeslopes and footslopes or on long or irregularly shaped areas of lateral moraines.

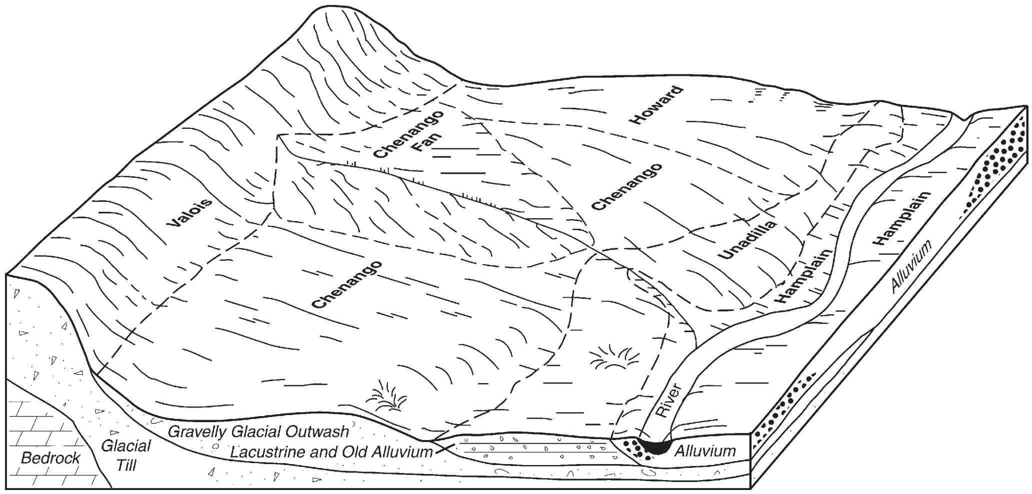

Figure 12.—Typical pattern of soils and underlying material in the Chenango-Valois-Howard general soil map unit.

They are very deep and well drained. They formed in ablation glacial till, poorly sorted glacial outwash material, and in colluvium derived from shale, siltstone, or sandstone bedrock. Typically, Valois soils have a surface layer of gravelly loam and gravelly silt loam. The subsoil and substratum are medium textured. Permeability is moderate in the surface layer and upper part of the subsoil and is moderate or moderately rapid in the lower part of the subsoil and in the substratum.

The Howard soils are gently sloping to very steep and are mostly on kames, terraces, moraines, and eskers. They are very deep and well drained. They formed in glacial outwash and inwash deposits that consist of water-sorted, stratified sand and gravel derived from limestone, sandstone, and shale bedrock. Typically, Howard soils have a surface layer of gravelly silt loam. The subsurface layer is medium textured. The subsoil is mainly moderately fine textured. The substratum is coarse textured. Permeability is moderate or moderately rapid in the surface layer, subsurface layer, and subsoil and is very rapid in the substratum.

The soils of minor extent include Tunkhannock, Castile, Unadilla, Scio, Hamplain, Otego, Trestle, Deposit, and Herkimer soils. The well drained Tunkhannock soils formed in water-sorted, stratified sand and gravel derived from reddish shale, siltstone, and sandstone. The Tunkhannock soils are mainly in the southwestern part of the county. The moderately well drained Castile soils are in the slightly lower positions on outwash plains where the water table is closer to the surface. The well drained Unadilla soils and the moderately well drained Scio soils are on alluvial terraces and glacial lake plains. The well drained Hamplain soils and the moderately well drained Otego soils are on flood plains. The well drained Trestle soils and the moderately well drained Deposit soils are along high gradient streams that are subject to rare flooding. The well drained Herkimer soils are on alluvial fans in the northern part of the county and are subject to rare flooding.

The unit is used mainly for farming. The less sloping areas are used for corn and hay crops. Some areas are used for vegetable crops. The steeper areas of this unit are used for pasture or forestland. Droughtiness may be a problem during extended dry periods in areas of the Howard and Chenango soils (fig. 13).

The very rapid or rapid permeability in the Chenango and Howard soils can result in poor filtering by septic tank absorption fields. The poor filtering can result in contamination of ground water and nearby water bodies. Frost action is a limitation

Figure 13.—A landscape in the Chenango-Valois-Howard general soil map unit. The Chenango soils are the cropland on the lateral moraine or terrace areas in the foreground and middle of the photo. The Valois soils are on the more sloping valley walls that are being used for pasture and hayland. A similar soil-landscape pattern occurs in the northern part of the county, but Howard soils instead of Chenango soils are on the lateral moraines or terraces. Lordstown soils are on the forested, bedrock-controlled hill in the background.

affecting community development in some areas. The slope is also a limitation in some areas.

Some areas of this unit are mined as a source of sand and gravel. Figure 14 shows a gravel pit along the edge of an outwash terrace containing Chenango soils.

9. Atherton-Riverhead-Scio (fine sandy loam)

Dominantly nearly level and gently sloping, very deep, well drained to poorly drained, moderately coarse textured and medium textured soils that formed in glacial outwash, old glacial lake deltas, and water-sorted deposits; on terraces and outwash plains, predominantly in the northwestern part of the county

This unit consists of soils that formed in sandy glacial outwash. It occurs predominantly in the northwestern part of the county in the Unadilla River Valley. The landscape consists of outwash plains, terraces, glacial lake deltas, and beaches. Slopes are dominantly 0 to 6 percent but range from 0 to 8 percent.

This map unit makes up about 1.1 percent the county. It is about 60 percent Atherton soils, 22 percent Riverhead soils, 8 percent Scio (fine sandy loam) soils, and 10 percent soils of minor extent.

The Atherton soils are nearly level and are mainly in depressional areas and long, narrow drainageways. They are very deep and poorly drained. Typically, they have a

Figure 14.—A pit with stratified deposits of gravel and sand on an outwash terrace in an area of nearly level and gently sloping Chenango soils.

surface layer and subsoil of silt loam. The substratum is medium textured. The seasonal high water table is at the surface to 6 inches below the surface from November through June. Permeability is moderate in the surface layer and subsoil and is moderate or moderately rapid in the substratum.

The Riverhead soils are nearly level and gently sloping and are mainly on broad terraces, glacial lake plains and deltas, and beaches. They are very deep and well drained. Typically, they have a surface layer and subsoil of sandy loam. The substratum is moderately coarse textured. Permeability is moderately rapid in the surface layer and subsoil and is rapid or very rapid in the substratum.

The Scio (fine sandy loam) soils are nearly level and gently sloping and are mainly on broad outwash plains, on terraces, and in slightly concave drainageways that dissect outwash terraces. They are very deep and moderately well drained. Typically, they have a surface layer of fine sandy loam. The subsoil and substratum are medium textured. The seasonal high water table is at a depth of 18 to 24 inches from March through May. Permeability is moderate throughout the soil.

The soils of minor extent include Canandaigua, Raynham, Unadilla, Castile, Red Hook, Otego, and Wayland soils. The poorly drained or very poorly drained Canandaigua soils and the somewhat poorly drained Raynham soils are in drainageways and depressional areas. The well drained Unadilla soils are on alluvial terraces and glacial lake plains. The moderately well drained Castile soils and the somewhat poorly drained Red Hook soils are on gravelly glacial outwash terraces and moraines. The moderately well drained Otego soils and the poorly drained Wayland soils are on flood plains.

This unit is used mainly for farming. The better drained areas are used for corn, alfalfa, and vegetable crops. Some areas are used for pasture or forestland.

Wetness due to a high water table in areas dominated by the Atherton or Scio soils is the main limitation affecting community development. Frost action in areas dominated by the Scio or Riverhead soils is also a limitation. The rapid or very rapid permeability in the substratum in some areas of the Riverhead soils can result in poor filtering by septic tank absorption fields. Contamination of ground water and nearby water bodies is possible in these areas.

Dominantly Nearly Level, Well Drained to Very Poorly Drained, Gently Sloping Soils That Formed in Alluvium or on Low Terraces

The two map units in this group make up about 8.5 percent of the county. These very deep soils are on low terraces, alluvial fans, and flood plains. They formed in alluvial sediments and glacial outwash. Some of the major soils meet the requirements for prime farmland. Most of the better drained areas are used as cropland. The wetter areas are commonly used as pasture or are idle.

10. Otego-Chenango-Scio

Dominantly nearly level and gently sloping, very deep, well drained and moderately well drained, moderately coarse textured and medium textured soils that formed in alluvium, glacial outwash, and water-deposited silts; on flood plains and terraces

This unit consists of soils that formed in alluvial deposits, glacial outwash, and water-sorted silty deposits along the larger streams in the county. The landscape consists of flood plains, alluvial fans, kames, terraces, eskers, moraines, and glacial lake plains. Slopes range from 0 to 50 percent. These soils are dominantly 0 to 8 percent on the flood plains, terraces, and fans but are as steep as 50 percent along the edges of outwash plains.

This map unit makes up about 3.1 percent the county. It is about 31 percent Otego soils, 31 percent Chenango soils, 29 percent Scio soils, and 9 percent soils of minor extent. Figure 15 shows the relationship of this general soil map unit to the Mardin-Lordstown-Bath unit.

The Otego soils are nearly level and are on flood plains along major streams that are subject to occasional flooding from November through June. They are very deep and moderately well drained. They formed in alluvial deposits. Typically, they have a surface layer and subsoil of silt loam. The substratum is medium textured and moderately coarse textured. The seasonal high water table is at a depth of 18 to 30 inches from November through June. Permeability is moderate in the surface layer, subsoil, and upper part of the substratum and is moderate or moderately rapid below.

The Chenango soils are nearly level and gently sloping on terraces and alluvial fans and are gently sloping to very steep on some kames and eskers. They are very deep and well drained. They formed in glacial outwash, alluvial fan deposits, and inwash deposits that consist of water-sorted, stratified sand and gravel derived from brownish or olive sandstone, siltstone, and shale bedrock. Typically, Chenango soils have a surface layer of gravelly silt loam. The alluvial fan deposits typically have a channery loam surface. The subsoil is medium textured. The substratum is coarse textured. The alluvial fan deposits typically have a seasonal high water table at a depth of 3 to 6 feet from March to May. Permeability is moderate or moderately rapid in the surface layer and subsoil and is rapid in the substratum.

The Scio soils are nearly level and gently sloping and are mostly in slightly concave areas on terraces and old alluvial fans. They are very deep and moderately

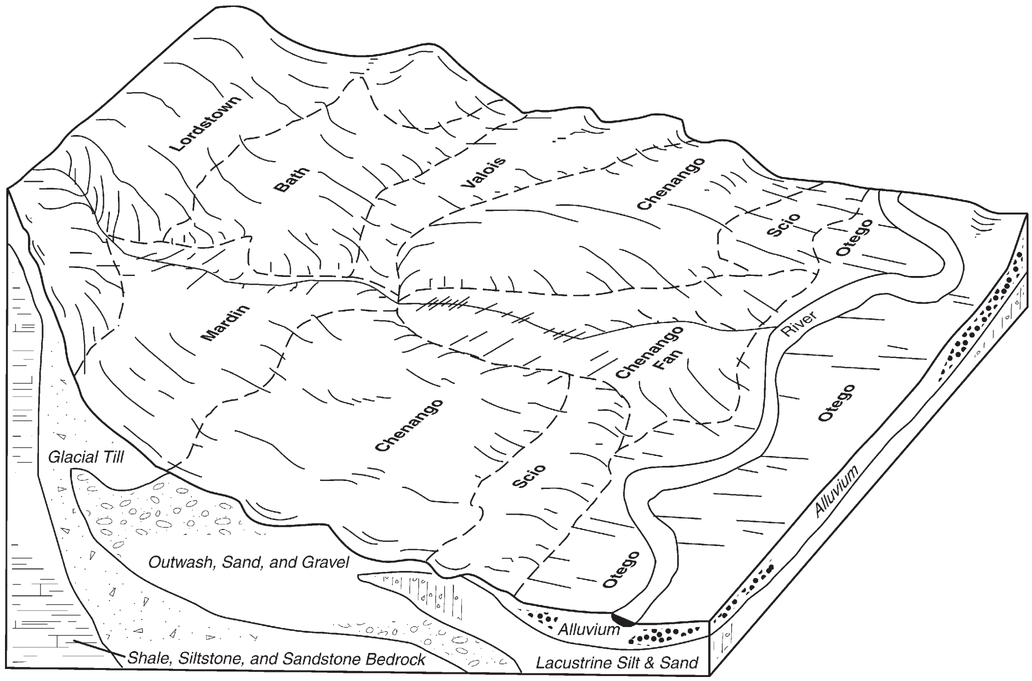

Figure 15.—The relationship between the soils and underlying material in the Otego-Chenango-Scio general soil map unit and the Mardin-Lordstown-Bath general soil map unit.

well drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are medium textured. The seasonal high water table is at a depth of 18 to 24 inches from March through May. Permeability is moderate throughout the soil.

The soils of minor extent include Tunkhannock, Atherton, Castile, Valois, Unadilla, Raynham, Canandaigua, Palms, Trestle, Deposit, Hamplain, Wakeville, and Wayland soils. The well drained Tunkhannock soils formed in water-sorted, stratified sand and gravel derived from reddish shale, siltstone, and sandstone, mainly in the southwestern part of the county. The poorly drained Atherton soils formed in gravelly outwash material in the lower areas and near streams where the water table is close to the surface. The moderately well drained Castile soils formed in gravelly outwash on the flatter parts of outwash plains. The very deep, well drained Valois soils are on toeslopes, footslopes, and sides of valleys. The well drained Unadilla soils are on the slightly higher alluvial terraces and glacial lake plains. The somewhat poorly drained Raynham soils and the poorly drained or very poorly drained Canandaigua soils are on lake plains where the water table is close to the surface. The very poorly drained Palms soils formed in organic deposits in bogs. The well drained Trestle soils and the moderately well drained Deposit soils are along high gradient streams that are subject to rare flooding. The well drained Hamplain soils are on the same landforms as the Otego soils but are deeper to the water table. The somewhat poorly drained Wakeville soils and the poorly drained Wayland soils are on flood plains and along stream channels where the water table is closer to the surface.

This unit is used mainly for farming. Most areas are used for corn and hay crops. Some areas are used for vegetable crops. During extended dry periods, droughtiness can be a problem for some crops in areas of the Chenango soils. The application of manure, fertilizer, or pesticides immediately before or during periods that are subject to flooding can result in lower water quality in nearby streams.

Frost action and flooding are the main limitations affecting community development in areas dominated by the Otego soils, the Chenango soils, and, in some places, the

Scio soils. In areas dominated by the Chenango soils, the very rapid or rapid permeability can result in poor filtering by septic tank absorption fields. This poor filtering can lead to contamination of ground water and nearby water bodies. Wetness due to a high water table in areas dominated by the Otego or Scio soils is also a limitation in many areas. The slope is a limitation in a few areas dominated by the Chenango soils.

11. Wayland-Canandaigua-Raynham

Dominantly nearly level, very deep, somewhat poorly drained to very poorly drained, medium textured soils that formed in alluvium or water-deposited silts; on flood plains, on terraces, and in larger depressional areas

This unit consists of soils that formed in alluvial and lacustrine deposits. The landscape consists of flood plains, glacial lake plains, and terraces. Slopes range from 0 to 3 percent.

This map unit makes up about 5.4 percent the county. It is about 54 percent Wayland soils, 18 percent Canandaigua soils, 13 percent Raynham soils, and 15 percent soils of minor extent. Figure 16 shows the relationship of this general soil map unit to the Otego-Chenango-Scio unit.

The Wayland soils are nearly level and are on flood plains. They are very deep and poorly drained. They are subject to frequent flooding from November through June. Typically, they have a surface layer of silt loam. The substratum is medium textured and moderately fine textured. The seasonal high water table is at the surface to 6 inches below the surface from November through June. Permeability is moderate or moderately slow in the surface layer and is slow in the substratum.

The Canandaigua soils are nearly level and are mostly in depressional areas and drainageways on lower terraces and glacial lake plains. They are very deep and are poorly drained, very poorly drained, or ponded. Typically, they have a surface layer of silt loam or mucky silt loam. The subsoil and substratum are medium textured with lenses of moderately fine textured material. The seasonal high water table is 12 inches above the surface to 12 inches below the surface from November through May. Permeability is moderately slow throughout.

The Raynham soils are nearly level and are mainly on alluvial terraces and glacial lake plains. They are very deep and somewhat poorly drained. Typically, they have a surface layer of silt loam. The subsoil and substratum are medium textured. The seasonal high water table is 6 to 18 inches below the surface from November through

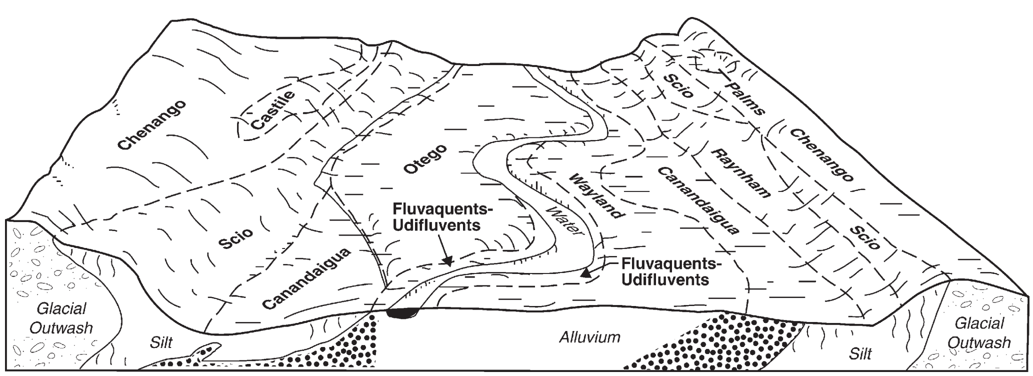

Figure 16.—The relationship between the soils and underlying material in the Wayland-Canandiagua-Raynham general soil map unit and the Otego-Chenango-Scio general soil map unit.

May. Permeability is moderate or moderately slow in the surface layer and subsoil and is slow in the substratum.

The soils of minor extent include Chenango, Castile, Red Hook, Atherton, Scio, Otego, Wakeville, Carlisle, and Palms soils and Fluvaquents-Udifluvents. The well drained Chenango soils, moderately well drained Castile soils, somewhat poorly drained Red Hook soils, and poorly drained Atherton soils are on outwash plains. The moderately well drained Scio soils are on the slightly higher alluvial terraces and glacial lake plains. The moderately well drained Otego soils and the somewhat poorly drained Wakeville soils are on flood plains that are subject to occasional flooding. The very poorly drained Carlisle and Palms soils formed in organic deposits in bogs. The Fluvaquents-Udifluvents vary in texture and drainage and are along streams that are subject to frequent flooding, scouring, and deposition.

Many areas of this unit are idle. Some areas are used for pasture or forestland. A few areas are used for cultivated crops. The application of manure, fertilizer, or pesticides immediately before or during periods that are subject to flooding can result in lower water quality in nearby streams.

Wetness due the seasonal high water, frost action, and flooding in areas dominated by the Wayland soils are the main limitations affecting community development. Better suited soils should be considered as alternative sites. Wetland regulations may limit certain land uses in many areas of this unit. Slow permeability in the substratum is a limitation in areas dominated by the Raynham soils.

Detailed Soil Map Units

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

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

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

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

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

Soils that have profiles that are almost alike make up a *soil series*. 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, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Riverhead sandy loam, loamy substratum, 3 to 8 percent slopes, is a phase of the Riverhead series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Oquaga-Arnot complex, 8 to 15 percent slopes, rocky, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Danley and Nunda soils, 15 to 25 percent slopes, is an undifferentiated group in this survey area.

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

Ad—Alden mucky silt loam

This very deep, nearly level, very poorly drained soil is on till plains in low depressions and along small streams. It formed in glacial till and commonly has a thin alluvial surface mantle because of local deposition from higher landforms. Individual areas are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 50 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown mucky silt loam

Subsurface layer:
8 to 10 inches—gray very fine sandy loam that has common strong brown mottles and root stains; 2 percent rock fragments

Subsoil:
10 to 15 inches—gray loam that has many dark yellowish brown and common strong brown mottles; 2 percent rock fragments
15 to 25 inches—gray very fine sandy loam that has common olive brown and dark yellowish brown mottles; firm; 5 percent rock fragments

Substratum:
25 to 36 inches—gray loam that has common olive brown and dark yellowish brown mottles; firm; 5 percent rock fragments
36 to 72 inches—dark grayish brown silt loam that has thin lenses and pockets of gravelly sandy loam and common dark yellowish brown and many yellowish brown mottles; firm; 10 percent rock fragments, except in the lenses and pockets of gravelly sandy loam, which have up to 25 percent

Minor Components

Included with this unit in mapping are Palms, Canandaigua, Chippewa, and Wayland soils and Fluvaquents-Udifluvents. The small areas of Palms and Canandaigua soils are on the same landform as the Alden soil. The Chippewa soils, which have subsoil and substratum layers of dense till, are on till plains. The Wayland soils and Fluvaquents-Udifluvents are on flood plains adjacent to the Alden soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow or moderately slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, moderately acid to neutral in the subsurface layer and subsoil, and moderately acid to moderately alkaline in the substratum
Seasonal high water table: 1 foot above the surface to 0.5 foot below from November through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are idle and support water-tolerant brush, trees, and herbaceous vegetation. Some areas are pasture, and a few areas are forestland.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table. This unit is poorly suited to pasture because of the same limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. Weed control and applications of fertilizer increase forage yields. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees. In some areas in the northern part of the county, however, white spruce and eastern arborvitae (northern white cedar) can be planted.

Dwellings

Prolonged wetness due to the seasonal high water table and ponding in some areas are the main limitations affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, the slow permeability in the substratum in some areas, and ponding in some areas are the main limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, and, in some areas, ponding are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

At—Atherton silt loam

This very deep, nearly level, poorly drained soil is in depressional areas and above the flood plain along drainageways on outwash and inwash plains, terraces, kame-kettle landforms, and dead-ice sinks. Individual areas typically either are long and narrow or are oval. They generally range from 6 to 15 acres in size but may be as large as 65 acres. Slopes range from 0 to 3 percent.

Typical Profile

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

Subsurface layer:
3 to 7 inches—dark brown silt loam that has common strong brown and a few grayish brown mottles

Subsoil:
7 to 13 inches—grayish brown silt loam that has common strong brown mottles
13 to 24 inches—gray silt loam that has a few strong brown mottles; 3 percent rock fragments

Substratum:
24 to 33 inches—gray very gravelly silt loam that has a few dark yellowish brown mottles; 35 percent rock fragments
33 to 43 inches—light olive brown very gravelly loam that has a few yellowish brown mottles; 40 percent rock fragments
43 to 72 inches—light olive brown very gravelly loam that has common lenses of silty clay loam; 59 percent rock fragments

Minor Components

Included with this unit in mapping are Canandaigua, Red Hook, unnamed, and Castile soils and Fluvaquents-Udifluvents. The small areas of poorly drained or very poorly drained Canandaigua soils, which formed in water-sorted silt deposits, and the somewhat poorly drained Red Hook soils are in the slightly higher areas. The unnamed soils, which are mainly in the town of Plainfield, are poorly drained, dominantly fine sandy loam, and do not have rock fragments. The moderately well drained Castile soils are in the higher areas of the map unit. The few small areas of Fluvaquents-Udifluvents are on flood plains and formed in recent alluvial deposits. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and moderate or moderately rapid in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsurface layer and moderately acid to mildly alkaline in the subsoil and substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are idle or are pasture. A few areas are forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain good tilth. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

This unit is moderately suited to pasture. Wetness is a limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and moderate soil strength. It also has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table is the main limitation affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table is the main limitation on sites for conventional septic tank absorption fields. Better suited areas should be selected because extensive alterations would be required to overcome this limitation. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table and potential for frost action are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 4w.

BfB—Bath channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on hilltops and hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 20 acres in size but may be as large as 55 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Mardin, Volusia, Valois, Lordstown, and Arnot soils. The small areas of moderately well drained Mardin soils and somewhat poorly drained Volusia soils are in the slightly lower positions and in shallow depressions. The Valois soils, which do not have a firm subsoil, are on the lower landforms along valley walls. The moderately deep Lordstown soils and shallow Arnot soils are on the slightly higher ridgetops and side slopes where the bedrock is closer to the surface. Also included are a few areas that are similar to the Bath soil but have up to 3 percent of the surface covered by large stones and boulders. These areas are shown by a spot symbol on the maps. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture, forestland, or idle. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

BfC—Bath channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on hilltops and hillsides having generally convex relief in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are broad or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 55 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Mardin, Volusia, Valois, and Lordstown soils. The small areas of moderately well drained Mardin soils and somewhat poorly drained Volusia soils are in the slightly lower positions and in shallow depressions. The Valois soils, which do not have a firm subsoil, are on the lower landforms along valley walls. The moderately deep Lordstown soils are on ridgetops and side slopes where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture, forestland, or idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation by minimizing excavating and filling. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and potential for frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

BfD—Bath channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are broad or irregular in shape. They generally range from 6 to 45 acres in size but may be as large as 200 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Mardin, Valois, Lordstown, and Arnot soils. The small areas of moderately well drained Mardin soils are in the slightly lower areas. The Valois soils, which do not have a firm subsoil, are on the lower landforms along valley walls. The moderately deep Lordstown soils and shallow Arnot soils are on some shoulder slopes and on some ridgetops and side slopes where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are forestland. A few areas are used for cultivated crops or are idle.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that limits the amount of time row crops are grown help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope is the main limitation affecting dwellings. Less sloping adjacent areas and inclusions in this unit are better suited to dwellings. Designing dwellings to conform to the natural slope of the land facilitates construction on the moderately steep slopes. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the seasonal high water table, and the slow or very slow permeability in the very firm subsoil and substratum are the main limitations on sites for conventional septic tank absorption fields. This unit has inclusions that are less sloping, more permeable, and better suited to septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

BfE—Bath channery silt loam, 25 to 45 percent slopes

This very deep, steep and very steep, well drained soil is on hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Mardin, Valois, Lordstown, and Arnot soils. The moderately well drained Mardin soils are in small areas that are slightly lower on the landscape than the Bath soil. The Valois soils, which do not have a firm subsoil, are on the lower landforms and along valley walls. The moderately deep Lordstown soils and shallow Arnot soils are on some shoulder slopes and on some ridgetops and side slopes where the bedrock is closer to the surface. Also included are some soils that are similar to the Bath soil but have a slope of more than 45 percent. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture or idle.

Crops and pasture
This unit is generally not suited to cultivated crops because of the steep and very steep slopes and the severe hazard of erosion. The steeper areas of this unit generally are not suited to pasture for the same reasons. Weed control and applications of lime and fertilizer increase forage yields in the less sloping areas of this unit. Conservation tillage practices may be helpful during pasture renovation in some areas.

Forestland
The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings
The slope is the main limitation affecting dwellings. Most areas require extensive landscaping and grading because of the steep and very steep slopes. Adjacent areas

that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope, seasonal high water table, and the slow or very slow permeability in the very firm subsoil and substratum are the main limitations on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is a hazard. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Planning locations and grades of roads to conform to the slope and contour of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 6e.

BhC—Bath and Lackawanna soils, 8 to 15 percent slopes, very stony

This unit consists of very deep, strongly sloping, well drained soils on hillsides and hilltops in glaciated uplands. The Bath soil formed in glacial till derived from brownish sandstone, siltstone, and shale. The Lackawanna soil formed in glacial till derived from reddish sandstone, siltstone, and shale. Slopes generally are convex. Individual areas of this unit commonly are oval or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 90 acres. Some areas consist mainly of the Bath soil, other areas consist mainly of the Lackawanna soil. The very stony Bath and Lackawanna soils are mapped together because they have similar potential for use and management. The unit is about 50 percent Bath soil, 30 percent Lackawanna soil, and 20 percent other soils. Stones on the surface are up to 48 inches in diameter, cover 3 to 15 percent of the surface, and are approximately 1 to 30 feet apart.

Typical Profile

Bath

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Lackawanna

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping in the areas of brown soils are Mardin, Lordstown, and Valois soils. The moderately well drained Mardin soils are on the slightly lower and more concave landforms. The small areas of moderately deep Lordstown soils are on side slopes and ridgetops where the bedrock is closer to the surface. The areas of Valois soils are along the sides of valleys where the glacial till is less dense.

Included with this unit in mapping in the areas of reddish soils are Wellsboro and Oquaga soils. The moderately well drained Wellsboro soils are in the more concave positions. The few small areas of moderately deep, well drained Oquaga soils are on side slopes and ridgetops where the bedrock is closer to the surface. Also included are some areas of soils that have slopes of less than 8 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Bath
Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Lackawanna
Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture. Some areas are forestland.

Crops and pasture
This unit is generally not suited to cultivated crops because surface stones interfere with most tillage and harvesting operations. This unit is also generally not suited to pasture for the same reason. In most areas, the surface stones interfere with

the use of equipment during seeding, weed control, and application of lime and fertilizer.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation by minimizing excavating and filling. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion. Surface stones may interfere with grading and installation of drains in some areas.

Septic tank absorption fields

The slow permeability in the firm subsoil of the Lackawanna soil, the slow or very slow permeability in the very firm subsoil and substratum of the Bath soil, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

The slope, potential for frost action, and, in some areas, wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system reduce the wetness and potential for frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 6s.

BhE—Bath and Lackawanna soils, 15 to 35 percent slopes, very stony

This unit consists of very deep, moderately steep and steep, well drained soils on hillsides in glaciated uplands. The Bath soil formed in glacial till derived from brownish sandstone, siltstone, and shale. The Lackawanna soil formed in glacial till derived from reddish sandstone, siltstone, and shale. Slopes generally are convex. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 125 acres. Some areas consist mainly of the Bath soil, other areas consist mainly of the Lackawanna soil. The very stony Bath and Lackawanna soils are mapped together because they have similar potential for use and management. The unit is about 50 percent Bath soil, 30 percent Lackawanna soil, and 20 percent other soils. Stones on the surface are up to 48 inches in diameter, cover 3 to 15 percent of the surface, and are approximately 1 to 30 feet apart.

Typical Profile

Bath

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 26 inches—dark yellowish brown channery silt loam; 15 percent rock fragments
26 to 30 inches—olive channery loam that has common light olive brown mottles; 15 percent rock fragments
30 to 40 inches—olive brown channery loam; very firm; 30 percent rock fragments

Substratum:
40 to 72 inches—olive very channery loam; very firm; 40 percent rock fragments

Lackawanna

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping in the areas of brown soils are Mardin, Lordstown, Arnot, and Valois soils. The moderately well drained Mardin soils are on the slightly lower and more concave landforms. The small areas of moderately deep Lordstown soils and shallow Arnot soils are on side slopes and ridgetops where the bedrock is closer to the surface. The Valois soils are along the sides of valleys where the glacial till is less dense.

Included with this unit in mapping in the areas of reddish soils are Wellsboro, Oquaga, and Arnot soils. The moderately well drained Wellsboro soils are in the more concave positions. The few small areas of moderately deep Oquaga soils and shallow Arnot soils are on side slopes and ridgetops where the bedrock is closer to the surface. Also included are some areas of soils that have slopes of more than 35 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Bath

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the lower part of the subsoil, and strongly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 3.2 feet from November through March

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid or very rapid

Lackawanna
Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid or very rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture.

Crops and pasture
This unit is not suited to cultivated crops because of surface stones, which interfere with most tillage and harvesting operations; steep slopes; and a severe hazard of erosion. This unit is also generally not suited to pasture for the same reasons. In most areas, the surface stones interfere with the use of equipment during seeding, weed control, and application of lime and fertilizer.

Forestland
The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and erodibility. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings
The slope is the main limitation affecting dwellings. Most areas require extensive landscaping and grading because of the slope. Adjacent areas that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields
The slope, the slow or very slow permeability in the firm subsoil of the Lackawanna soil, the slow or very slow permeability in the very firm subsoil and substratum of the Bath soil, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Lateral movement of effluent resulting in seepage at the surface downslope is a hazard. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets
The slope is the main limitation on sites for local roads and streets. Planning locations and grades of roads to conform to the slope and contour of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification
The capability subclass is 7s.

Cb—Canandaigua silt loam

This very deep, nearly level, poorly drained soil is in depressional areas of glacial lake plains and river valleys. This soil is also in glaciated uplands where water-sorted sediments have accumulated to a depth of more than 40 inches over glacial till. This soil formed in silty glaciolacustrine deposits. Individual areas typically are long and narrow or are oval. They generally range from 6 to 20 acres in size but may be as large as 80 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown silt loam

Subsoil:
8 to 14 inches—dark grayish brown silt loam that has common strong brown mottles
14 to 24 inches—grayish brown silt loam that has common yellowish brown, gray, and strong brown mottles
24 to 32 inches—grayish brown silty clay loam that has common yellowish brown and gray mottles

Substratum:
32 to 41 inches—grayish brown stratified silt loam and silty clay having common dark yellowish brown and light olive brown mottles
41 to 60 inches—dark grayish brown silt loam that has common dark yellowish brown and light olive brown mottles; 10 percent rock fragments
60 to 75 inches—olive brown silt loam that has common dark yellowish brown and light olive brown mottles; slightly effervescent

Minor Components

Included with this unit in mapping are Raynham, Atherton, Wayland, and Alden soils and Fluvaquents-Udifluvents. The somewhat poorly drained Raynham soils are in small areas that are slightly higher on the landscape than the Canandaigua soil. The poorly drained Atherton soils have a higher content of gravel than the Canandaigua soil. The small areas of poorly drained Wayland soils and Fluvaquents-Udifluvents have variable drainage and texture and are subject to flooding. The very poorly drained Alden soils are in small, glaciated, upland depressional areas where the glacial till is close to the surface. Also included are very poorly drained Canandaigua soils that are subject to ponding, have a mucky surface, and are in the slightly lower areas. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderately slow in the subsoil and substratum
Available water capacity: High
Reaction: Moderately acid to mildly alkaline in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At the surface to a depth of 1.0 foot from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are idle and support water-tolerant brush, trees, and herbaceous vegetation. Some areas are pasture or forestland. A few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain good tilth. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

This unit is moderately suited to pasture. Wetness is a limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table is the main limitation affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table and the moderately slow permeability in the subsoil and substratum are the main limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table and potential for frost action are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth helps to overcome the wetness and frost action. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 4w.

Cc—Canandaigua mucky silt loam

This very deep, nearly level, very poorly drained soil is in depressional areas of glacial lake plains and river valleys. This soil is also in glaciated uplands where water-sorted sediments have accumulated to a depth of more than 40 inches over glacial till. This soil formed in silty glaciolacustrine deposits. Individual areas typically are long and narrow or are oval. They generally range from 6 to 20 acres in size but may be as large as 165 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown mucky silt loam

Subsoil:
8 to 14 inches—dark grayish brown silt loam that has common strong brown mottles
14 to 24 inches—grayish brown silt loam that has common yellowish brown, gray, and strong brown mottles
24 to 32 inches—grayish brown silty clay loam that has common yellowish brown and gray mottles

Substratum:
32 to 41 inches—grayish brown stratified silt loam and silty clay having common dark yellowish brown and light olive brown mottles
41 to 60 inches—dark grayish brown silt loam that has common dark yellowish brown and light olive brown mottles; 10 percent rock fragments
60 to 75 inches—olive brown silt loam that has common dark yellowish brown and light olive brown mottles; slightly effervescent

Minor Components

Included with this unit in mapping are Wayland, Alden, Carlisle, and Palms soils and Fluvaquents-Udifluvents. The small areas of poorly drained Wayland soils and Fluvaquents-Udifluvents have variable drainage and texture and are subject to flooding. The very poorly drained Alden soils are in small, glaciated, upland depressional areas where the glacial till is close to the surface. The Carlisle and Palms soils have organic material deposits that are more than 16 inches thick. Also included are Canandaigua soils that are not subject to ponding, do not have a mucky surface, and are in the slightly higher areas. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderately slow in the subsoil and substratum
Available water capacity: High
Reaction: Moderately acid to mildly alkaline in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: 1.0 foot above the surface to 1.0 foot below the surface from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are idle and support water-tolerant brush, trees, and herbaceous vegetation. Some areas are pasture or forestland.

Crops and pasture

This unit is generally unsuited to cultivated crops and pasture because of wetness and surface ponding.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table and ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected.

State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, ponding, and the moderately slow permeability in the subsoil and substratum are the main limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, ponding, and potential for frost action are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth helps to overcome the wetness and frost action. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

Cd—Carbondale mucky peat

This very deep, nearly level, very poorly drained soil is in depressions and bogs on upland till plains and other areas that were formerly lakes or ponds at elevations above 1,750 feet. It formed in well decomposed organic materials that are more than 51 inches thick over mineral deposits. Individual areas typically are irregular in shape or oval. They generally range from 6 to 20 acres in size but may be as large as 85 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:

0 to 6 inches—mucky peat (hemic material), dark brown broken face and light brownish gray rubbed; about 90 percent fiber undisturbed and about 75 percent fiber rubbed

Subsurface layer:

6 to 11 inches—mucky peat (hemic material), very dark brown broken face and rubbed; about 62 percent fiber undisturbed and about 44 percent fiber rubbed

11 to 22 inches—mucky peat (hemic material), black broken face and dark reddish brown rubbed; about 40 percent fiber undisturbed and about 22 percent fiber rubbed

22 to 36 inches—muck (sapric material), very dark gray broken face and very dark brown rubbed; about 38 percent fiber undisturbed and about 4 percent fiber rubbed

36 to 38 inches—muck (sapric material), very dark gray broken face and very dark brown rubbed; about 38 percent fiber undisturbed and about 4 percent fiber rubbed

38 to 46 inches—mucky peat (hemic material), black broken face and rubbed; about 52 percent fiber undisturbed and about 25 percent fiber rubbed

46 to 71 inches—mucky peat (hemic material), black broken face and rubbed; about 40 percent fiber undisturbed and about 2 percent fiber rubbed

71 to 78 inches—muck (sapric material), very dark grayish brown broken face and dark gray rubbed; about 16 percent fiber undisturbed and about 1 percent fiber rubbed
78 to 100 inches—mucky peat (hemic material), very dark grayish brown broken face and dark grayish brown rubbed; about 53 percent fiber undisturbed and about 4 percent fiber rubbed

Mineral substratum:
100 to 106 inches—gray limnic material, about 7 percent fiber undisturbed and about 1 percent fiber rubbed
106 to 115 inches—gray silt loam

Minor Components

Included with this unit in mapping are unnamed, Alden, Norchip, and Canandaigua soils and Saprists and Aquents. The small areas of unnamed soils are on the same landform as the Carbondale soil, typically toward the edges of the map unit, and have less than 51 inches of organic deposits over mineral soil. The very poorly drained Alden soils and poorly drained Norchip soils are on glacial till deposits in the slightly higher areas and are near the periphery of the mapped areas. The small spots of Canandaigua soils, which formed in silty lacustrine or water-sorted deposits, are at the extreme edges of the map unit. The several small areas of Saprists and Aquents have water on the surface most of the year. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, moderately slow to moderately rapid in the subsurface layers, and moderate or moderately slow in the mineral substratum
Available water capacity: High
Reaction: Very strongly acid to mildly alkaline throughout
Seasonal high water table: 1.0 foot above the surface to 1.0 foot below the surface from September through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are forestland. A few areas are idle and support water-tolerant brush, trees, and herbaceous vegetation.

Crops and pasture
This unit is unsuited to cultivated crops and pasture because of wetness due to the prolonged seasonal high water table and surface ponding. The low strength of the organic materials is also a limitation affecting pasture. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland
The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings
Prolonged wetness due to the seasonal high water table, ponding in some areas, low strength, and subsidence are serious limitations affecting dwellings. A site that

has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, ponding in some areas, and subsidence are serious limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, subsidence, low strength, and, in some areas, ponding are the main limitations on sites for local roads and streets. Extensive alterations would be required to overcome these limitations. Selecting a site that has better suited soils reduces construction costs and minimizes potential problems. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

Ce—Carlisle muck

This very deep, nearly level, very poorly drained soil is in bogs, in depressional areas, or in basins that receive runoff water from surrounding areas and were formerly lakes or ponds. This soil formed in well decomposed organic materials that are more than 51 inches thick over mineral deposits. Individual areas typically are irregular in shape or oval. They generally range from 6 to 20 acres in size but may be as large as 45 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:

0 to 2 inches—peat (fibric material), black broken face; about 90 percent fiber undisturbed and about 70 percent fiber rubbed

Subsurface layer:

2 to 7 inches—muck (sapric material), dark reddish brown broken face and rubbed; about 25 percent fiber undisturbed and about 5 percent fiber rubbed

7 to 12 inches—muck (sapric material), black broken face and rubbed; about 30 percent fiber undisturbed and about 10 percent fiber rubbed

12 to 14 inches—muck (sapric material), black broken face and rubbed; about 30 percent fiber undisturbed and about 10 percent fiber rubbed

14 to 21 inches—muck (sapric material), dark brown broken face and dark reddish brown rubbed; about 60 percent fiber undisturbed and about 15 percent fiber rubbed

21 to 36 inches—muck (sapric material), dark brown broken face and dark reddish brown rubbed; about 40 percent fiber undisturbed and about 10 percent fiber rubbed

36 to 39 inches—muck (sapric material), dark brown broken face and dark reddish brown rubbed; about 40 percent fiber undisturbed and about 10 percent fiber rubbed

39 to 72 inches—muck (sapric material), black broken face and rubbed; about 25 percent fiber undisturbed and about 4 percent fiber rubbed

Minor Components

Included with this unit in mapping are Palms, Chippewa, Alden, Canandaigua, Fonda, and Edwards soils and Saprists and Aquents. The small areas of very deep, very poorly drained Palms soils are on the same landform as the Carlisle soil, generally toward the edges of the map unit, and have less than 51 inches of organic deposits over mineral soil. The very deep, poorly drained Chippewa and very poorly drained Alden soils, which are on glacial till deposits, and the very poorly drained Canandaigua and Fonda soils, which formed in lacustrine or water-sorted deposits, are in the slightly higher areas and near the periphery of the mapped areas. The few small areas of Saprists and Aquents have water on the surface most of the year. The Edwards soils are in the towns of Springfield and Richfield in a few bogs that are underlain by marl. Also included are some areas of a soil that is similar to the Carlisle soil but has pH of less than 4.5 in calcium chloride. Also included are some areas of a Carlisle soil that has thicker subsurface and bottom layers of mucky peat than is typical for the Carlisle soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderately slow to moderately rapid throughout
Available water capacity: High
Reaction: Very strongly acid to mildly alkaline
Seasonal high water table: 0.5 foot above the surface to 1.0 foot below the surface from September through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are forestland. A few areas are idle and support water-tolerant brush, trees, and herbaceous vegetation.

Crops and pasture

This unit is not suited to pasture and cultivated crops because of wetness due to the prolonged seasonal high water table and surface ponding. The low strength of the organic materials is also a limitation affecting pasture. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table, ponding in some areas, low strength, and subsidence are serious limitations affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, ponding in some areas, and subsidence are serious limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, subsidence, low strength, and, in some areas, ponding are the main limitations on sites for local roads and streets. Extensive alterations would be required to overcome these limitations. Selecting a site that has better suited soils reduces construction costs and minimizes potential problems. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 5w.

CfA—Castile channery silt loam, 0 to 3 percent slopes

This very deep, nearly level, moderately well drained soil is on the flatter parts of glacial outwash plains. It formed in water-sorted glacial outwash materials. Individual areas are broad and irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 45 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 13 inches—very channery silt loam, dark brown with thin bands of dark yellowish brown; 55 percent rock fragments
13 to 17 inches—brown very channery silt loam that has many dark yellowish brown and few light brownish gray mottles; 35 percent rock fragments
17 to 24 inches—dark yellowish brown very gravelly loam that has a few strong brown mottles; 45 percent rock fragments

Substratum:
24 to 36 inches—dark yellowish brown very gravelly loam; 55 percent rock fragments
36 to 72 inches—olive brown extremely gravelly sandy loam; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango and Red Hook soils. The few areas of well drained Chenango soils are in the slightly higher, better drained areas. The few areas of somewhat poorly drained Red Hook soils are in the slightly lower positions where the water table is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, moderately rapid in the subsoil, and rapid or very rapid in the substratum
Available water capacity: Low
Reaction: Very strongly acid to neutral (where limed) in the surface layer, very strongly acid to slightly acid in the subsoil, and strongly acid to neutral in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None

Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Wetness due to the seasonal high water table is a limitation during extended wet periods in some areas. A subsurface drainage system may be needed in the wetter areas. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are eastern white pine, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. Grading the land so that surface water moves away from the dwellings reduces the wetness. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

Wetness due to the seasonal high water table and, in some areas, the rapid or very rapid permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. In some areas, poor filtering capacity can result in contamination of ground water. Included and adjacent areas that are deeper to the water table or which have better filtering capabilities should be considered as alternative sites.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome this limitation.

Capability classification

The capability subclass is 2w.

CfB—Castile channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on the flatter parts of glacial outwash plains. It formed in water-sorted glacial outwash materials. Individual areas are broad and irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 90 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
9 to 13 inches—very channery silt loam, dark brown with thin bands of dark yellowish brown; 55 percent rock fragments
13 to 17 inches—brown very channery silt loam that has many dark yellowish brown and few light brownish gray mottles; 35 percent rock fragments
17 to 24 inches—dark yellowish brown very gravelly loam that has a few strong brown mottles; 45 percent rock fragments

Substratum:
24 to 36 inches—dark yellowish brown very gravelly loam; 55 percent rock fragments
36 to 72 inches—olive brown extremely gravelly sandy loam; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango and Red Hook soils. The few areas of well drained Chenango soils are in the slightly higher, better drained areas. The few areas of somewhat poorly drained Red Hook soils are in the slightly lower positions where the water table is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, moderately rapid in the subsoil, and rapid or very rapid in the substratum
Available water capacity: Low
Reaction: Very strongly acid to neutral (where limed) in the surface layer, very strongly acid to slightly acid in the subsoil, and strongly acid to neutral in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Wetness due to the seasonal high water table is a limitation during extended wet periods in some areas. A subsurface drainage system may be needed in the wetter areas. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture (fig. 17). Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water is the main limitation affecting dwellings. Grading the land so that surface water moves away from the dwellings reduces the

Figure 17.—A pasture of gently sloping Castile soils. Moderately steep Chenango soils are in the background.

wetness. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

Wetness due to the seasonal high water table and, in some areas, the rapid or very rapid permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. In some areas, poor filtering capacity can result in contamination of ground water. Included and adjacent areas that are deeper to the water table or which have better filtering capabilities should be considered as alternative sites.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome this limitation.

Capability classification

The capability subclass is 2w.

ChA—Chenango gravelly silt loam, 0 to 3 percent slopes

This very deep, nearly level, well drained soil is on the flatter parts of glacial outwash plains, terraces, and kames. This soil formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 105 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown gravelly silt loam; 15 percent rock fragments

Subsoil:
7 to 13 inches—dark yellowish brown and yellowish brown gravelly silt loam; 20 percent rock fragments
13 to 27 inches—yellowish brown very gravelly loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:
27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments
39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Castile, Unadilla, Scio, Trestle, and Deposit soils. The few areas of moderately well drained Castile soils are in the slightly lower positions where the water table is closer to the surface. The well drained Unadilla soils and moderately well drained Scio soils contain less gravel and more silt than the Chenango soil. The few areas of well drained Trestle soils and moderately well drained Deposit soils are coarser textured than the Chenango soil, are subject to occasional flooding, and are in the lower areas along high gradient streams. Also included are Chenango, fan, soils in areas where side streams have deposited gravel onto the main valley floor. The Chenango, fan, soils are subject to rare flooding. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. This unit has a slight hazard of erosion on roads and trails. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

The rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability classification is 1.

ChB—Chenango gravelly silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on the flatter parts of glacial outwash plains, terraces, and kames. This soil formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 45 acres in size but may be as large as 180 acres.

Typical Profile

Surface layer:

0 to 7 inches—dark grayish brown gravelly silt loam; 15 percent rock fragments

Subsoil:

7 to 13 inches—dark yellowish brown and yellowish brown gravelly silt loam; 20 percent rock fragments

13 to 27 inches—yellowish brown very gravelly loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:

27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments

39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Castile, Unadilla, Scio, Valois, Trestle, and Deposit soils. The few areas of moderately well drained Castile soils are in the slightly lower positions where the water table is closer to the surface. The well drained Unadilla soils and moderately well drained Scio soils contain less gravel and more silt than the Chenango soil. The well drained Valois soils have deposits that are not water-sorted or contain less gravel in the upper 3 feet than the Chenango soil. The few areas of well drained Trestle soils and moderately well drained Deposit soils are coarser textured than the Chenango soil, are subject to occasional flooding, and are on the lower areas along high gradient streams. Also included are Chenango, fan, soils in areas where side streams have deposited gravel onto the main valley floor. The Chenango, fan, soils are subject to rare flooding. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

The rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

ChC—Chenango gravelly silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on glacial outwash, terraces, eskers, and kames. This soil formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 105 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown gravelly silt loam; 15 percent rock fragments

Subsoil:
7 to 13 inches—dark yellowish brown and yellowish brown gravelly silt loam; 20 percent rock fragments
13 to 27 inches—yellowish brown very gravelly loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:
27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments
39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Castile, Valois, and Unadilla soils. The few areas of moderately well drained Castile soils are in the slightly lower positions where the water table is closer to the surface. The well drained Valois soils have deposits that are not water-sorted or contain less gravel in the upper 3 feet than the Chenango soil. The few areas of well drained Unadilla soils contain less gravel and more silt than the Chenango soil. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may also interfere with certain tillage operations. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations.

Capability classification

The capability subclass is 3e.

ChD—Chenango gravelly silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on glacial outwash, terraces, eskers, and kames. This soil formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 70 acres.

Typical Profile

Surface layer:

0 to 7 inches—dark grayish brown gravelly silt loam; 15 percent rock fragments

Subsoil:

7 to 13 inches—dark yellowish brown and yellowish brown gravelly silt loam; 20 percent rock fragments

13 to 27 inches—yellowish brown very gravelly loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:

27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments

39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Valois soils. The well drained Valois soils have deposits that are not water-sorted or contain less gravel in the upper 3 feet than the Chenango soil. Also included are very small areas of Chenango soils that have slopes of more than 25 percent but were too small to map separately. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. A few areas are used for cultivated crops or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Also, droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may also interfere with certain tillage operations. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that includes several years of hay or small grains help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. Minimizing tillage during pasture renovation helps to control erosion.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope and the rapid permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. Adjacent, less sloping soils that have better filtering capabilities may be better suited to conventional septic tank absorption fields and should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

CIE—Chenango, Howard, and Tunkhannock soils, 25 to 50 percent slopes

This unit consists of very deep, steep and very steep, well drained soils. This unit is on glacial outwash terraces, eskers, valley walls, and kames. The Chenango soil formed in water-sorted, gravelly, outwash and inwash deposits derived from brownish sandstone, siltstone, and shale. The Howard soil formed in water-sorted, gravelly, outwash and inwash deposits derived from limestone, sandstone, and shale. The Tunkhannock soil formed in water-sorted, gravelly, outwash and inwash deposits derived from reddish sandstone, siltstone, and shale. Individual areas of this unit commonly are long and narrow or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 130 acres. Areas of this map unit are dominated by one of the soils but were mapped together because they have similar potential for use and management. The unit is about 50 percent Chenango soil, 15 percent Howard soil, 15 percent Tunkhannock soil, and 20 percent other soils.

Typical Profile

Chenango

Surface layer:

0 to 7 inches—dark grayish brown gravelly silt loam; 15 percent rock fragments

Subsoil:

7 to 13 inches—dark yellowish brown and yellowish brown gravelly silt loam; 20 percent rock fragments

13 to 27 inches—yellowish brown very gravelly loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:

27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments

39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Howard

Surface layer:

0 to 5 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:
5 to 9 inches—pale brown and brown silt loam with dark brown material from the subsoil; 10 percent rock fragments

Subsoil:
9 to 25 inches—gravelly loam, dark brown with pale brown surfaces of peds; 30 percent rock fragments
25 to 36 inches—dark brown very gravelly clay loam; 40 percent rock fragments
36 to 40 inches—dark brown very gravelly clay loam; 45 percent rock fragments

Substratum:
40 to 85 inches—grayish brown sand and gravel; 65 percent rock fragments; violently effervescent

Tunkhannock

Surface layer:
0 to 7 inches—dark brown gravelly loam; 20 percent rock fragments

Subsoil:
7 to 17 inches—dark brown very gravelly loam; 35 percent rock fragments
17 to 33 inches—brown very gravelly loam; 40 percent rock fragments

Substratum:
33 to 72 inches—dark brown extremely gravelly sandy loam that has thin strata of silt; 65 percent rock fragments; strongly acid

Minor Components

Included with this unit in mapping are Valois, unnamed, and Lansing soils. The few areas of well drained Valois soils are on valley walls where the deposits are not water-sorted or where the upper 3 feet of the soil contains less gravel than the Chenango, Howard, and Tunkhannock soils. The few areas of an unnamed soil have more rock fragments in the upper part of the soil than the Chenango, Howard, and Tunkhannock soils. The well drained Lansing soils are not water-sorted and are in small areas dominated by the Howard soils along the edge of glacial till plains. Also included are a few small areas of Chenango, Howard, and Tunkhannock soils that have slopes of more than 50 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Chenango
Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Howard
Permeability: Moderate or moderately rapid in the surface layer, subsurface layer, and subsoil and very rapid in the substratum
Available water capacity: Moderate
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Tunkhannock
Permeability: Moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. A few areas are pasture. Some small areas are mined as a source of sand and gravel.

Crops and pasture
This unit is generally not suited to cultivated crops because of the steep and very steep slopes and the severe hazard of erosion. The steeper areas of this unit generally are not suited to pasture for the same reasons. Weed control and applications of lime and fertilizer increase forage yields in the less sloping areas of this unit. Conservation tillage practices may be helpful during the renovation of pasture in some areas.

Forestland
The potential productivity of this unit is moderate for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings
The slope is the main limitation affecting dwellings. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields
The slope and the rapid permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. Less sloping, adjacent soils that have better filtering capabilities may be better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets
The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land and to minimize cutting and filling can help to overcome this limitation in some areas. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification
The capability subclass is 7e

CnA—Chenango channery loam, fan, 0 to 3 percent slopes

This very deep, nearly level, well drained soil is on alluvial fans. This soil formed in water-sorted, gravelly, alluvial and inwash deposits that washed into valleys from side streams. Individual areas are conical in shape, being narrow at the apex and broad at the base. They generally range from 6 to 25 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown channery loam; 20 percent rock fragments

Subsoil:
7 to 13 inches—dark yellowish brown and yellowish brown channery silt loam; 20 percent rock fragments
13 to 27 inches—yellowish brown very channery loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:
27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments
39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are unnamed, Trestle, and Deposit soils. The unnamed soils are in the slightly lower positions along streams, are subject to more frequent flooding than the Chenango soil, and have variable textures and drainage. The well drained Trestle soils and moderately well drained Deposit soils are in the slightly lower areas, are coarser textured than the Chenango soil, and are subject to occasional flooding. Also included in the slightly higher positions are small areas of Chenango soils that are not subject to flooding. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 3.0 to 6.0 feet from March through May
Flooding: Rare, brief, March through May
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture
This unit is well suited to cultivated crops. Although this unit is subject to rare flooding, the flooding does not normally occur during the growing season. In the lower areas, the flooding can delay planting and cause minor crop damage in some years.

The delays and damage usually occur along streams during extended wet periods. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase the available water capacity. The application of manure, fertilizer, or pesticides immediately before or during periods that are subject to flooding can result in lower water quality in nearby streams.

This unit is well suited to pasture. Rotating livestock grazing, using proper stocking rates, and excluding livestock during flooded periods help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is well suited to logging roads and log landings. This unit has a slight hazard of erosion on roads and trails. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Flooding is the main limitation affecting dwellings. Adjacent areas and higher areas of this unit that are not subject to flooding should be considered as alternative sites.

Septic tank absorption fields

The rapid permeability in the substratum and, in some areas, seasonal wetness due to a high water table are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. Adjacent soils that do not have a high water table and that have better filtering capabilities should be considered as alternative sites.

Local roads and streets

Flooding and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and above flood levels can help to overcome these limitations in many areas.

Capability classification

The capability subclass is 2s.

CnB—Chenango channery loam, fan, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on alluvial fans. It formed in water-sorted, gravelly, alluvial and inwash deposits that washed into valleys from side streams. Individual areas are conical in shape, being narrow at the apex and broad at the base. They generally range from 6 to 35 acres in size but may be as large as 140 acres.

Typical Profile

Surface layer:

0 to 7 inches—dark grayish brown channery loam; 20 percent rock fragments

Subsoil:

7 to 13 inches—dark yellowish brown and yellowish brown channery silt loam; 20 percent rock fragments

13 to 27 inches—yellowish brown very channery loam that has a thin layer of olive brown very fine sandy loam and thin strata of silt and sand in the lower part; 40 percent rock fragments

Substratum:
27 to 39 inches—dark brown stratified loamy sand and gravel; 50 percent rock fragments
39 to 72 inches—dark brown stratified loamy sand and gravel; 65 percent rock fragments

Minor Components

Included with this unit in mapping are unnamed, Trestle, and Deposit soils. The unnamed soils are in the slightly lower positions along streams, are subject to more frequent flooding than the Chenango soil, and have variable textures and drainage. The well drained Trestle soils and moderately well drained Deposit soils are in the slightly lower areas, are coarser textured than the Chenango soil, and are subject to occasional flooding. Also included in the slightly higher positions are small areas of Chenango soils that are not subject to flooding. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 3.0 to 6.0 feet from March through May
Flooding: Rare, brief, March through May
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although this unit is subject to rare flooding, the flooding does not normally occur during the growing season. In the lower areas, flooding can delay planting and cause minor crop damage in some years. The delays and damage usually occur along streams during extended wet periods. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase the available water capacity. The application of manure, fertilizer, or pesticides immediately before or during periods that are subject to flooding can result in lower water quality in nearby streams.

This unit is well suited to pasture. Rotating livestock grazing, using proper stocking rates, and excluding livestock during flooded periods help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope is the main limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Flooding is the main limitation affecting dwellings. Adjacent areas and higher areas of this unit that are not subject to flooding should be considered as alternative sites.

Septic tank absorption fields

The rapid permeability in the substratum and, in some areas, seasonal wetness due to a high water table are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. Adjacent soils that do not have a high water table and that have better filtering capabilities should be considered as alternative sites.

Local roads and streets

Flooding and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and above flood levels can help to overcome these limitations in many areas.

Capability classification

The capability subclass is 2s.

Cp—Chippewa and Norwich soils

This unit consists of very deep, nearly level, poorly drained soils. This unit is in depressions, in seep areas, and along narrow drainageways on till plains in glaciated uplands. The Chippewa soil formed in dense glacial till derived from gray or brownish sandstone, siltstone, and shale. The Norwich soil formed in dense glacial till derived from reddish sandstone, siltstone, and shale, mainly in the south-central and southwestern parts of the county. Slopes generally are concave and range from 0 to 3 percent. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 170 acres. Some areas consist mainly of the Chippewa soil, other areas consist mainly of the Norwich soil. A few areas contain both soils. The Chippewa and Norwich soils are mapped together because they have similar potential for use and management. The unit is about 45 percent Chippewa soil, 35 percent Norwich soil, and 20 percent other soils.

Typical Profile

Chippewa

Surface layer:

0 to 1 inch—partially decomposed organic matter

1 to 8 inches—dark grayish brown and dark gray mucky silt loam that has many strong brown mottles

Subsurface layer:

8 to 12 inches—dark gray flaggy silt loam that has many strong brown mottles; 30 percent rock fragments

Subsoil:

12 to 17 inches—grayish brown channery silt loam that has many red, light yellowish brown, and light olive brown mottles; 30 percent rock fragments

17 to 38 inches—gray channery silt loam that has many dark yellowish brown and common yellowish brown mottles; very firm; 25 percent rock fragments

38 to 47 inches—olive brown channery silt loam that has many gray and common light olive brown mottles; very firm; 23 percent rock fragments

Substratum:

47 to 72 inches—olive brown channery silt loam that has common dark yellowish brown mottles; firm; 25 percent rock fragments

Norwich

Surface layer:
0 to 4 inches—very dark grayish brown silt loam that has common yellowish red mottles; 10 percent rock fragments
4 to 8 inches—dark brown silt loam that has common yellowish red mottles; 10 percent rock fragments

Subsurface layer:
8 to 12 inches—light olive gray and weak red silt loam that has common reddish yellow and strong brown mottles; 10 percent rock fragments

Subsoil:
12 to 23 inches—weak red and grayish brown silt loam that has many yellowish red and common brownish yellow mottles; firm; 5 percent rock fragments
23 to 34 inches—weak red and gray channery silt loam that has common yellowish brown mottles; very firm; 15 percent rock fragments
34 to 46 inches—weak red channery silt loam that has common yellowish brown and a few gray mottles; firm; 15 percent rock fragments

Substratum:
46 to 72 inches—weak red channery silt loam; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Volusia, Morris, Palms, and Alden soils. The somewhat poorly drained Volusia and Morris soils are on the slightly higher and more convex landforms. The small areas of Palms muck and Alden soils are in slightly lower depressions and in shallow bogs. Also included are a few small areas of Chippewa and Norwich soils, very stony, that were too small to map separately. The included areas of minor components are as large as 6 acres.

Soil Properties

Chippewa
Permeability: Moderate in the surface layer and subsurface layer and slow or very slow in the subsoil and substratum
Available water capacity: Low
Reaction: Very strongly acid to slightly acid in the surface layer and subsurface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Norwich
Permeability: Moderate in the surface layer and subsurface layer and slow or very slow in the subsoil and substratum
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer, subsurface layer, and subsoil and strongly acid to neutral in the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are forestland or idle. Idle areas typically have water-tolerant herbaceous vegetation and brush. Some areas are pasture, and a few areas are used for cultivated crops or hay.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table. This unit is poorly suited to pasture because of the same limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. Weed control and applications of lime and fertilizer increase forage yields. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table and, in some areas, ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected. Wetland regulations may affect the use of this unit and should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table and the slow or very slow permeability in the firm and very firm subsoil are severe limitations on sites for conventional septic tank absorption fields. Ponding is a limitation in some areas. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table and potential for frost action are the main limitations on sites for local roads and streets. In some areas, ponding is also a hazard. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth can help to overcome these limitations. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

Cr—Chippewa and Norwich soils, very stony

This unit consists of very deep, nearly level, poorly drained soils. This unit is in depressions, in seep areas, and along narrow drainageways on till plains in glaciated uplands. The Chippewa soil, very stony, formed in dense glacial till derived from gray or brownish sandstone, siltstone, and shale. The Norwich soil, very stony, formed in dense glacial till derived from reddish sandstone, siltstone, and shale and is found mainly in the south-central and southwestern parts of the county. Slopes generally are concave and range from 0 to 3 percent. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 35 acres. Some areas consist mainly of the Chippewa soil, very stony. Other areas consist mainly of the Norwich soil, very stony. A few areas contain both soils. The very stony Chippewa and Norwich soils are mapped together because they have similar potential for use and management. The unit is about 45 percent Chippewa soil, very stony; 35 percent Norwich soil, very stony; and 20 percent other soils. Stones cover 0.1 to 3.0 percent of the surface.

Typical Profile

Chippewa

Surface layer:
0 to 1 inch—partially decomposed organic matter
1 to 8 inches—dark grayish brown and dark gray very stony silt loam that has many strong brown mottles

Subsurface layer:
8 to 12 inches—dark gray flaggy silt loam that has many strong brown mottles; 30 percent rock fragments

Subsoil:
12 to 17 inches—grayish brown channery silt loam that has many red, light yellowish brown, and light olive brown mottles; 30 percent rock fragments
17 to 38 inches—gray channery silt loam that has many dark yellowish brown and common yellowish brown mottles; very firm; 25 percent rock fragments
38 to 47 inches—olive brown channery silt loam that has many gray and common light olive brown mottles; very firm; 23 percent rock fragments

Substratum:
47 to 72 inches—olive brown channery silt loam that has common dark yellowish brown mottles; firm; 25 percent rock fragments

Norwich

Surface layer:
0 to 4 inches—very dark grayish brown very stony silt loam that has common yellowish red mottles; 10 percent rock fragments
4 to 8 inches—dark brown silt loam that has common yellowish red mottles; 10 percent rock fragments

Subsurface layer:
8 to 12 inches—light olive gray and weak red silt loam that has common reddish yellow and strong brown mottles; 10 percent rock fragments

Subsoil:
12 to 23 inches—weak red and grayish brown silt loam that has many yellowish red and common brownish yellow mottles; firm; 5 percent rock fragments
23 to 34 inches—weak red and gray channery silt loam that has common yellowish brown mottles; very firm; 15 percent rock fragments
34 to 46 inches—weak red channery silt loam that has common yellowish brown and a few gray mottles; firm; 15 percent rock fragments

Substratum:
46 to 72 inches—weak red channery silt loam; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Volusia, Morris, Palms, and Alden soils. The somewhat poorly drained Volusia and Morris soils are on the slightly higher and more convex landforms. The small areas of Palms muck and Alden soils are in slightly lower depressions and in shallow bogs. Also included are a few small areas of Chippewa and Norwich soils that do not have surface stones but were too small to map separately. The included areas of minor components are as large as 6 acres.

Soil Properties

Chippewa

Permeability: Moderate above the fragipan and slow or very slow in the fragipan and substratum
Available water capacity: Low
Reaction: Very strongly acid to slightly acid in the surface layer and subsurface layer, strongly acid to neutral in the subsoil, and moderately acid to moderately alkaline in the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Norwich

Permeability: Moderate above the fragipan and slow or very slow in the fragipan and substratum
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer, subsurface layer, and subsoil and strongly acid to neutral in the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are forestland or idle. Idle areas typically have water-tolerant herbaceous vegetation and brush. Some areas are pasture.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table and because of large stones on the surface. This unit is poorly suited to pasture because of the same limitations. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table, large surface stones, and, in some areas, ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected. Wetland regulations may affect the use of this unit and should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table and the slow or very slow permeability in the firm and very firm subsoil are severe limitations on sites for conventional septic tank absorption fields. Ponding is a limitation in some areas. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table and potential for frost action are the main limitations on sites for local roads and streets. In some areas, ponding is also a hazard. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth can help to overcome these limitations. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5s.

CsB—Conesus silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on footslopes, drumlins, and hilltops in glaciated uplands in the northern part of the county. It formed in glacial till derived from limestone. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 265 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam; 5 percent rock fragments

Subsoil:
9 to 14 inches—dark brown silt loam; 10 percent rock fragments
14 to 23 inches—channery silt loam, olive brown with pale brown surfaces of peds; 15 percent rock fragments
23 to 29 inches—dark brown channery silt loam that has common dark yellowish brown and dark grayish brown mottles; 15 percent rock fragments
29 to 37 inches—dark brown gravelly silt loam that has common light olive brown and a few grayish brown mottles; 20 percent rock fragments

Substratum:
37 to 43 inches—dark brown gravelly loam that has common yellowish brown mottles; firm; 30 percent rock fragments; violently effervescent
43 to 72 inches—dark grayish brown very gravelly loam that has many yellowish brown and common olive gray mottles; firm; 35 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lima, Lansing, Honeoye, Manheim, and Lyons soils. The small areas of Lima soils have carbonates within a depth of 30 inches. The well drained Lansing and Honeoye soils are on some of the higher parts of the landform. The somewhat poorly drained Manheim soils and poorly drained Lyons soils are in depressions and along small drainageways. At the higher elevations in the eastern parts of the towns of Cherry Valley and Roseboom are small areas of soils that are similar to the Conesus soil but have a subsoil with weak, dense and brittle (fragipan) layers. These similar soils also have colder soil temperatures than is typical for the Conesus soil. Also included are small areas of Conesus soils that have slopes of less than 3 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. In the steeper areas that have a long slope length, erosion can be a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Wetness due to the seasonal high water table may be a problem during extended wet periods in some areas. Installing a system of surface and subsurface drains in the wetter areas helps to overcome the wetness. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from higher areas. Placing drains around footings and foundations and adequately sealing foundation walls also help to overcome the wetness.

Septic tank absorption fields

Wetness due to the seasonal high water table and the slow or very slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and frost damage.

Capability classification

The capability subclass is 2e.

CsC—Conesus silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is on hillsides, drumlins, and footslopes in the northern part of the county. It formed in glacial till derived from limestone. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:

0 to 9 inches—dark brown silt loam; 5 percent rock fragments

Subsoil:

9 to 14 inches—dark brown silt loam; 10 percent rock fragments

14 to 23 inches—channery silt loam, olive brown with pale brown surfaces of peds; 15 percent rock fragments

23 to 29 inches—dark brown channery silt loam that has common dark yellowish brown and dark grayish brown mottles; 15 percent rock fragments

29 to 37 inches—dark brown gravelly silt loam that has common light olive brown and a few grayish brown mottles; 20 percent rock fragments

Substratum:

37 to 43 inches—dark brown gravelly loam that has common yellowish brown mottles; firm; 30 percent rock fragments; violently effervescent

43 to 72 inches—dark grayish brown very gravelly loam that has many yellowish brown and common olive gray mottles; firm; 35 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lima, Lansing, Honeoye, Manheim, and Lyons soils. The small areas of Lima soils have carbonates within a depth of 30 inches. The well drained Lansing and Honeoye soils are on some of the higher parts of the landform. The somewhat poorly drained Manheim soils and poorly drained Lyons soils are in depressions and along small drainageways. At the higher elevations in the eastern parts of the towns of Cherry Valley and Roseboom are small areas of soils that are similar to the Conesus soil but have a subsoil with weak, dense and brittle (fragipan) layers. These similar soils also have colder soil temperatures than is typical for the Conesus soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum

Available water capacity: High

Reaction: Strongly acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum

Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May

Flooding: None

Depth to bedrock: More than 60 inches

Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Wetness due to the seasonal high water table may be a problem during extended wet periods in some areas. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings

Wetness due to the seasonal high water table and slope are the main limitations affecting dwellings. Installing interceptor drains to divert water from the higher areas reduces the wetness. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

Wetness and the slow or very slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and potential for frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

DaB—Danley and Nunda soils, 3 to 8 percent slopes

This unit consists of very deep, gently sloping, moderately well drained soils. This unit is on hillsides and hilltops of glaciated uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. The Nunda soil has a silty mantle that ranges from 13 to 30 inches in thickness. Slopes generally are slightly convex. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 65 acres. Some areas consist mainly of the Danley soil, other areas consist mainly of the Nunda soil. A few areas contain both soils. The Danley and Nunda soils are mapped together because they have similar potential for use and management. The unit is about 60 percent Danley soil, 25 percent Nunda soil, and 15 percent other soils.

Typical Profile

Danley

Surface layer:
0 to 8 inches—dark brown silt loam; 5 percent rock fragments

Subsoil:
8 to 15 inches—silty clay loam, dark yellowish brown with light olive brown surfaces of peds and common yellowish brown mottles; firm; 10 percent rock fragments
15 to 30 inches—dark brown channery silty clay loam that has common yellowish brown and a few gray mottles; firm; 15 percent rock fragments
30 to 37 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; strongly effervescent

Substratum:
37 to 72 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; violently effervescent

Nunda

Surface layer:
0 to 6 inches—dark grayish brown silt loam; 3 percent rock fragments

Subsurface layer:
6 to 13 inches—light brownish gray silt loam with brown material from the subsoil; 5 percent rock fragments

Subsoil:
13 to 17 inches—silty clay loam, dark brown with pale brown surfaces of peds; 5 percent rock fragments
17 to 48 inches—grayish brown channery silty clay loam that has common yellowish brown and olive brown mottles; firm; 20 percent rock fragments

Substratum:
48 to 55 inches—dark brown channery silty clay loam that has a few yellowish brown mottles; firm; 30 percent rock fragments
55 to 72 inches—dark grayish brown channery silty clay loam that has common olive brown mottles; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Darien, Burdett, Lyons, Honeoye, and Lansing soils. The somewhat poorly drained Darien and Burdett soils are on the slightly lower and more concave landforms. The small areas of poorly drained Lyons soils are in depressions and along small drainageways. The very small areas of well drained Honeoye and Lansing soils are on the higher and more convex landforms. Also included are a few areas of severely eroded Danley and Nunda soils that have a thinner solum. The included areas of minor components are as large as 6 acres.

Soil Properties

Danley

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to slightly acid (unless limed) in the surface layer and the upper part of the subsoil, moderately acid to neutral in the lower part of the subsoil, moderately acid to moderately alkaline in the transition zone between the subsoil and the substratum, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Nunda

Permeability: Moderate in the surface layer and subsurface layer, moderately slow in the subsoil, and slow or very slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and the upper part of the subsoil; moderately acid to neutral in the lower part of the subsoil; and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is suited to cultivated crops. In the steeper areas that have long slope lengths, erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Wetness due to the seasonal high water table may be a problem during extended wet periods in some areas. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. In some areas, protective sleeves may be needed to prevent drain openings from being clogged with silt and very fine sand during the installation of subsurface drains. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are European larch, white spruce, and Norway spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings, foundations, and slabs and adequately sealing foundation walls also help to overcome the wetness.

Septic tank absorption fields

Wetness due to the seasonal high water table in the Danley and Nunda soils, the slow permeability in the substratum in the Danley soil, and the slow or very slow permeability in the substratum in the Nunda soil are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Better suited soils should be considered as alternative sites to some of the wetter areas of this unit.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation. Some areas may also require the installation of a drainage system because of wetness due to the seasonal high water table.

Capability classification

The capability subclass is 2e.

DaC—Danley and Nunda soils, 8 to 15 percent slopes

This unit consists of very deep, strongly sloping, moderately well drained soils. This unit is on hillsides and sides of dissected valleys of glaciated uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. The Nunda soil has a silty mantle that ranges from 13 to 30 inches in thickness. Slopes generally are slightly convex. Individual areas of this unit commonly are oblong, long and narrow, or irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 75 acres. Some areas consist mainly of the Danley soil, other areas consist mainly of the Nunda soil. A few areas contain both soils. The Danley and Nunda soils are mapped together because they have similar potential for use and management. The unit is about 60 percent Danley soils, 25 percent Nunda soils, and 15 percent other soils.

Typical Profile

Danley

Surface layer:
0 to 8 inches—dark brown silt loam; 5 percent rock fragments

Subsoil:
8 to 15 inches—silty clay loam, dark yellowish brown with light olive brown surfaces of peds and common yellowish brown mottles; firm; 10 percent rock fragments
15 to 30 inches—dark brown channery silty clay loam that has common yellowish brown and a few gray mottles; firm; 15 percent rock fragments
30 to 37 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; strongly effervescent

Substratum:
37 to 72 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; violently effervescent

Nunda

Surface layer:
0 to 6 inches—dark grayish brown silt loam; 3 percent rock fragments

Subsurface layer:
6 to 13 inches—light brownish gray silt loam with dark brown material from the subsoil; 5 percent rock fragments

Subsoil:
13 to 17 inches—silty clay loam, dark brown with pale brown surfaces of peds; 5 percent rock fragments
17 to 48 inches—grayish brown channery silty clay loam that has common yellowish brown and olive brown mottles; firm; 20 percent rock fragments

Substratum:
48 to 55 inches—dark brown channery silty clay loam that has a few yellowish brown mottles; firm; 30 percent rock fragments
55 to 72 inches—dark grayish brown channery silty clay loam that has common olive brown mottles; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Darien, Burdett, Lyons, Honeoye, and Lansing soils. The somewhat poorly drained Darien and Burdett soils are on the slightly lower and more concave landforms. The small areas of poorly drained Lyons soils are in depressions and along small drainageways. The well drained Honeoye and Lansing soils are in small, higher and steeper areas. Also included are few areas of severely eroded Danley and Nunda soils that have a thinner solum. The included areas of minor components are as large as 6 acres.

Soil Properties

Danley
Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to slightly acid (unless limed) in the surface layer and the upper part of the subsoil, moderately acid to neutral in the lower part of the subsoil, moderately acid to moderately alkaline in the transition zone between the subsoil and the substratum, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Nunda
Permeability: Moderate in the surface layer and subsurface layer, moderately slow in the subsoil, and slow or very slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and the upper part of the subsoil; moderately acid to neutral in the lower part of the subsoil; and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Wetness due to the seasonal high water table may be a problem during extended wet periods in some areas. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. In some areas, protective sleeves may be needed to prevent drain openings from being clogged with silt and very fine sand during the installation of subsurface drains. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, white spruce, and Norway spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings, foundations, and slabs and adequately sealing foundation walls also help to overcome the wetness. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

Wetness due to the seasonal high water table in the Danley and Nunda soils, slow permeability in the substratum in the Danley soil, and the slow or very slow permeability in the substratum in the Nunda soil are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Better suited soils should be considered as alternatives to some of the wetter sites.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation. Some areas may also require the installation of a drainage system because of wetness due to the seasonal high water table.

Capability classification

The capability subclass is 3e.

DaD—Danley and Nunda soils, 15 to 25 percent slopes

This unit consists of very deep, moderately steep, moderately well drained soils. This unit is on hillsides and sides of dissected valleys on till plains in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. The Nunda soil has a silty mantle that ranges from 13 to 30 inches in thickness. Slopes generally are slightly convex. Individual areas of this unit commonly are oblong, long and narrow, or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 175 acres. Some areas consist mainly of the Danley soil, other areas consist mainly of the Nunda soil. A few areas contain both soils. The Danley and Nunda soils are mapped together because they have similar potential for use and management. The unit is about 60 percent Danley soil, 25 percent Nunda soil, and 15 percent other soils.

Typical Profile

Danley

Surface layer:
0 to 8 inches—dark brown silt loam; 5 percent rock fragments

Subsoil:
8 to 15 inches—silty clay loam, dark yellowish brown with light olive brown surfaces of peds and common yellowish brown mottles; firm; 10 percent rock fragments
15 to 30 inches—dark brown channery silty clay loam that has common yellowish brown and a few gray mottles; firm; 15 percent rock fragments
30 to 37 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; strongly effervescent

Substratum:
37 to 72 inches—dark brown channery silty clay loam; firm; 20 percent rock fragments; violently effervescent

Nunda

Surface layer:
0 to 6 inches—dark grayish brown silt loam; 3 percent rock fragments

Subsurface layer:
6 to 13 inches—light brownish gray silt loam with dark brown material from the subsoil; 5 percent rock fragments

Subsoil:
13 to 17 inches—silty clay loam, dark brown with pale brown surfaces of peds; 5 percent rock fragments
17 to 48 inches—grayish brown channery silty clay loam that has common yellowish brown and olive brown mottles; firm; 20 percent rock fragments

Substratum:
48 to 55 inches—dark brown channery silty clay loam that has a few yellowish brown mottles; firm; 30 percent rock fragments
55 to 72 inches—dark grayish brown channery silty clay loam that has common olive brown mottles; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Darien, Burdett, Honeoye, Lansing, Farmington, and Wassaic soils. The somewhat poorly drained Darien and Burdett soils are on the slightly lower and more concave landforms. The well drained Honeoye and Lansing soils are on the upper part of landforms and on the sides of steeper valleys. The shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are in small, higher and steeper areas along bedrock-controlled hillsides. Also included are a few areas of severely eroded Danley and Nunda soils that have a thinner solum. The included areas of minor components are as large as 6 acres.

Soil Properties

Danley

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to slightly acid (unless limed) in the surface layer and the upper part of the subsoil, moderately acid to neutral in the lower part of the subsoil, moderately acid to moderately alkaline in the transition zone between the subsoil and the substratum, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Nunda

Permeability: Moderate in the surface layer and subsurface layer, moderately slow in the subsoil, and slow or very slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and the upper part of the subsoil; moderately acid to neutral in the lower part of the subsoil; and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are used for hay and pasture. Some areas are used for cultivated crops or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and a severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that limits the amount of time row crops are grown help to control erosion. Wetness due to the seasonal high water table may be a problem during extended wet periods in some areas. A system of surface and subsurface drains in the wetter areas can help to control the wetness. In some areas, protective sleeves may be needed to prevent drain openings from being clogged with silt and very fine sand during the installation of subsurface drains. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Restricted grazing during wet periods, proper stocking rates, and rotational grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope, moderate soil strength, and wetness. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, white spruce, and Norway spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land facilitates construction. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, wetness due to the seasonal high water table, the slow permeability in the substratum of the Danley soil, and the slow or very slow permeability in the substratum of the Nunda soil are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. Better suited soils should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential frost damage and the slope are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Designing roads to conform to the natural slope of the land and grading and filling help to overcome the slope limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

DeB—Darien and Burdett soils, 1 to 8 percent slopes

This unit consists of very deep, nearly level and gently sloping, somewhat poorly drained soils. This unit is on hillsides and hilltops in glaciated uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. The Burdett soil has a silty mantle that ranges from 13 to 25 inches in thickness. Slopes generally are slightly concave or smooth. Individual areas of this unit commonly are oblong or oval. They generally range from 6 to 35 acres in size but may be as large as 140 acres. Some areas consist mainly of the Darien soil, other areas consist mainly of the Burdett soil. A few areas contain both soils. The Darien and Burdett soils are mapped together because they have similar potential for use and management. The unit is about 60 percent Darien soil, 25 percent Burdett soil, and 15 percent other soils.

Typical Profile

Darien

Surface layer:
0 to 6 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
6 to 12 inches—brown channery silt loam that has a few yellowish brown mottles; 15 percent rock fragments
12 to 27 inches—grayish brown channery silty clay loam that has many strong brown mottles; very firm; 15 percent rock fragments
27 to 42 inches—very dark grayish brown channery silty clay loam that has many dark yellowish brown mottles; firm; 20 percent rock fragments

Substratum:
42 to 72 inches—very dark grayish brown very channery silty clay loam; firm; 35 percent rock fragments; violently effervescent

Burdett

Surface layer:
0 to 8 inches—dark grayish brown silt loam; 5 percent rock fragments

Subsoil:
8 to 15 inches—yellowish brown silt loam that has common yellowish red mottles; 5 percent rock fragments
15 to 19 inches—silty clay loam, dark grayish brown with grayish brown surfaces of peds and common dark yellowish brown mottles; firm; 10 percent rock fragments
19 to 25 inches—dark yellowish brown silty clay loam that has common dark yellowish brown mottles; firm; 10 percent rock fragments
25 to 33 inches—dark grayish brown silty clay loam that has a few yellowish brown and light brownish gray mottles; firm; 10 percent rock fragments
33 to 44 inches—dark brown channery silty clay loam that has a few dark yellowish brown and grayish brown mottles; firm; 15 percent rock fragments; slightly effervescent

Substratum:
44 to 72 inches—dark brown channery silty clay loam that has a few dark yellowish brown and grayish brown mottles; firm; 15 percent rock fragments; strongly effervescent

Minor Components

Included with this unit in mapping are Danley, Nunda, and Lyons soils. The moderately well drained Danley and Nunda soils are on the slightly higher and more convex landforms. The small areas of poorly drained Lyons soils are in depressions and along small drainageways. Also included are a few areas of severely eroded Darien and Burdett soils that have a thinner solum. The included areas of minor components are as large as 6 acres.

Soil Properties

Darien

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer, slightly acid or neutral in the upper part of the subsoil, and mildly alkaline or moderately alkaline in the lower part of the subsoil and in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Burdett
Permeability: Moderate in the surface layer and the upper part of the subsoil and slow in the lower part of the subsoil and in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for pasture and hayland. Some areas are used for cultivated crops or forestland. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. In the steeper areas that have long slope lengths, erosion can be a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth. Minimum tillage, winter cover crops, and a crop rotation that includes sod crops also help to maintain tilth and reduce the hazard of erosion.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and slow or moderately slow permeability in the subsoil and substratum. Adjacent, better drained areas should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

DeC—Darien and Burdett soils, 8 to 15 percent slopes

This unit consists of very deep, strongly sloping, somewhat poorly drained soils. This unit is on hillsides and sides of dissected valleys in till plains in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. The Burdett soil has a silty mantle that ranges from 13 to 25 inches in thickness. Slopes generally are smooth. Individual areas of this unit commonly are oblong, long and narrow, or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 145 acres. Some areas consist mainly of the Darien soil, other areas consist mainly of the Burdett soil. A few areas contain both soils. The Darien and Burdett soils are mapped together because they have similar potential for use and management. The unit is about 60 percent Darien soil, 25 percent Burdett soil, and 15 percent other soils.

Typical Profile

Darien

Surface layer:

0 to 6 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:

6 to 12 inches—brown channery silt loam that has a few yellowish brown mottles; 15 percent rock fragments

12 to 27 inches—grayish brown channery silty clay loam that has many strong brown mottles; very firm; 15 percent rock fragments

27 to 42 inches—very dark grayish brown channery silty clay loam that has many dark yellowish brown mottles; firm; 20 percent rock fragments

Substratum:

42 to 72 inches—very dark grayish brown very channery silty clay loam; firm; 35 percent rock fragments; violently effervescent

Burdett

Surface layer:

0 to 8 inches—dark grayish brown silt loam; 5 percent rock fragments

Subsoil:

8 to 15 inches—yellowish brown silt loam that has common yellowish red mottles; 5 percent rock fragments

15 to 19 inches—silty clay loam, dark grayish brown with grayish brown surfaces of peds and common dark yellowish brown mottles; firm; 10 percent rock fragments

19 to 25 inches—dark yellowish brown silty clay loam that has common dark yellowish brown mottles; firm; 10 percent rock fragments

25 to 33 inches—dark grayish brown silty clay loam that has a few yellowish brown and light brownish gray mottles; firm; 10 percent rock fragments
33 to 44 inches—dark brown channery silty clay loam that has a few dark yellowish brown and grayish brown mottles; firm; 15 percent rock fragments; slightly effervescent

Substratum:
44 to 72 inches—dark brown channery silty clay loam that has a few dark yellowish brown and grayish brown mottles; firm; 15 percent rock fragments; strongly effervescent

Minor Components

Included with this unit in mapping are Danley, Nunda, and Lyons soils. The moderately well drained Danley and Nunda soils are on the slightly higher and more convex landforms. The small areas of poorly drained Lyons soils are in depressions and along small drainageways. Also included are a few areas of severely eroded Darien and Burdett soils that have a thinner solum. The included areas of minor components are as large as 6 acres.

Soil Properties

Darien
Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer, slightly acid or neutral in the upper part of the subsoil, and mildly alkaline or moderately alkaline in the lower part of the subsoil and in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Burdett
Permeability: Moderate in the surface layer and the upper part of the subsoil and slow in the lower part of the subsoil and in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for pasture and hayland. Some areas are used for cultivated crops or forestland.

Crops and pasture
This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table and because of the hazard of erosion. A conservation tillage system that leaves crop residue on the surface after planting and contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth. Minimum tillage, winter cover crops, and a crop rotation that includes sod crops also help to maintain tilth and control erosion.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and slow or moderately slow permeability in the subsoil and substratum. Adjacent, better drained areas should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3e.

Ed—Edwards muck

This very deep, nearly level, very poorly drained soil is in depressions and bogs in the northern part of the county. It is on till plains, on lake plains, and in other areas that were formerly lakes or ponds. It formed in well decomposed organic materials that range from 16 to 51 inches in thickness and are overlying marl deposits. Individual areas typically are irregular in shape or oval. They generally range from 6 to 25 acres in size but may be as large as 265 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:

0 to 12 inches—muck (sapric material), black broken face and very dark brown rubbed; about 45 percent fiber undisturbed and about 15 percent fiber rubbed

Subsurface layer:
12 to 18 inches—muck (sapric material), black broken face and very dark brown rubbed; about 45 percent fiber undisturbed and about 15 percent fiber rubbed
18 to 24 inches—muck (sapric material), black broken face and rubbed; about 40 percent fiber undisturbed and about 10 percent fiber rubbed
24 to 34 inches—muck (sapric material), black broken face and rubbed; about 20 percent fiber undisturbed and about 2 percent fiber rubbed
34 to 36 inches—muck (sapric material), black broken face; about 15 percent fiber undisturbed and about 2 percent fiber rubbed
36 to 50 inches—muck (sapric material), black broken face; about 15 percent fiber undisturbed and about 2 percent fiber rubbed

Mineral substratum:
50 to 53 inches—light olive gray marl; violently effervescent
53 to 72 inches—white marl; violently effervescent

Minor Components

Included with this unit in mapping are Carlisle, Canandaigua, Fonda, Alden, and Lyons soils and Saprists and Aquents. The small areas of Carlisle soils, which have thicker deposits of organic materials than those of the Edwards soil, are on the same landform as the Edwards soil, generally toward the center of mapped areas. The very poorly drained Canandaigua and Fonda soils, which formed in lacustrine or water-sorted deposits, and the Alden and Lyons soils, which formed in glacial till, are in the slightly higher areas and near the periphery of the mapped areas. The few small areas of Saprists and Aquents have water on the surface most of the year. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderately slow to moderately rapid in the surface layer and subsurface layers and very slow to moderate in the mineral substratum
Available water capacity: High
Reaction: Very strongly acid to mildly alkaline in the surface layer and subsurface layers and slightly alkaline or moderately alkaline in the mineral substratum
Seasonal high water table: 1.0 foot above the surface to 1.0 foot below from September through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are forestland. A few areas are idle and support water-tolerant brush, trees, and herbaceous vegetation.

Crops and pasture

This unit is not suited to pasture and cultivated crops because of wetness due to the prolonged seasonal high water table and surface ponding. The low strength of the organic materials is also a limitation affecting pasture. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table, subsidence, low strength, and, in some areas, ponding are the main limitations affecting dwellings. Better suited soils on adjacent uplands should be selected for construction of dwellings. The common minor components in this unit also have severe limitations affecting dwellings. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, subsidence, low strength, and ponding in some areas are the main limitations on sites for conventional septic tank absorption fields. Better suited soils on adjacent uplands should be selected because extensive alterations would be required to use this soil and because the common minor components in this unit also have severe limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, subsidence, low strength, and, in some areas, ponding are the main limitations on sites for local roads and streets. Extensive alterations would be required to overcome these limitations. Selecting a site that has better suited soils reduces construction costs and minimizes potential problems. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 5w.

FaB—Farmington silt loam, 0 to 8 percent slopes

This shallow, nearly level and gently sloping, somewhat excessively drained soil is on broad, bedrock-controlled benches in uplands. It occurs on limestone ridges in the northeastern part of the county. This soil formed in glacial till and is underlain by fractured limestone bedrock. Individual areas are broad and irregular in shape. They generally range from 6 to 65 acres in size but may be as large as 405 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 18 inches—dark yellowish brown gravelly silt loam; 20 percent rock fragments

Bedrock:
18 inches—gray, massive limestone; fractured in the upper 2 inches

Minor Components

Included with this unit in mapping are unnamed soils and Wassaic soils. Some of the small areas of unnamed soils have bedrock within a depth of 10 inches. A few other small areas of unnamed soils are 40 to 60 inches deep over limestone bedrock. The moderately deep, well drained Wassaic soils are in slightly concave areas and are deeper to bedrock than the Farmington soil. Also included along the edge of ridges in some areas are small ledges of rock outcrop. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer (unless limed) and moderately acid to mildly alkaline in the subsoil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The shallow depth to bedrock and the low available water capacity are the main limitations. This unit is better suited to crops and varieties that mature early in the season—when more moisture is available—and to those that are able to withstand droughty conditions.

This unit is suited to pasture. The shallow depth to bedrock and low available water capacity are management concerns. Fencing systems that use shallow placement or greater distances between posts are preferred. Rotating livestock grazing and excluding livestock during droughty periods help to maintain the pasture in good condition. Weed control, applications of fertilizer, and, in a few areas, applications of lime increase forage yields.

Forestland

The potential productivity of this unit is dominantly moderate for sugar maple. In areas where the depth to bedrock approaches very shallow, however, the potential productivity is low. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are European larch and Norway spruce. However, because of the shallow depth to bedrock and, in some areas, low productivity, this unit is generally not recommended as a site for planting trees.

Dwellings

The shallow depth to bedrock is the main limitation affecting dwellings. Most of the bedrock is hard limestone that is not easily ripped. If a better site is unavailable, construction should be in the deeper areas of soil. The unit has inclusions of Wassaic soils, which are moderately deep to bedrock and are better suited to dwellings, especially without basements. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed.

Septic tank absorption fields

The shallow depth to bedrock is the main limitation on sites for conventional septic tank absorption fields. Onsite sewage disposal systems must be specially designed to overcome the shallow soil depth and to prevent ground water contamination resulting from the common fractures and solution cavities in the bedrock. Adjacent soils that are very deep to bedrock, such as Lansing soils, have limitations because of slow permeability but are better suited to septic systems than the Farmington soil. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock is the main limitation on sites for local roads and streets. Adding fill as needed and planning the locations and grades of roads to avoid removal of rock can help to overcome this limitation in some areas.

Capability classification

The capability subclass is 2s.

FeB—Farmington-Rock outcrop complex, 0 to 8 percent slopes

This unit consists of a shallow, nearly level and gently sloping, somewhat excessively drained Farmington soil and rock outcrops. This unit is on bedrock-controlled uplands above bedrock escarpments in the northeastern part of the county. The Farmington soil formed in glacial till underlain by limestone bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit are broad, oblong, or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 195 acres. The unit is about 60 percent Farmington soil, 20 percent rock outcrops, and 20 percent other soils. The Farmington soil and rock outcrops occur in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Farmington

Surface layer:
0 to 9 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 18 inches—dark yellowish brown gravelly silt loam; 20 percent rock fragments

Bedrock:
18 inches—gray, massive limestone; fractured in the upper 2 inches

Rock outcrop

The rock outcrops are typically angular flat blocks or exposed ledges of massive gray or very dark gray limestone bedrock.

Minor Components

Included with this unit in mapping are unnamed soils and Wassaic soils. Some of the small areas of unnamed soils have bedrock within a depth of 10 inches. A few other small areas of unnamed soils are 40 to 60 inches deep over limestone bedrock. The moderately deep, well drained Wassaic soils are in slightly concave areas where the bedrock is deeper in the soil profile. Also included along the edge of ridges in some areas are small ledges of rock outcrop. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Farmington

Permeability: Moderate throughout the soil
Available water capacity: Low

Reaction: Strongly acid to slightly acid in the surface layer (unless limed) and moderately acid to mildly alkaline in the subsoil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are forestland. Some areas are pasture or are used for cultivated crops.

Crops and pasture

This unit is generally not suited to cultivated crops in most areas because equipment use is limited by the rock outcrops and the shallow depth to bedrock. The low available water capacity is also a limitation.

This unit is suited to pasture. The rock outcrops, shallow depth to bedrock, and low available water capacity are management concerns. The rock outcrops limit equipment use. Fencing systems that use shallow placement or greater distances between posts are preferred. Droughtiness is commonly a problem during extended dry periods. The depth to bedrock restricts root growth in legumes, and thus frost heave can damage or kill the plants. Rotating livestock grazing and excluding livestock during droughty periods help to maintain the pasture in good condition. Weed control increases forage yields. Where the use of equipment is practical, applications of fertilizer also increase forage yields. Conservation tillage practices are helpful in some areas during pasture renovation.

Forestland

The potential productivity of this unit is low for sugar maple because of the shallow soil depth and bedrock outcrops. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. Bedrock outcrops and ledges may also limit the use of equipment. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Because of the low productivity, the rock outcrops, and the shallow depth to bedrock, this unit is generally not recommended as a site for planting trees.

Dwellings

The shallow depth to bedrock and the common bedrock outcrops are the main limitations affecting dwellings. Most of the bedrock is hard limestone that is not easily ripped. If a better site is unavailable, construction should be in the deeper areas of soil. The unit has inclusions of Wassaic soils, which are moderately deep to bedrock and are better suited to dwellings, especially without basements. Where dwellings are constructed in areas of the Farmington soil, those without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed.

Septic tank absorption fields

The shallow depth to bedrock and many rock outcrops are serious limitations on sites for conventional septic tank absorption fields. Extensive alterations are required for conventional systems to function satisfactorily. Onsite sewage disposal systems must be specially designed to overcome the shallow soil depth and to prevent ground water contamination resulting from the common fractures and solution cavities in the bedrock. The areas of rock outcrops should not be selected as sites for sewage disposal systems. Adjacent soils that are very deep to bedrock, such as Lansing soils, have limitations because of slow permeability but are better suited to septic systems than the Farmington soil or areas of rock outcrop. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock and many rock outcrops are the main limitations on sites for local roads and streets. Adding fill as needed and planning locations and grades of roads to avoid areas of rock outcrops and to avoid removal of rock can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 6s in areas of the Farmington soil.

FeC—Farmington-Rock outcrop complex, 8 to 15 percent slopes

This unit consists of a shallow, strongly sloping, somewhat excessively drained Farmington soil and rock outcrops. This unit is on bedrock-controlled ridges and along narrow bedrock escarpments in the northeastern part of the county. The Farmington soil formed in glacial till underlain by limestone bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 80 acres. The unit is about 60 percent Farmington soil, 20 percent rock outcrops, and 20 percent other soils. The Farmington soil and rock outcrops occur in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Farmington

Surface layer:
0 to 9 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 18 inches—dark yellowish brown gravelly silt loam; 20 percent rock fragments

Bedrock:
18 inches—gray, massive limestone; fractured in the upper 2 inches

Rock outcrop

The rock outcrops are typically angular flat blocks or exposed ledges of massive gray or very dark gray limestone bedrock.

Minor Components

Included with this unit in mapping are unnamed soils and Wassaic soils. Some of the small areas of unnamed soils have bedrock within a depth of 10 inches. A few other small areas of unnamed soils are shallow and formed in glacial till over black shale bedrock. The few areas of moderately deep, well drained Wassaic soils are mainly on footslopes where the bedrock is deeper in the soil profile. The included areas of minor components are as large as 6 acres.

Soil Properties

Farmington

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer (unless limed) and moderately acid to mildly alkaline in the subsoil

Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland. Some areas are pasture.

Crops and pasture

This unit is generally not suited to cultivated crops in most areas because equipment use is limited by the rock outcrops and the shallow depth to bedrock. The low available water capacity is also a limitation.

This unit is suited to pasture. The rock outcrops, shallow depth to bedrock, and low available water capacity are management concerns. The rock outcrops limit equipment use. Fencing systems that use shallow placement or greater distances between posts are preferred. Droughtiness is commonly a problem during extended dry periods. The depth to bedrock restricts root growth in legumes, and thus frost heave can damage or kill the plants. Rotating livestock grazing and excluding livestock during droughty periods help to maintain the pasture in good condition. Weed control increases forage yields. Where the use of equipment is practical, applications of fertilizer also increase forage yields. Conservation tillage practices are helpful in some areas during pasture renovation.

Forestland

The potential productivity of this unit is low for sugar maple because of the shallow soil depth and the bedrock outcrops. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. Bedrock outcrops and ledges may also limit the use of equipment. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Because of low productivity, rock outcrops, and shallow depth to bedrock, this unit is generally not recommended as a site for planting trees.

Dwellings

The shallow depth to bedrock and the common bedrock outcrops are the main limitations affecting dwellings. Most of the bedrock is hard limestone that is not easily ripped. The unit has inclusions of Wassaic soils, which are moderately deep to bedrock and are better suited to dwellings, especially without basements. Where dwellings are constructed in areas of the Farmington soil, those without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed.

Septic tank absorption fields

The shallow depth to bedrock and many rock outcrops are serious limitations on sites for conventional septic tank absorption fields. Extensive alterations are required for conventional systems to function satisfactorily. In most areas, a specially designed system would be required for onsite sewage disposal. The areas of rock outcrops should not be selected as sites for sewage disposal systems. Adjacent soils that are very deep to bedrock, such as Lansing soils, have limitations because of slow permeability but are better suited to septic systems than the Farmington soil or the areas of rock outcrop. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock and many rock outcrops are the main limitations on sites for local roads and streets. Adding fill as needed and planning locations and grades of roads to avoid areas of rock outcrops and to avoid removal of rock can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 6s in areas of the Farmington soil.

FeD—Farmington-Rock outcrop complex, 15 to 35 percent slopes

This unit consists of a shallow, moderately steep and steep, somewhat excessively drained Farmington soil and rock outcrops. This unit is on bedrock-controlled ridges and along bedrock escarpments in the northeastern part of the county. The Farmington soil formed in glacial till underlain by limestone bedrock. Many areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit are long and narrow. They generally range from 6 to 30 acres in size but may be as large as 150 acres. The unit is about 60 percent Farmington soil, 20 percent rock outcrops, and 20 percent other soils. The Farmington soil and rock outcrops occur in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Farmington

Surface layer:
0 to 9 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 18 inches—dark yellowish brown gravelly silt loam; 20 percent rock fragments

Bedrock:
18 inches—gray, massive limestone; fractured in the upper 2 inches

Rock outcrop

The rock outcrops are typically exposed ledges of massive gray or very dark gray limestone bedrock.

Minor Components

Included with this unit in mapping are unnamed soils. Some of the small areas of unnamed soils have bedrock within a depth of 10 inches. A few other small areas of unnamed soils are shallow and formed in glacial till over black shale bedrock. The included areas of minor components are as large as 6 acres.

Soil Properties

Farmington
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer (unless limed) and moderately acid to mildly alkaline in the subsoil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland.

Crops and pasture

This unit is not suited to cultivated crops because of the rock outcrops, the shallow depth to bedrock, and the moderately steep and steep slopes, which limit the use of equipment. The low available water capacity is also a limitation. This unit is generally not suited to pasture for the same reasons.

Forestland

The potential productivity of this unit is low for sugar maple because of the shallow soil depth and the bedrock outcrops. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Bedrock outcrops and ledges may also limit the use of equipment. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Because of the low productivity, the rock outcrops, and the shallow depth to bedrock, this unit is generally not recommended as a site for planting trees.

Dwellings

The shallow depth to bedrock, the common bedrock outcrops, and the moderately steep and steep slopes are the main limitations affecting dwellings. Most of the bedrock is hard limestone that is not easily ripped. Extensive alterations are needed to make this unit suitable for dwellings. Adjacent areas that are deeper to bedrock and less sloping are better suited.

Septic tank absorption fields

The shallow depth to bedrock, many rock outcrops, and steep slopes are serious limitations on sites for conventional septic tank absorption fields. Extensive alterations are required for conventional systems to function satisfactorily. Poor filtering capacity can result in contamination of the ground water supply. Lateral movement of effluent resulting in seepage at the surface downslope is also a hazard. Adjacent soils that are less sloping and very deep to bedrock may be better suited to septic systems than the Farmington soil or the areas of rock outcrop. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock, many rock outcrops, and moderately steep and steep slopes are the main limitations on sites for local roads and streets. Adding fill as needed and planning locations and grades of roads to avoid areas of rock outcrops and to avoid removal of rock can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 7s in areas of the Farmington soil.

FeF—Farmington-Rock outcrop complex, 35 to 60 percent slopes

This unit consists of a shallow, very steep, somewhat excessively drained Farmington soil and rock outcrops. This unit is on bedrock-controlled ridges and along escarpments in the northeastern part of the county. The Farmington soil formed in glacial till underlain by limestone bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit are long and narrow. They generally range from 6 to 30 acres in size but may be as large as 120 acres. The unit is about 50 percent Farmington soil, 25 percent rock outcrops, and 25 percent other soils. The Farmington soil and rock outcrops occur in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Farmington

Surface layer:
0 to 9 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 18 inches—dark yellowish brown gravelly silt loam; 20 percent rock fragments

Bedrock:
18 inches—gray, massive limestone; fractured in the upper 2 inches

Rock outcrop

The rock outcrops are typically exposed ledges of massive gray or very dark gray limestone bedrock.

Minor Components

Included with this unit in mapping are unnamed soils and Manlius soils. The unnamed soils have bedrock within a depth of 10 inches. The moderately deep Manlius soils are underlain by shale bedrock. The included areas of minor components are as large as 6 acres.

Soil Properties

Farmington
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Strongly acid to slightly acid in the surface layer (unless limed) and moderately acid to mildly alkaline in the subsoil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very Rapid

Use and Management

Most areas of this map unit are forestland.

Crops and pasture
This unit is not suited to cultivated crops because of the serious hazard of erosion, the rock outcrops, and the shallow soil depth. This unit is not suited to pasture for the same reasons.

Forestland
The potential productivity of this unit is low for sugar maple because of the shallow soil depth and the bedrock outcrops. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Bedrock outcrops and ledges may also limit the use of equipment. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Because of the low productivity, the rock outcrops, and the shallow depth to bedrock, this unit is generally not recommended as a site for planting trees.

Dwellings
The shallow depth to bedrock, the common bedrock outcrops, and the very steep slope are serious limitations affecting dwellings. Most of the bedrock is hard limestone that is not easily ripped. Extensive alterations are needed to make this unit suitable for dwellings.

Septic tank absorption fields
The shallow depth to bedrock, many rock outcrops, and very steep slopes are

serious limitations on sites for conventional septic tank absorption fields. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent soils that are less sloping and very deep to bedrock may be better suited to septic systems than the Farmington soil or the areas of rock outcrop. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock, many rock outcrops, and very steep slopes are the main limitations on sites for local roads and streets. Adding fill as needed and planning locations and grades of roads to avoid areas of rock outcrops and to avoid removal of rock can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 7s in areas of the Farmington soil.

Fg—Fluvaquents-Udifluvents complex, frequently flooded

This unit consists of very deep, nearly level, very poorly drained to somewhat excessively drained soils that formed in recent alluvial deposits on flood plains. Historically, this unit was commonly called alluvial land. Fluvaquents are low lying, poorly drained and very poorly drained soils that are frequently flooded. Udifluvents are in the slightly higher areas on the flood plain and commonly consist of old gravel and sand bars. Individual areas of this unit typically are long and narrow. They generally range from 6 to 35 acres in size but may be as large as 220 acres. Fluvaquents make up about 50 percent of the unit, Udifluvents about 35 percent, and other soils about 15 percent. The Fluvaquents and Udifluvents are so intermingled that it was not practical to separate them in mapping. They are subject to extreme changes during flood periods. Many areas are cut by old drainage channels. Large areas consist of stratified gravelly deposits that may have a thin surface of silty alluvium. Slopes range from 0 to 3 percent.

Typically, the Fluvaquents have a grayish or brownish surface layer that ranges from gravelly sandy loam to silt loam. The thickness of the surface layer ranges from 2 to 13 inches. The substratum is mottled grayish or brownish. It ranges from sandy loam to silt loam or the gravelly or very gravelly analogs of those textures.

Typically, the Udifluvents have a brownish surface layer that ranges from silt loam to fine sandy loam or the gravelly analogs of those textures. The thickness of the surface layer ranges from 2 to 13 inches. The substratum is brownish. It ranges from silt loam to sandy loam or the gravelly or very gravelly analogs of those textures.

Included in this unit in mapping are Wayland, Wakeville, Palms, and Carlisle soils and Saprists and Aquents. The poorly drained Wayland soils are in small, low-lying areas on flood plains. The somewhat poorly drained Wakeville soils are in the slightly higher areas where the flood plain is more uniform and contains more silt. The Palms and Carlisle soils and the Saprists and Aquents, inundated, are in depressions adjacent to the flood plains. Also included are some recent gravel and sand bars. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

This unit is frequently flooded and is commonly wet. Bedrock is typically at a depth of more than 5 feet. Permeability, available water capacity, content of organic matter, and soil reaction vary greatly, depending on the composition of alluvium and location of the unit in the county.

Most of the acreage of this map unit is idle or forestland. A few areas are pasture.

This unit is generally unsuited to cultivated crops. Frequent flooding of the Fluvaquents and Udifluvents and wetness in the Fluvaquents are the main limitations affecting cropland. Gouging and deposition of sand, gravel, and cobbles on the surface are also limitations. They interfere with the use of equipment and plant growth. This unit is poorly suited to pasture for the same reasons. Weed and brush control can increase forage yields in some areas. Some areas have poor accessibility. Excluding livestock during periods of flooding helps to maintain water quality.

The potential productivity of this unit for wood is low. Brush and some hardwoods, such as red maples and poplars, can grow in many places and make suitable wildlife habitat.

This unit is generally not suited to dwellings, septic tank absorption fields, or local roads and streets because of the frequent flooding in areas of both the Fluvaquents and Udifluvents and because of prolonged periods of wetness in areas of the Fluvaquents. Better suited soils should be considered as alternative sites. Wetland regulations may restrict or prohibit certain land uses and should be investigated.

Capability classification

The capability subclass is 5w.

Fo—Fonda mucky silt loam

This very deep, nearly level, very poorly drained soil is in slightly depressional areas on lake plains and in sediment-filled depressions on till uplands. It formed in water-deposited, fine-textured material. Individual areas are broad and are round or oval. They generally range from 6 to 35 acres in size but may be as large as 55 acres. Slopes are 0 to 1 percent.

Typical Profile

Surface layer:
0 to 2 inches—mucky peat (hemic material)
2 to 10 inches—black mucky silt loam

Subsoil:
10 to 18 inches—dark gray silty clay loam
18 to 28 inches—dark gray silty clay that has common olive brown mottles

Substratum:
28 to 44 inches—gray silty clay varved with thin bands of silt; common olive brown mottles; strongly effervescent
44 to 74 inches—dark gray varved clay and silty clay having a few olive brown mottles; slightly effervescent

Minor Components

Included with this unit in mapping are Rhinebeck, Canandaigua, Lyons, Palms, Carlisle, and Edwards soils. The Rhinebeck soils are somewhat poorly drained. The Canandaigua soils have less clay in the subsoil and substratum, and the Lyons soils have more rock fragments than the Fonda soil. The few areas of very poorly drained Palms, Carlisle, and Edwards soils formed in organic deposits in nearby bogs. Also included are Fonda soils that have thin, calcareous layers within the surface layer and subsoil but that are not calcareous in the remainder of the profile above the substratum. The included areas of minor components are as large as 6 acres and make up about 10 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and slow or very slow in the subsoil and substratum
Available water capacity: High

Reaction: Slightly acid or neutral in the surface layer, slightly acid to moderately alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: 1 foot above the surface to 0.5 foot below from November through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are forestland. Some areas are idle and support water-tolerant brush, trees, and herbaceous vegetation. A few small areas are pasture.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table. This unit is poorly suited to pasture because of the same limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees. In some areas in the northern part of the county, however, white spruce and eastern arborvitae (northern white cedar) can be planted.

Dwellings

Prolonged wetness due to the seasonal high water table and, in some areas, ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, the slow permeability in the substratum in some areas, and ponding in some areas are the main limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, and, in some areas, ponding are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

GrB—Greene-Tuller complex, 1 to 8 percent slopes

This unit consists of nearly level and gently sloping Greene and Tuller soils. The Greene soil is somewhat poorly drained and moderately deep. The Tuller soil is poorly drained and shallow. This unit is principally on sandstone, siltstone, and shale ridgetops and benches at elevations below 1,750 feet. These soils formed in glacial till underlain by bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit either are broad or are long and narrow. They generally range from 6 to 20 acres in size but may be as large as 50 acres. This unit is about 50 percent Greene soil, 30 percent Tuller soil, and 20 percent other soils. The Greene and Tuller soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Greene

Surface layer:
0 to 8 inches—very dark grayish brown silt loam; 5 percent rock fragments

Subsoil:
8 to 18 inches—dark brown silt loam that has many strong brown and common light brownish gray mottles; 5 percent rock fragments
18 to 27 inches—dark grayish brown silt loam that has common dark yellowish brown mottles; 10 percent rock fragments

Substratum:
27 to 39 inches—dark grayish brown gravelly loam that has a few dark yellowish brown mottles; 25 percent rock fragments

Bedrock:
39 inches—black, fractured shale

Tuller

Surface layer:
0 to 8 inches—dark grayish brown channery silt loam that has a few dark yellowish brown and dark brown mottles; 15 percent rock fragments

Subsoil:
8 to 14 inches—dark grayish brown channery silt loam that has many yellowish brown and brown and a few light brownish gray mottles; 30 percent rock fragments

Bedrock:
14 inches—dark gray, fractured sandstone and shale

Minor Components

Included with this unit in mapping are unnamed, Arnot, Lordstown, and Volusia soils. The small areas of unnamed soils are moderately deep and poorly drained. The shallow, somewhat excessively drained Arnot soils and moderately deep, well drained Lordstown soils are on the same landform as the Greene and Tuller soils. The pockets of very deep, somewhat poorly drained Volusia soils have deeper glacial till over the bedrock than the Greene and Tuller soils. Also included in some areas, mostly in the northern part of the county, are soils that are similar to the Greene soil but that have higher reaction. A few small, narrow areas of rock outcrop are at the edge of the map unit in some areas. The included areas of minor components are as large as 6 acres.

Soil Properties

Greene
Permeability: Moderate in the surface layer and slow in the subsoil and substratum

Available water capacity: Moderate
Reaction: Very strongly acid or strongly acid in the surface layer and strongly acid or moderately acid in the subsoil and substratum
Seasonal high water table: At a depth of 0.5 to 1.0 foot from December through June
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Tuller
Permeability: Moderate in the surface layer and slow or moderately slow in the subsoil
Available water capacity: Very low
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At the surface to a depth of 1.0 foot from November through June
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are forestland or idle. Some areas are used for cultivated crops or hay. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture
Where drained, this unit is moderately suited to cultivated crops. Depth to bedrock, seasonal wetness, and the very low available water capacity in the Tuller soil, especially during droughty periods, are the main limitations affecting crops.

This unit is moderately suited to pasture. The shallow depth of the Tuller soil commonly results in droughtiness during the summer. Wetness in spring and late fall is commonly a problem in areas of both the Greene and Tuller soils. Excluding livestock during wet periods and droughty periods helps to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland
The potential productivity of this unit is moderate for red maple. This unit is poorly suited to logging roads and log landings because of wetness and moderate soil strength. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Because of the wetness and the shallow depth to bedrock, areas dominated by the Tuller soil are generally not recommended for planting trees. Trees to manage in areas dominated by the Greene soil are eastern white pine, white spruce, and Norway spruce.

Dwellings
Wetness due to the seasonal high water table and the depth to bedrock are the main limitations affecting dwellings. Many areas of this unit have bedrock that is massive and is not easily ripped. If a better site is unavailable, development should be in the better drained, deeper areas. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. Wetland regulations should be investigated before dwellings are constructed in the wettest areas of this unit.

Septic tank absorption fields
Wetness and the depth to bedrock are serious limitations on sites for conventional septic tank absorption fields. Also, the slow permeability in the subsoil and substratum is a limitation. State and local health codes may prohibit conventional

septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness, the depth to bedrock, and potential for frost action are the main limitations on sites for local roads and streets. Planning roads to avoid poorly drained areas and areas that are shallow to bedrock reduces construction costs and minimizes potential problems. In some areas, constructing roads on raised additions of coarse-grained subgrade and base material helps to overcome these limitations. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage in the wettest areas of this unit. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 3w.

Hb—Hamplain silt loam

This very deep, nearly level, well drained soil is on flood plains along the larger streams and rivers in the county. This soil formed in silty alluvial deposits. Individual areas are long and narrow. They generally range from 6 to 35 acres in size but may be as large as 100 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown silt loam

Subsoil:
9 to 24 inches—brown silt loam
24 to 38 inches—brown very fine sandy loam

Substratum:
38 to 78 inches—brown and dark yellowish brown loamy very fine sand

Minor Components

Included with this unit in mapping are Otego, Wakeville, Unadilla, and Scio soils. The small areas of moderately well drained Otego soils and somewhat poorly drained Wakeville soils are on the lower parts of the flood plain. The few areas of well drained Unadilla soils and moderately well drained Scio soils are on low terraces. Also included are a few areas of Hamplain soils that are subject to rare flooding. They are along the Susquehanna River on the slightly higher parts of the flood plain. Also included are soils that are similar to the Hamplain soil but have higher base saturation and are less acid. They are along the Unadilla River in the northwestern part of the county. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and moderate or moderately rapid in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral (where limed) in the surface layer and strongly acid to slightly acid in the subsoil and substratum
Seasonal high water table: At a depth of 3.5 to 6.0 feet from March through May
Flooding: Occasional, brief, November through June
Depth to bedrock: More than 60 inches
Surface runoff: Slow or very slow

Use and Management

Most areas of this map unit are used for cultivated crops. A few areas are hayland or idle. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although the unit is susceptible to flooding, the flooding does not normally occur during the growing season. However, flooding can delay planting and cause minor crop damage in some years, especially on the lower parts of the flood plain. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is also well suited to pasture. Excluding livestock from the pasture during flooding or wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. The application of lime, fertilizer, or herbicide during periods that are subject to flooding can result in lower water quality.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of flooding and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Trees to manage are black walnut, black locust, and Norway spruce.

Dwellings

Flooding is the main limitation affecting dwellings. Inclusions within the unit and adjacent areas that are not subject to flooding are better suited to dwellings. State or local regulations may prohibit or restrict the construction of dwellings.

Septic tank absorption fields

Flooding is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and streams during flood periods. Nearby areas that are not subject to flooding are better suited to conventional septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding and potential for frost action are the main limitations on sites for local roads and streets. Constructing roads on raised additions of coarse-grained subgrade and base material can help to overcome these limitations in some areas. However, it is better to construct local roads and streets on nearby soils that are not subject to flooding because strong floodwater currents can wash out or otherwise damage roadbeds.

Capability classification

The capability classification is 1.

HdC—Hawksnest silt loam, 8 to 15 percent slopes

This strongly sloping, shallow, somewhat excessively drained soil is on the sides and tops of hills in bedrock-controlled uplands at elevations over 1,750 feet. It formed in glacial till underlain by shale, siltstone, or sandstone bedrock. Many areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas commonly are oblong or long and narrow. They generally range from 6 to 20 acres in size but may be as large as 30 acres.

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed leaf litter and pine needles
1 to 7 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
7 to 11 inches—yellowish brown channery silt loam; 25 percent rock fragments
11 to 19 inches—strong brown channery silt loam; 30 percent rock fragments

Bedrock:
19 inches—very dark gray and dark gray, massive siltstone

Minor Components

Included with this unit in mapping are Mongaup, Torull, Gretor, Lewbath, Willdin, and unnamed soils. The glacial till is thicker over bedrock in the moderately deep, well drained Mongaup soils than in the Hawksnest soil. The few areas of shallow, poorly drained Torull soils and moderately deep, somewhat poorly drained Gretor soils are in shallow depressions. The very deep, well drained Lewbath soils and moderately well drained Willdin soils are deeper to bedrock than the Hawksnest soil and have a firm or very firm fragipan subsoil. The few small areas of unnamed soils are less than 10 inches deep to bedrock. Also included are a few small areas of bedrock outcrop. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderate or moderately rapid in the subsoil
Available water capacity: Low
Reaction: Extremely acid to strongly acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland. Some areas are pasture. A few areas are hayland.

Crops and pasture

This unit is generally not suited to cultivated crops in most areas because of the shallow depth to bedrock and the low available water capacity and in some areas because of the rock outcrops.

This unit is suited to pasture. The shallow depth to bedrock, low available water capacity, and rock outcrops in some areas are management concerns. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is low for northern red oak and sugar maple because of the shallow soil depth. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Because of low productivity, shallow depth to bedrock, and rock outcrops in some areas, this unit is generally not recommended as a site for planting trees.

Dwellings

The shallow depth to bedrock is the main limitation affecting dwellings. The bedrock is typically hard and massive. Although it may be fractured in the upper part in some areas, it is typically not easily ripped. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion. Adjacent areas that are deeper to bedrock are better suited to dwellings.

Septic tank absorption fields

This unit is generally not suited to conventional septic tank absorption fields because of the shallow depth to bedrock and the rock outcrops. Poor filtering capacity can result in contamination of ground water. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent areas that are deeper to bedrock are better suited to conventional septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock is the main limitation on sites for local roads and streets. Planning the locations and grades of roads to avoid areas of rock outcrops, adding fill as needed, and minimizing the removal of soil and bedrock can help to overcome this limitation in some areas.

Capability classification

The capability subclass is 4e.

HeA—Herkimer gravelly silt loam, fan, 0 to 2 percent slopes

This very deep, nearly level, well drained soil is on alluvial fans, principally in the northern part of the county. It formed in water-sorted, gravelly, alluvial and inwash deposits that washed into valleys from side streams. This soil is dominated by dark colored shale and smaller amounts of limestone. Individual areas are conical in shape, being narrow at the apex and broad at the base. They generally range from 6 to 30 acres in size but may be as large as 90 acres.

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown gravelly silt loam; 20 percent rock fragments

Subsoil:
9 to 19 inches—dark brown gravelly silt loam; 30 percent rock fragments
19 to 33 inches—dark brown gravelly silt loam; 20 percent rock fragments

Substratum:
33 to 70 inches—dark yellowish brown gravelly loam that has a few yellowish red mottles; 15 percent rock fragments
70 to 72 inches—dark yellowish brown gravelly loam that has a few yellowish red mottles; 15 percent rock fragments; slightly effervescent

Minor Components

Included with this unit in mapping are unnamed, Scio, and Howard soils and Fluvaquents-Udifluvents. The few areas of unnamed soils are similar to the Herkimer soil but are moderately well drained and are in the higher positions that formed in glacial till. The several small areas of moderately well drained Scio soils contain more silt and less gravel than the Herkimer soil. They are in the town of Cherry Valley along the outer fringes of fans. The few small areas of well drained Howard soils are in the slightly higher positions of gravelly outwash and inwash deposits. The Fluvaquents-Udifluvents, which are subject to more frequent flooding than the Herkimer soil and have variable textures and drainage, are in the slightly lower positions along streams. Also included in mapping, along the Canajoharie Creek near the Montgomery County line, are some areas that are on alluvial terraces rather than on alluvial fans, that may not be subject to flooding, and that have silt deposits. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At a depth of 3.0 to 6.0 feet from March through May
Flooding: Rare, brief, March through May
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although this unit is subject to rare flooding, the flooding does not normally occur during the growing season. In the lower areas, flooding can delay planting and cause minor crop damage in some years. The delays and damage usually occur along streams during extended wet periods or under adverse weather conditions. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is also well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. This unit has a slight hazard of erosion on roads and trails. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

Flooding is the main limitation affecting dwellings. Adjacent areas and higher areas of this unit that are not subject to flooding should be considered as alternative sites.

Septic tank absorption fields

Flooding is the main limitation on sites for conventional septic tank absorption fields. In some areas, absorption field failure and contamination of ground water or nearby water bodies can occur during flooding. Better suited soils should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in a few areas of this unit. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained subgrade and base material to raise the roadbed above flood levels can help to overcome this limitation in many areas.

Capability classification

The capability classification is 1.

HeB—Herkimer gravelly silt loam, fan, 2 to 6 percent slopes

This very deep, nearly level and gently sloping, well drained soil is on alluvial fans, principally in the northern part of the county. It formed in water-sorted, gravelly, alluvial and inwash deposits that washed into valleys from side streams. This soil is dominated by dark colored shale and smaller amounts of limestone. Individual areas are conical in shape, being narrow at the apex and broad at the base. They generally range from 6 to 35 acres in size but may be as large as 80 acres.

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown gravelly silt loam; 20 percent rock fragments

Subsoil:
9 to 19 inches—dark brown gravelly silt loam; 30 percent rock fragments
19 to 33 inches—dark brown gravelly silt loam; 20 percent rock fragments

Substratum:
33 to 70 inches—dark yellowish brown gravelly loam that has a few yellowish red mottles; 15 percent rock fragments
70 to 72 inches—dark yellowish brown gravelly loam that has a few yellowish red mottles; 15 percent rock fragments; slightly effervescent

Minor Components

Included with this unit in mapping are unnamed, Scio, and Howard soils and Fluvaquents-Udifluvents. The few areas of moderately well drained, unnamed soils are similar to the Herkimer soil but are in higher positions that formed in glacial till. The several small areas of moderately well drained Scio soils contain more silt and less gravel than the Herkimer soil. They are in the town of Cherry Valley along the outer fringes of fans. The few small areas of well drained Howard soils are in the slightly higher positions of gravelly outwash and inwash deposits. The Fluvaquents-Udifluvents, which are subject to more frequent flooding and have variable textures and drainage, are in the slightly lower positions along streams. Also included in mapping, along the Canajoharie Creek near the Montgomery County line, are some areas that are on alluvial terraces rather than on alluvial fans, that may not be subject to flooding, and that have silt deposits. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At a depth of 3.0 to 6.0 feet from March through May

Flooding: Rare, brief, March through May
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although this unit is subject to rare flooding, the flooding does not normally occur during the growing season. In the lower areas, flooding can delay planting and cause minor crop damage in some years. The delays and damage usually occur along streams during extended wet periods or under adverse weather conditions. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is also well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

Flooding is the main limitation affecting dwellings. Adjacent areas and higher areas of this unit that are not subject to flooding should be considered as alternative sites.

Septic tank absorption fields

Flooding is the main limitation on sites for conventional septic tank absorption fields. In some areas, absorption field failure and contamination of ground water or nearby water bodies can occur during flooding periods. Better suited soils should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in a few areas of this unit. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained subgrade and base material to raise the roadbed above flood levels can help to overcome this limitation in many areas.

Capability classification

The capability subclass is 2e.

HnB—Honeoye silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on footslopes, drumlins, and hilltops in glaciated uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 50 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam; 12 percent rock fragments

Subsoil:
8 to 17 inches—gravelly silt loam, brown with grayish brown surfaces of peds; 20 percent rock fragments
17 to 29 inches—dark brown gravelly silt loam that has a few yellowish brown mottles in the lower part; firm; 20 percent rock fragments; slightly effervescent in the lower part

Substratum:
29 to 72 inches—dark brown gravelly loam that has a few yellowish brown mottles in the upper part; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lansing, Conesus, Lima, and Wassaic soils. The small areas of Lansing soils and moderately well drained Conesus soils have carbonates to a greater depth than in the Honeoye soil. The moderately well drained Lima soils are on the slightly lower parts of the landform. The glacial till is thinner over the limestone bedrock in the few areas of moderately deep, well drained Wassaic soils than in the Honeoye soil. Also included are small areas of Honeoye soils that have slopes of less than 3 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum
Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 2.5 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. In the steeper areas that have long slope lengths, erosion can be a hazard. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings

Many areas of this unit have few or no limitations affecting dwellings. In some areas, however, wetness due to the seasonal high water table is a limitation affecting dwellings with basements. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

Slow and very slow permeability in the substratum and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

HnC—Honeoye silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on hilltops, hillsides, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 155 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam; 12 percent rock fragments

Subsoil:
8 to 17 inches—gravelly silt loam, brown with grayish brown surfaces of peds; 20 percent rock fragments
17 to 29 inches—dark brown gravelly silt loam that has a few yellowish brown mottles in the lower part; firm; 20 percent rock fragments; slightly effervescent in the lower part

Substratum:
29 to 72 inches—dark brown gravelly loam that has a few yellowish brown mottles in the upper part; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lansing, Conesus, Lima, and Wassaic soils. The small areas of Lansing soils and moderately well drained Conesus soils have carbonates to a greater depth than in the Honeoye soil. The moderately well drained Lima soils are on the slightly lower parts of the landform. The glacial till is thinner over the limestone bedrock in the few areas of moderately deep, well drained Wassaic soils than in the Honeoye soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum
Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 2.5 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings

The slope and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

Slow and very slow permeability in the substratum and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

HnD—Honeoye silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on hillsides, drumlins, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oval, oblong, or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 55 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam; 12 percent rock fragments

Subsoil:
8 to 17 inches—gravelly silt loam; brown with grayish brown surfaces of peds; 20 percent rock fragments
17 to 29 inches—dark brown gravelly silt loam that has a few yellowish brown mottles in the lower part; firm; 20 percent rock fragments; slightly effervescent in the lower part

Substratum:
29 to 72 inches—dark brown gravelly loam that has a few yellowish brown mottles in the upper part; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lansing, Conesus, Lima, and Wassaic soils. The small areas of Lansing soils and moderately well drained Conesus soils have carbonates to a greater depth than in the Honeoye soil. The moderately well drained Lima soils are on the slightly lower parts of the landform. The glacial till is thinner over the limestone bedrock in the few areas of moderately deep, well drained Wassaic soils than in the Honeoye soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum
Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 2.5 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are forestland, and a few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, and a crop rotation that limits the amount of time row crops are grown help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Erosion is a hazard during construction. Minimizing the removal of vegetative cover during excavation, using temporary erosion-control structures during construction, and seeding help to control the erosion. Adjacent areas that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope, wetness due to the seasonal high water table, and the slow or very slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

HoE—Honeoye and Lansing soils, 25 to 50 percent slopes

This unit consists of very deep, steep and very steep, well drained soils. This unit is on drumlins and glaciated uplands in the northern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. Slopes generally are convex. They range from 25 to 50 percent but are predominantly less then 35 percent. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 125 acres. Some areas consist mainly of the Honeoye soil, other areas consist mainly of the Lansing soil. A few areas contain both soils. The Honeoye and Lansing soils are mapped together because they have similar potential for use and management. The unit is about 45 percent Honeoye soil, 35 percent Lansing soil, and 20 percent other soils.

Typical Profile

Honeoye

Surface layer:
0 to 8 inches—brown silt loam; 12 percent rock fragments

Subsoil:
8 to 17 inches—gravelly silt loam; brown with grayish brown surfaces of peds; 20 percent rock fragments
17 to 29 inches—dark brown gravelly silt loam that has a few yellowish brown mottles in the lower part; firm; 20 percent rock fragments; slightly effervescent in the lower part

Substratum:
29 to 72 inches—dark brown gravelly loam that has a few yellowish brown mottles in the upper part; firm; 30 percent rock fragments; violently effervescent

Lansing

Surface layer:
0 to 9 inches—dark grayish brown silt loam; 10 percent rock fragments

Upper subsoil:
9 to 17 inches—dark yellowish brown gravelly loam; 20 percent rock fragments

Subsurface layer:
17 to 26 inches—pale brown and dark brown gravelly loam; 25 percent rock fragments

Lower subsoil:
26 to 37 inches—gravelly silt loam, dark brown with pale brown surfaces of peds; 15 percent rock fragments
37 to 49 inches—dark brown gravelly silt loam; 30 percent rock fragments

Substratum:
49 to 72 inches—brown cobbly loam; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Lima, Conesus, Manlius, and unnamed soils. The moderately well drained Lima and Conesus soils are on the slightly lower and more concave landforms. The small areas of moderately deep, well drained Manlius soils are on side slopes and ridgetops where the bedrock is closer to the surface. The few areas of unnamed soils, which are in the northeastern part of the county, have a crudely stratified, cobbly substratum. Also included are a few areas where the slope is more than 50 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Honeoye
Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum

Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 2.0 to 2.5 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Lansing
Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and the subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture.

Crops and pasture
This unit is generally not suited to cultivated crops because of the steep and very steep slopes and the severe hazard of erosion. The steeper areas of this unit generally are not suited to pasture for the same reasons. Weed control and applications of fertilizer increase forage yields in the less sloping areas. Conservation tillage practices may be helpful during the renovation of pasture in some areas.

Forestland
The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, European larch, and eastern white pine.

Dwellings
The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The slopes are steep and very steep and commonly require extensive landscaping and grading. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields
The slope, wetness due to the seasonal high water table, and the slow or very slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is a hazard. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets
The slope is the main limitation on sites for local roads and streets. Designing

roads to conform to the natural slope of the land and planning locations and grades of roads to minimize cutting and filling can help to overcome this limitation in some areas. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 6e.

HrB—Howard gravelly silt loam, 2 to 8 percent slopes

This very deep, gently sloping, well drained soil is on glacial outwash plains and kames. It formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 225 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:
5 to 9 inches—pale brown and brown silt loam with dark brown material from the subsoil; 10 percent rock fragments

Subsoil:
9 to 25 inches—gravelly loam, dark brown with pale brown surfaces of peds; 30 percent rock fragments
25 to 36 inches—dark brown very gravelly clay loam; 40 percent rock fragments
36 to 40 inches—dark brown very gravelly clay loam; 45 percent rock fragments

Substratum:
40 to 85 inches—grayish brown sand and gravel; 65 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Herkimer and unnamed soils. The few areas of well drained Herkimer soils are on alluvial fans and in slightly lower-lying areas where the water table is closer to the surface than in the Howard soil. The few areas of unnamed soils are on the same landform as the Howard soil, are moderately well drained, and are coarser textured. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, subsurface layer, and subsoil and very rapid in the substratum
Available water capacity: Moderate
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control, applications of fertilizer, and, in some areas, applications of lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are red pine, black walnut, black locust, and Norway spruce.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Poor filtering capacity because of the very rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. It can result in contamination of ground water and nearby water bodies. Adjacent areas that have a better filtering capacity are better suited to conventional septic tank absorption fields. In a few areas, specially designed systems may be needed to prevent ground water contamination. State and local health codes may prohibit conventional septic tank absorption fields in a few areas because of the very rapid permeability in the substratum layer.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

HrC—Howard gravelly silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on glacial outwash plains, eskers, and kames. This soil formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:

0 to 5 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:

5 to 9 inches—pale brown and brown silt loam with dark brown material from the subsoil; 10 percent rock fragments

Subsoil:

9 to 25 inches—gravelly loam, dark brown with pale brown surfaces of peds; 30 percent rock fragments

25 to 36 inches—dark brown very gravelly clay loam; 40 percent rock fragments

36 to 40 inches—dark brown very gravelly clay loam; 45 percent rock fragments

Substratum:
40 to 85 inches—grayish brown sand and gravel; 65 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are unnamed soils and Lansing soils. Some of the areas of unnamed soils do not have water-sorted material in the substratum. A few other small areas of unnamed soils are moderately well drained and are coarser textured than the Howard soil. The small areas of well drained Lansing soils are along the edge of glacial till plains. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, subsurface layer, and subsoil and very rapid in the substratum
Available water capacity: Moderate
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may also interfere with certain tillage operations. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control, applications of fertilizer, and, in some areas, applications of lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are red pine, black walnut, black locust, and Norway spruce.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

Poor filtering capacity because of the very rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. It can result in contamination of ground water and nearby water bodies. Adjacent areas that have a better filtering capacity are better suited to conventional septic tank absorption fields. In a few areas, specially designed systems may be needed to prevent ground water contamination. State and local health codes may prohibit conventional septic tank absorption fields in a few areas of this unit because of the very rapid permeability in the substratum layer.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations.

Capability classification

The capability subclass is 3e.

HrD—Howard gravelly silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on glacial outwash plains, eskers, and kames. It formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 65 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:
5 to 9 inches—pale brown and brown silt loam with dark brown material from the subsoil; 10 percent rock fragments

Subsoil:
9 to 25 inches—gravelly loam, dark brown with pale brown surfaces of peds; 30 percent rock fragments
25 to 36 inches—dark brown very gravelly clay loam; 40 percent rock fragments
36 to 40 inches—dark brown very gravelly clay loam; 45 percent rock fragments

Substratum:
40 to 85 inches—grayish brown sand and gravel; 65 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are unnamed soils and Lansing soils. Some areas of unnamed soils do not have water-sorted material in the substratum. A few other small areas of unnamed soils on the same landform as the Howard soil are coarser textured than the Howard soil. The small areas of well drained Lansing soils are along the edge of glacial till plains. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately rapid in the surface layer, subsurface layer, and subsoil and very rapid in the substratum
Available water capacity: Moderate
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. A few areas are used for cultivated crops or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Also, droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may also interfere with certain tillage operations. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that includes several years of hay or small grains help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Rotational grazing, proper stocking rates, weed control, applications of fertilizer, and, in some areas, applications of lime increase forage yields. Minimizing tillage during pasture renovation helps to control erosion.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are red pine, black walnut, black locust, and Norway spruce.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. Erosion is a hazard during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope and poor filtering capacity are the main limitations on sites for conventional septic tank absorption fields. The very rapid permeability in the substratum can result in contamination of ground water and nearby water bodies. Adjacent areas that are less sloping and have a better filtering capacity are better suited to conventional septic tank absorption fields. In a few areas, specially designed systems may be needed to prevent ground water contamination. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope and the very rapid permeability in the substratum layer. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

LaB—Lackawanna channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on the tops and sides of hills in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are broad or irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 80 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Wellsboro, Morris, Oquaga, and Arnot soils. The small areas of moderately well drained Wellsboro soils and somewhat poorly drained Morris soils are in shallow depressions and the slightly lower positions. The moderately deep, well drained Oquaga soils and shallow, somewhat excessively drained Arnot soils are on the slightly higher ridgetops and side slopes where the bedrock is closer to the surface. Also included are a few areas of Lackawanna soils that have up to 3 percent of the surface covered with large stones and boulders. These soils are generally shown with a spot symbol on the maps. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture, forestland, or idle. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow permeability in the firm subsoil and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

LaC—Lackawanna channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on the tops and sides of hills in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are broad or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 95 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Wellsboro, Morris, Oquaga, and Arnot soils. The small areas of moderately well drained Wellsboro soils and somewhat poorly drained Morris soils are in shallow depressions and the slightly lower positions. The moderately deep, well drained Oquaga soils and the shallow, somewhat excessively drained Arnot soils are on the slightly higher ridgetops and side slopes where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture, forestland, or idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

Wetness due to the seasonal high water table and slope are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation by minimizing excavating and filling. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slow permeability in the firm subsoil and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and potential for frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

LaD—Lackawanna channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on the tops and sides of hills in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are oblong or irregular in shape. They generally range from 6 to 45 acres in size but may be as large as 170 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Wellsboro, Oquaga, Arnot, and unnamed soils. The small areas of moderately well drained Wellsboro soils are in the slightly lower positions. The moderately deep, well drained Oquaga soils and the shallow, somewhat excessively drained Arnot soils are on the slightly higher ridgetops and side slopes where the bedrock is closer to the surface. The few areas of unnamed soils are similar to the Lackawanna soil but do not have a firm subsoil (fragipan). Also included are some small areas of Lackawanna soils that have slopes of less than 15 percent. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None

Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are forestland or idle. A few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that limits the amount of time row crops are grown help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are less sloping are better suited to dwellings. Designing dwellings to conform to the natural slope of the land facilitates construction. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the slow permeability in the firm subsoil, and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

LaE—Lackawanna channery silt loam, 25 to 35 percent slopes

This very deep, steep, well drained soil is on sides of hills in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 50 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
6 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 24 inches—reddish brown channery silt loam; 30 percent rock fragments

Subsurface layer:
24 to 26 inches—reddish gray channery silt loam that has common dark yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
26 to 70 inches—dark reddish brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Wellsboro, Oquaga, Arnot, and unnamed soils. The small areas of moderately well drained Wellsboro soils are in the slightly lower positions. The moderately deep, well drained Oquaga soils and shallow, somewhat excessively drained Arnot soils are on ridgetops and side slopes where the bedrock is closer to the surface. The few areas of unnamed soils are similar to the Lackawanna soil but do not have a firm subsoil (fragipan). Also included are a few areas of Lackawanna soils that have up to 3 percent of the surface covered with large stones and boulders. These Lackawanna soils are generally shown with spot symbols on the maps. Also included are a few areas of Lackawanna soils that have slopes of more than 35 percent. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture or idle.

Crops and pasture

This unit is generally not suited to cultivated crops because of the steep slopes and the severe hazard of erosion. The unit is better suited to pasture, although suitability is poor for the same reasons. Weed control and applications of lime and fertilizer increase forage yields. Conservation tillage practices may be helpful during pasture renovation in some areas.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. The slope is steep and commonly requires extensive landscaping and grading. Adjacent areas that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope, the slow permeability in the firm subsoil, and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is also a hazard. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Planning locations and grades of roads to conform to the slope and contour of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 6e.

LeB—Lansing silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on hilltops, hillsides, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 130 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam; 10 percent rock fragments

Upper subsoil:
9 to 17 inches—dark yellowish brown gravelly loam; 20 percent rock fragments

Subsurface layer:
17 to 26 inches—pale brown and dark brown gravelly loam; 25 percent rock fragments

Lower subsoil:
26 to 37 inches—gravelly silt loam, dark brown with pale brown surfaces of peds; 15 percent rock fragments
37 to 49 inches—dark brown gravelly silt loam; 30 percent rock fragments

Substratum:
49 to 72 inches—brown cobbly loam; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Conesus, Honeoye, Lima, and Wassaic soils. The areas of moderately well drained Conesus soils are on the slightly lower parts of the landform. The Honeoye soils and moderately well drained Lima soils have carbonates within a depth of 32 inches. The glacial till is thinner over the limestone bedrock in the few small areas of moderately deep, well drained Wassaic soils than in the Lansing soil. Also included, at the higher elevations in the eastern parts of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Lansing soil but have a subsoil with weak, dense and brittle (fragipan) layers. These soils also have colder soil temperatures than is typical for the Lansing soil. Also included are small areas of Lansing soils that have slopes of less than 3 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. In the steeper areas that have long slope lengths, erosion can be a hazard. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is also well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, white spruce, Norway spruce, and European larch.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Slow permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

LeC—Lansing silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on hilltops, hillsides, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam; 10 percent rock fragments

Upper subsoil:
9 to 17 inches—dark yellowish brown gravelly loam; 20 percent rock fragments

Subsurface layer:
17 to 26 inches—pale brown and dark brown gravelly loam; 25 percent rock fragments

Lower subsoil:
26 to 37 inches—gravelly silt loam, dark brown with pale brown surfaces of peds; 15 percent rock fragments
37 to 49 inches—dark brown gravelly silt loam; 30 percent rock fragments

Substratum:
49 to 72 inches—brown cobbly loam; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Conesus, Honeoye, Lima, and Wassaic soils. The areas of moderately well drained Conesus soils are on the slightly lower parts of the landform. The Honeoye soils and moderately well drained Lima soils have carbonates within a depth of 32 inches. The glacial till is thinner over the limestone bedrock in the few small areas of moderately deep, well drained Wassaic soils than in the Lansing soil. Also included, at the higher elevations in the eastern parts of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Lansing soil but have a subsoil with weak, dense and brittle (fragipan) layers. These soils also have colder soil temperatures than is typical for the Lansing soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow in the substratum

Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, white spruce, Norway spruce, and European larch.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

Slow permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

LeD—Lansing silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on hillsides, drumlins, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 245 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam; 10 percent rock fragments

Upper subsoil:
9 to 17 inches—dark yellowish brown gravelly loam; 20 percent rock fragments

Subsurface layer:
17 to 26 inches—pale brown and dark brown gravelly loam; 25 percent rock fragments

Lower subsoil:
26 to 37 inches—gravelly silt loam, dark brown with pale brown surfaces of peds; 15 percent rock fragments
37 to 49 inches—dark brown gravelly silt loam; 30 percent rock fragments

Substratum:
49 to 72 inches—brown cobbly loam; firm; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Conesus, Honeoye, Lima, and Wassaic soils. The areas of moderately well drained Conesus soils are on the slightly lower parts of the landform. The Honeoye soils and moderately well drained Lima soils have carbonates within a depth of 32 inches. The glacial till is thinner over the limestone bedrock in the few small areas of moderately deep, well drained Wassaic soils than in the Lansing soil. Also included, at the higher elevations in the eastern parts of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Lansing soil but have a subsoil with weak, dense and brittle (fragipan) layers. These soils also have colder soil temperatures than is typical for the Lansing soil. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer, subsurface layer, and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are forestland. A few areas are used for cultivated crops.

Crops and pasture
This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, and a crop rotation that limits the amount of time row crops are grown help to control

erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, white spruce, Norway spruce, and European larch.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome this limitation. Erosion is a hazard during construction. Minimizing the removal of vegetative cover during excavation, using temporary erosion-control structures, and seeding help to control the erosion. Adjacent areas that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope and the slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

LfB—Lewbath channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on hilltops and upper parts of valley sides that generally have convex relief. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, or shale. It is at elevations over 1,750 feet. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 50 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown channery silt loam; 20 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown silt loam; 10 percent rock fragments
16 to 21 inches—light olive brown channery silt loam; firm; 30 percent rock fragments

21 to 33 inches—dark grayish brown channery silt loam; very firm; 30 percent rock fragments
33 to 52 inches—dark grayish brown very channery loam that has common light olive brown and a few light brownish gray mottles; very firm; 45 percent rock fragments

Substratum:
52 to 72 inches—olive brown very flaggy loam; firm; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Ontusia, and Mongaup soils. The moderately well drained Willdin soils are in small, slightly lower or flatter areas. The somewhat poorly drained Ontusia soils are in slight depressions and along small intermittent drainageways. The few small areas of moderately deep Mongaup soils are on bedrock-controlled uplands and in the more sloping areas of hillsides where the glacial till is thinner. A few very small areas of Lewbath soils that have very stony surfaces are included. These Lewbath soils are generally identified with spot symbols on the soil maps. Also included, in the eastern part of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Lewbath soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. Also included in the southeastern part of the county are a few areas where the soil is red. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and the substratum
Available water capacity: Moderate
Reaction: Strongly acid or moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland and pasture. Some areas are used for cultivated crops or are idle. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer frost-free days than the average for the county. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Excluding livestock during early spring and during wet periods helps to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. Wetness due to the perched seasonal high water table is a limitation in some areas. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the firm and very firm subsoil and substratum and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

LfC—Lewbath channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on hilltops, hillsides, and upper parts of valley sides that generally have convex relief. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, or shale. It is at elevations over 1,750 feet. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 80 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown channery silt loam; 20 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown silt loam; 10 percent rock fragments
16 to 21 inches—light olive brown channery silt loam; firm; 30 percent rock fragments
21 to 33 inches—dark grayish brown channery silt loam; very firm; 30 percent rock fragments
33 to 52 inches—dark grayish brown very channery loam that has common light olive brown and a few light brownish gray mottles; very firm; 45 percent rock fragments

Substratum:
52 to 72 inches—olive brown very flaggy loam; firm; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Ontusia, and Mongaup soils. The moderately well drained Willdin soils are in small, slightly lower or flatter areas. The somewhat poorly drained Ontusia soils are in slight depressions and along small intermittent drainageways. The few small areas of moderately deep Mongaup soils are on bedrock-controlled uplands and in the more sloping areas of hillsides where the glacial till is thinner. Also included are a few very small areas of Lewbath soils that have very stony surfaces. These soils are generally identified with a spot symbol on the soil maps. Also included, in the eastern part of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Lewbath soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and the substratum
Available water capacity: Moderate
Reaction: Strongly acid or moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland and pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. Also, crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer frost-free days than the average for the county.

This unit is well suited to pasture. Rotating livestock grazing, using proper stocking rates, and excluding livestock during early spring and during wet periods help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. Wetness due to the perched seasonal high water table is a limitation in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation by minimizing excavating and filling. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the firm and very firm subsoil and substratum and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and potential for frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

LfD—Lewbath channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on the sides of hills. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, or shale. It is at elevations over 1,750 feet. Individual areas typically are long and narrow or are oblong. They generally range from 6 to 35 acres in size but may be as large as 200 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown channery silt loam; 20 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown silt loam; 10 percent rock fragments
16 to 21 inches—light olive brown channery silt loam; firm; 30 percent rock fragments
21 to 33 inches—dark grayish brown channery silt loam; very firm; 30 percent rock fragments
33 to 52 inches—dark grayish brown very channery loam that has common light olive brown and a few light brownish gray mottles; very firm; 45 percent rock fragments

Substratum:
52 to 72 inches—olive brown very flaggy loam; firm; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Mongaup, and Hawksnest soils. The moderately well drained Willdin soils are in small, slightly lower areas. The few small areas of moderately deep Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are on bedrock-controlled uplands and on shoulder slopes. Also included are a few very small areas of Lewbath soils that have slopes of less than 15 percent. Included in the eastern part of the towns of Cherry Valley and Roseboom are small areas of soils that are similar to the Lewbath soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. Also included are a few small areas of Lewbath soils that have very stony surfaces. These Lewbath soils are generally identified with spot symbols on the soil maps. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and the substratum
Available water capacity: Moderate
Reaction: Strongly acid or moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are used for pasture and forestland. Some areas are hayland or idle.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that limits the amount of time row crops are grown help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer frost-free days than the average for the county.

This unit is moderately suited to pasture. Erosion is a hazard. Minimizing tillage during pasture renovation helps to control erosion. Rotating livestock grazing, using proper stocking rates, and excluding livestock during early spring and during wet periods help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Wetness due to the perched seasonal high water table is a limitation in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing the foundation walls also reduce the wetness. Designing dwellings to conform to the natural slope of the land facilitates construction. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the slow or very slow permeability in the firm and very firm subsoil and substratum, and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using drop boxes or other structures to ensure even distribution of effluent increase the efficiency of the system. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

LfE—Lewbath channery silt loam, 25 to 35 percent slopes

This very deep, steep, well drained soil is on hillsides in glaciated uplands. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, or shale. It is at elevations over 1,750 feet. Individual areas typically are long and narrow or are oblong. They generally range from 6 to 35 acres in size but may be as large as 50 acres.

Typical Profile

Surface layer:
0 to 8 inches—brown channery silt loam; 20 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown silt loam; 10 percent rock fragments
16 to 21 inches—light olive brown channery silt loam; firm; 30 percent rock fragments
21 to 33 inches—dark grayish brown channery silt loam; very firm; 30 percent rock fragments
33 to 52 inches—dark grayish brown very channery loam that has common light olive brown and a few light brownish gray mottles; very firm; 45 percent rock fragments

Substratum:
52 to 72 inches—olive brown very flaggy loam; firm; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Mongaup, and Hawksnest soils. The moderately well drained Willdin soils are in small, slightly lower areas. The few small areas of moderately deep Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are on bedrock-controlled uplands and on shoulder slopes. Also included are a few areas of soils that are similar to the Lewbath soil but have a slope of more than 35 percent. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and the substratum
Available water capacity: Moderate
Reaction: Strongly acid or moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from November through March

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture or idle.

Crops and pasture
This unit is generally not suited to cultivated crops because of the steep slopes and the severe hazard of erosion. The unit is better suited to pasture, although suitability is poor. Weed control and applications of lime and fertilizer increase forage yields. Conservation tillage practices may be helpful during pasture renovation in some areas.

Forestland
The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Wetness due to the perched seasonal high water table is a limitation in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings
The slope and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. The slopes are steep and commonly require extensive landscaping and grading. Adjacent areas that are less sloping are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields
The slope, wetness due to the seasonal high water table, and the slow or very slow permeability in the firm and very firm subsoil and substratum are the main limitations on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is also a hazard. Adjacent areas that are less sloping and more permeable are better suited to septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets
The slope is the main limitation on sites for local roads and streets. Planning locations and grades of roads to conform to the slope and contour of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification
The capability subclass is 6e.

LhC—Lewbeach channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on hillsides. It formed in firm glacial till derived from reddish sandstone, siltstone, or shale. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 40 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark reddish brown channery silt loam; 20 percent rock fragments

Upper subsoil:
9 to 15 inches—reddish brown channery silt loam; 20 percent rock fragments
15 to 19 inches—reddish brown channery silt loam; 25 percent rock fragments

Subsurface layer:
19 to 24 inches—reddish brown gravelly loam; 20 percent rock fragments
24 to 27 inches—reddish gray gravelly fine sandy loam that has a few strong brown mottles; 33 percent rock fragments

Lower subsoil:
27 to 35 inches—reddish brown channery loam; very firm; 25 percent rock fragments
35 to 72 inches—reddish brown channery loam; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Willowemoc, Onteora, and Vly soils. The moderately well drained Willowemoc soils are in small, slightly lower areas. The somewhat poorly drained Onteora soils are in slight depressions and along small, intermittent drainageways. The few areas of moderately deep, well drained Vly soils are on bedrock-controlled uplands and in the more sloping areas of hillsides where the glacial till is thinner. Also included are a few very small areas of Lewbeach soils that have very stony surfaces. These Lewbeach soils are generally identified with spot symbols on the soil maps. Also included are a few areas of soils that are similar to the Lewbeach soil but have a slope of more than 15 percent. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, moderate or moderately slow in the upper part of the subsoil and the subsurface layer, and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Very strongly acid to neutral (where limed) in the surface layer and very strongly acid to moderately acid in the subsoil and substratum
Seasonal high water table: At a depth of 2.0 to 2.9 feet from November through March
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland and pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer frost-free days than the average for the county.

This unit is well suited to pasture. Rotating livestock grazing, using proper stocking rates, and excluding livestock during early spring and during wet periods help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, European larch, and white spruce.

Dwellings

Wetness due to the seasonal high water table and slope are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation by minimizing excavating and filling. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the very firm subsoil and wetness due to the seasonal high water table in some areas are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

LkB—Lima gravelly silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on hilltops, hillsides, and uplands in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 145 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:
7 to 12 inches—brown loam; 5 percent rock fragments

Subsoil:
12 to 17 inches—dark brown gravelly silt loam with brown gravelly fine sandy loam surfaces of peds; 15 percent rock fragments

17 to 28 inches—dark brown gravelly silt loam that has a few olive yellow mottles; 15 percent rock fragments

Substratum:
28 to 47 inches—dark brown and dark grayish brown gravelly silt loam; firm; 25 percent rock fragments; slightly effervescent
47 to 72 inches—dark brown and dark grayish brown very channery silt loam; firm; 45 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Conesus, Lansing, Honeoye, Manheim, and Lyons soils. The small areas of Conesus soils have carbonates deeper in the profile than the Lima soil. The well drained Lansing and Honeoye soils are on the higher parts of the landform. The somewhat poorly drained Manheim soils and poorly drained Lyons soils are in depressions and along small drainageways. Also included are small areas of Lima soils that have slopes of less than 3 percent or more than 8 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow or very slow in the substratum
Available water capacity: Moderate
Reaction: Moderately acid to mildly alkaline in the surface layer, subsurface layer, and subsoil and slightly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. A system of surface and subsurface drains can help to control wetness. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is also well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, white spruce, and European larch.

Dwellings

Wetness is the main limitation affecting dwellings with basements. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness.

Septic tank absorption fields

Wetness and slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

LkC—Lima gravelly silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is on hillsides and sides of dissected valleys in the northern part of the county. It formed in glacial till derived from limestone and calcareous shale. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 40 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly silt loam; 15 percent rock fragments

Subsurface layer:
7 to 12 inches—brown loam; 5 percent rock fragments

Subsoil:
12 to 17 inches—dark brown gravelly silt loam that has brown gravelly fine sandy loam surfaces of peds; 15 percent rock fragments
17 to 28 inches—dark brown gravelly silt loam that has a few olive yellow mottles; 15 percent rock fragments

Substratum:
28 to 47 inches—dark brown and dark grayish brown gravelly silt loam; firm; 25 percent rock fragments; slightly effervescent
47 to 72 inches—dark brown and dark grayish brown very channery silt loam; firm; 45 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Conesus, Lansing, Honeoye, and Manheim soils. The small areas of Conesus soils have carbonates deeper in the profile than the Lima soils. The well drained Lansing and Honeoye soils are on the higher parts of the landform. The somewhat poorly drained Manheim soils and poorly drained Lyons soils are in depressions and along small drainageways. Also included are small areas of Lima soils that have slopes of more than 15 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and subsoil and slow or very slow in the substratum

Available water capacity: Moderate
Reaction: Moderately acid to mildly alkaline in the surface layer, subsurface layer, and subsoil and slightly alkaline or moderately alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. A system of surface and subsurface drains can help to control the wetness. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, white spruce, and European larch.

Dwellings

Wetness is the main limitation affecting dwellings with basements. Installing interceptor drains to divert water from the higher areas reduces the wetness. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

Wetness and slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Distribution lines should be placed on the contour.

Local roads and streets

Wetness, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and frost action. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

LoB—Lordstown-Arnot complex, 1 to 8 percent slopes, rocky

This unit consists of nearly level and gently sloping Lordstown and Arnot soils. The Lordstown soil is moderately deep and well drained. The Arnot soil is shallow and somewhat excessively drained. This unit is on hilltops and hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 170 acres. Slopes generally are slightly convex, or the unit is on flat benches. The unit is about 55 percent Lordstown soil, 25 percent Arnot soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Lordstown and Arnot soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one of the soils.

Typical Profile

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Arnot

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 30 percent rock fragments

Subsoil:
5 to 7 inches—dark brown channery silt loam; 15 percent rock fragments
7 to 17 inches—strong brown very channery silt loam; 40 percent rock fragments

Substratum:
17 to 19 inches—dark brown very flaggy silt loam; 45 percent rock fragments

Bedrock:
19 inches—greenish gray, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are Chadakoin, Tuller, Greene, Bath, and Mardin soils. The small areas of Chadakoin soils are more than 40 inches deep to bedrock. The shallow, poorly drained Tuller soils and moderately deep, somewhat poorly drained Greene soils are in shallow depressions and in slightly concave areas. The few small areas of very deep, well drained Bath soils and moderately well drained Mardin soils have a firm or very firm fragipan subsoil. Also included are a few areas where the depth to bedrock is less than 10 inches. The included areas of minor components are as large as 6 acres.

Soil Properties

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Arnot
Permeability: Moderate throughout the soil
Available water capacity: Very low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are used for cultivated crops or hay. This unit meets the requirements for prime farmland.

Crops and pasture

Areas of this unit that are dominated by the Arnot soil are poorly suited to cultivated crops because of the shallow depth to bedrock, the very low available water capacity, and numerous areas of bedrock outcrops. Areas that are dominated by the moderately deep Lordstown soil are better suited to cultivated crops, although droughtiness may be a problem, especially during extended dry periods, and numerous bedrock outcrops are a limitation in some areas. A conservation tillage system that leaves residue on the surface after planting helps to control erosion in the steeper areas and in the areas having longer slope lengths. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is poorly suited to pasture in areas that are dominated by the Arnot soil because of the shallow depth to bedrock, numerous rock outcrops, and the very low available water capacity. Areas that are dominated by the moderately deep Lordstown soil are better suited to pasture. Some areas of the Lordstown soil tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in areas of the Lordstown soil and low in areas of the Arnot soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. Bedrock outcrops and ledges also limit the suitability of this unit for these uses. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations affecting dwellings. The Lordstown soil is poorly suited to dwellings with basements and moderately suited to dwellings without basements because it is moderately deep to bedrock. The Arnot soil is generally not suited to dwellings because it is shallow to bedrock. Much of the bedrock is massive and hard sandstone and siltstone that are not easily ripped. If a better site is unavailable, construction should be in the deeper areas of soil. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome the limitations caused by the bedrock.

Septic tank absorption fields

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. The Lordstown soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Arnot soil is not suited because of the shallow depth to bedrock. Adjacent soils that are very deep to bedrock, such as Bath and Valois soils, are better suited to conventional septic systems. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock in the Arnot soil and, in some areas, bedrock outcrops are the main limitations on sites for local roads and streets. The moderately deep Lordstown soil is better suited to this use although depth to bedrock and potential for frost action are limitations. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed can help to overcome these limitations in some areas. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 2s.

LpC—Lordstown-Chadakoin complex, 8 to 15 percent slopes

This unit consists of well drained, strongly sloping Lordstown and Chadakoin soils. The Lordstown soil is moderately deep. The Chadakoin soil is deep. This unit is on hilltops and hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 105 acres. Slopes generally are slightly convex. The unit is about 55 percent Lordstown soil, 25 percent Chadakoin soil, and 20 percent other soils and some rock outcrops. The Lordstown and Chadakoin soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Chadakoin

Surface layer:
0 to 9 inches—dark yellowish brown silt loam; 10 percent rock fragments

Subsoil:
9 to 19 inches—brownish yellow and light olive brown gravelly silt loam; 20 percent rock fragments
19 to 40 inches—light olive brown very gravelly silt loam; 35 percent rock fragments
40 to 46 inches—light olive brown very flaggy silt loam that has common yellowish brown mottles; firm; 50 percent rock fragments

Substratum:
46 to 57 inches—light olive brown very flaggy silt loam that has common yellowish brown and a few light yellowish brown mottles; firm; 55 percent rock fragments

Bedrock:
57 inches—dark gray, horizontally bedded shale that is fractured in the upper part

Minor Components

Included with this unit in mapping are Arnot, unnamed, Bath, and Mardin soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Arnot soils than in the Lordstown and Chadakoin soils. The unnamed soils are moderately deep, are moderately well drained, and commonly have a thin, firm subsoil layer above the bedrock. The very deep, well drained Bath soils and moderately well drained Mardin soils have a firm or very firm subsoil (fragipan). The included areas of minor components are as large as 6 acres.

Soil Properties

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Chadakoin
Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil, strongly acid or moderately acid in the transition zone between the subsoil and the substratum, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 4.0 to 6.0 feet from February through April
Flooding: None
Depth to bedrock: 40 to 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or forestland. Some areas are hayland, and a few areas are used for cultivated crops.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. In areas where the bedrock is closer to the surface, droughtiness may also be a problem. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and slope are the main limitations affecting dwellings. The Lordstown soil is poorly suited to dwellings with basements and moderately suited to dwellings without basements because it is moderately deep to bedrock. The Chadakoin soil is better suited to dwellings than the Lordstown soil. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the slope and the limitations caused by the bedrock. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The depth to bedrock in the Lordstown soil is the main limitation on sites for conventional septic tank absorption fields. The Lordstown soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Chadakoin soil is better suited to septic tank absorption fields than the Lordstown soil. Adjacent soils that are very deep to bedrock and less sloping are better suited to conventional septic systems. In some areas, the effectiveness of the system can be increased by using a raised absorption bed that has a curtain drain surrounding it, by placing distribution lines on the contour, and by using distribution boxes or other structures to ensure even distribution of effluent. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit because of the slope or the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, potential for frost action, and the depth to bedrock in the Lordstown soil are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock, and adding fill as needed help to overcome the slope and bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3e.

LpD—Lordstown-Chadakoin complex, 15 to 25 percent slopes

This unit consists of well drained, moderately steep Lordstown and Chadakoin soils. The Lordstown soil is moderately deep. The Chadakoin soil is deep. This unit is on hilltops and hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 60 acres in size but may be as large as 205 acres. The unit is about 55 percent Lordstown soil, 30 percent Chadakoin soil, and 15 percent other soils and some rock outcrops. The Lordstown and Chadakoin soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Chadakoin

Surface layer:
0 to 9 inches—dark yellowish brown silt loam; 10 percent rock fragments

Subsoil:
9 to 19 inches—brownish yellow and light olive brown gravelly silt loam; 20 percent rock fragments
19 to 40 inches—light olive brown very gravelly silt loam; 35 percent rock fragments
40 to 46 inches—light olive brown very flaggy silt loam that has common yellowish brown mottles; firm; 50 percent rock fragments

Substratum:
46 to 57 inches—light olive brown very flaggy silt loam that has common yellowish brown and a few light yellowish brown mottles; firm; 55 percent rock fragments

Bedrock:
57 inches—dark gray, horizontally bedded shale that is fractured in the upper part

Minor Components

Included with this unit in mapping are Arnot, Bath, and Mardin soils. The shallow, somewhat excessively drained Arnot soils are in areas where the glacial till is thinner over the bedrock. The very deep, well drained Bath soils and moderately well drained

Mardin soils have a firm or very firm subsoil (fragipan). The included areas of minor components are as large as 6 acres.

Soil Properties

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Chadakoin
Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil, strongly acid or moderately acid in the transition zone between the subsoil and the substratum, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 4.0 to 6.0 feet from February through April
Flooding: None
Depth to bedrock: 40 to 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or forestland. Some areas are hayland, and a few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. In areas where the bedrock is closer to the surface, droughtiness may also be a problem. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and the use of cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The slope and the depth to bedrock are the main limitations affecting dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited. The Chadakoin soil is better suited to dwellings than the Lordstown soil. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the slope and the limitations caused by the bedrock. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope and the depth to bedrock in the Lordstown soil are the main limitations on sites for conventional septic tank absorption fields. The Lordstown soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Chadakoin soil is better suited to septic tank absorption fields than the Lordstown soil. Adjacent areas that are very deep to bedrock and less sloping are better suited to conventional septic tank absorption fields. In some areas, the effectiveness of the system can be increased by using a raised absorption bed that has a curtain drain surrounding it, by placing distribution lines on the contour, and by using distribution boxes or other structures to ensure even distribution of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope or, in some areas, the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. The locations and grades of roads should be planned to minimize the removal of bedrock. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

LrE—Lordstown, Chadakoin, and Manlius soils, 25 to 50 percent slopes, very rocky

This unit consists of steep and very steep Lordstown, Chadakoin, and Manlius soils. The Lordstown and Manlius soils are moderately deep and well drained. The Chadakoin soil is deep and well drained. This unit is on hillsides and sides of valleys in bedrock-controlled uplands. These soils formed in glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 70 acres in size but may be as large as 510 acres. Slopes generally are irregular or are in a series of benches that have steep bedrock outcrops at the edges. Most areas of this map unit are dominated by one of the soils. The soils were mapped together because they have similar potential for use and management. The unit is about 40 percent Lordstown soil, 25 percent Chadakoin soil, 20 percent Manlius soil, and 15 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 6 percent but ranges from 2 to 10 percent.

Typical Profile

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Chadakoin

Surface layer:
0 to 9 inches—dark yellowish brown silt loam; 10 percent rock fragments

Subsoil:
9 to 19 inches—brownish yellow and light olive brown gravelly silt loam; 20 percent rock fragments
19 to 40 inches—light olive brown very gravelly silt loam; 35 percent rock fragments
40 to 46 inches—light olive brown very flaggy silt loam that has common yellowish brown mottles; firm; 50 percent rock fragments

Substratum:
46 to 57 inches—light olive brown very flaggy silt loam that has common yellowish brown and a few light yellowish brown mottles; firm; 55 percent rock fragments

Bedrock:
57 inches—dark gray, horizontally bedded shale that is fractured in the upper part

Manlius

Surface layer:
0 to 3 inches—dark brown channery silt loam; 15 percent rock fragments
3 to 6 inches—dark brown channery silt loam; 25 percent rock fragments

Subsoil:
6 to 11 inches—dark yellowish brown channery silt loam; 30 percent rock fragments
11 to 17 inches—yellowish brown very channery silt loam; 35 percent rock fragments

Substratum:
17 to 28 inches—dark brown extremely channery silt loam; 60 percent rock fragments

Bedrock:
28 inches—dark gray, horizontally bedded, fractured siltstone and shale

Minor Components

Included with this unit in mapping are Arnot, Valois, Bath, and Mardin soils. The shallow, somewhat excessively drained Arnot soils are in areas where the glacial till is thinner over the bedrock. The very deep, well drained Valois soils are on toeslopes and along valley sides. The very deep, well drained Bath soils and moderately well drained Mardin soils have a firm or very firm fragipan subsoil. Also included are a few areas where the slope is more than 50 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very rapid

Chadakoin
Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately slow in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil, strongly acid or moderately acid in the transition zone between the subsoil and the substratum, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 4.0 to 6.0 feet from February through April
Flooding: None
Depth to bedrock: 40 to 60 inches
Surface runoff: Very rapid

Manlius
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland.

Crops and pasture

This unit is not suited to cultivated crops because of the steep and very steep slopes, the rock outcrops, and the severe hazard of erosion. This unit is also not suited to pasture in most areas for the same reasons. A few areas where the unit is dominated by the Chadakoin soil without rock outcrops are moderately suited to pasture. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Bedrock outcrops and ledges are also limitations affecting these uses. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

This unit is generally not suited to dwellings because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are needed to make this unit suitable for dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited to dwellings.

Septic tank absorption fields

This unit is not suited to conventional septic tank absorption fields because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent areas that are less sloping and deeper to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The steep and very steep slopes and the areas of rock outcrops are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops, and adding fill as needed can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 7s.

Ly—Lyons silt loam

This very deep, nearly level, poorly drained soil is in depressions and along shallow drainageways in glacial uplands. Individual areas typically are long and narrow or are oval. They generally range from 6 to 25 acres in size but may be as large as 105 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 9 inches—very dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
9 to 15 inches—dark grayish brown gravelly silt loam that has common yellowish brown mottles; 30 percent rock fragments
15 to 24 inches—dark grayish brown gravelly silt loam that has common yellowish brown mottles; 30 percent rock fragments; slightly effervescent
24 to 35 inches—dark grayish brown channery silt loam that has many yellowish brown mottles; 30 percent rock fragments; violently effervescent

Substratum:
35 to 72 inches—dark grayish brown very channery silt loam; 40 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are Canandaigua, Manheim, Lima, Conesus, Palms, and Edwards soils. The small areas of Canandaigua soils, which formed in water-sorted silt deposits, and the somewhat poorly drained Manheim soils are on the same landform as the Lyons soil. The moderately well drained Lima and Conesus soils are in the higher areas. The few small areas of Palms and Edwards soils formed in organic deposits in bogs. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate or moderately slow in the surface layer and subsoil and slow or very slow in the substratum
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer, slightly acid to mildly alkaline in the subsoil, and neutral to moderately alkaline in the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through June

Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are idle and support water-tolerant brush, trees, and herbaceous vegetation. A few areas are pasture or forestland.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table. Also, erosion from nearby higher areas can result in sediment being deposited on this soil, thereby burying seeds and preventing them from growing.

This unit is poorly suited to pasture because of wetness due to the seasonal high water table. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. In some areas, weed control and applications of fertilizer increase forage yields. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees. In some areas in the northern part of the county, however, white spruce and eastern arborvitae (northern white cedar) can be planted.

Dwellings

Prolonged wetness due to the seasonal high water table and, in some areas, ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table, the slow or very slow permeability in the substratum, and ponding in some areas are the main limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The seasonal high water table, potential for frost action, and, in some areas, ponding are the main limitations on sites for local roads and streets. Adding a considerable amount of coarse-grained subgrade and base material can help to overcome the wetness and potential for frost action. Adding fill to raise the road above the level of ponded water also helps to overcome these limitations. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

MaA—Manheim silt loam, 0 to 3 percent slopes

This very deep, nearly level, somewhat poorly drained soil is in depressional areas and the flatter parts of footslopes and toeslopes on glaciated uplands in the northern part of the county. It formed in glacial till derived from limestone and black calcareous shale. Individual areas typically are long and narrow or are oblong. They generally range from 6 to 25 acres in size but may be as large as 45 acres.

Typical Profile

Surface layer:
0 to 4 inches—very dark grayish brown silt loam; 5 percent rock fragments
4 to 9 inches—very dark grayish brown and dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 19 inches—channery silt loam, dark brown with brown surfaces of peds and a few yellowish brown and grayish brown mottles; 15 percent rock fragments
19 to 29 inches—channery silt loam that has thin lenses of very fine sandy loam, dark brown with dark grayish brown surfaces of peds and common dark yellowish brown and a few grayish brown mottles; 15 percent rock fragments

Substratum:
29 to 41 inches—dark grayish brown channery silt loam that has thin lenses of silty clay loam and common yellowish brown mottles; 20 percent rock fragments; strongly effervescent
41 to 72 inches—dark grayish brown gravelly silty clay loam that has common yellowish brown mottles; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are unnamed, Lima, Conesus, and Lyons soils. Some of the unnamed soils, which are similar to Manheim soils but not as dark colored as is typical for the Manheim series, are on the same landform as the Manheim soils. Other unnamed soils, which are similar to Manheim soils but have more rock fragments in the substratum, are in depressional areas between east-west oriented drumlins. The moderately well drained Lima and Conesus soils are in small, slightly higher areas. The poorly drained Lyons soils are in the slightly lower depressions and along small drainageways. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are pasture or idle. Some areas are used for cultivated crops or hay. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture
This unit is moderately suited to cultivated crops. Wetness due to the seasonal

high water table is a limitation. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. However, wetness due to the seasonal high water table is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock during wet periods, rotating livestock grazing, and using proper stocking rates help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple and white ash and moderate for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are Norway spruce, white spruce, Japanese larch, and eastern arborvitae (northern white cedar).

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. Placing drains around footings and foundations and adequately sealing the foundation walls help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

The slow permeability in the substratum and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Installing curtain drains around the absorption field and using diversions to intercept runoff from higher areas reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Better drained, more permeable areas should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. In some of the wettest areas of this unit, wetland regulations may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 3w.

MaB—Manheim silt loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is on footslopes and toeslopes of hillsides and on the flatter parts of glaciated uplands in the northern part of the county. It formed in glacial till derived from limestone and black calcareous shale. Individual areas typically are long and narrow or are oblong. They generally range from 6 to 35 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:

0 to 4 inches—very dark grayish brown silt loam; 5 percent rock fragments

4 to 9 inches—very dark grayish brown and dark brown silt loam; 10 percent rock fragments

Subsoil:
9 to 19 inches—channery silt loam, dark brown with brown surfaces of peds and a few yellowish brown and grayish brown mottles; 15 percent rock fragments
19 to 29 inches—channery silt loam that has thin lenses of very fine sandy loam, dark brown with dark grayish brown surfaces of peds and common dark yellowish brown and a few grayish brown mottles; 15 percent rock fragments

Substratum:
29 to 41 inches—dark grayish brown channery silt loam that has thin lenses of silty clay loam and common yellowish brown mottles; 20 percent rock fragments; strongly effervescent
41 to 72 inches—dark grayish brown gravelly silty clay loam that has common yellowish brown mottles; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are unnamed, Lima, Conesus, and Lyons soils. Some of the unnamed soils, which are similar to Manheim soils but not as dark colored as is typical for the Manheim series, are on the same landform as the Manheim soils. Other unnamed soils, which are similar to Manheim soils but have more rock fragments in the substratum, are in depressional areas between east-west oriented drumlins. The moderately well drained Lima and Conesus soils are in small, slightly higher areas. The poorly drained Lyons soils are in the slightly lower depressions and along small drainageways. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are pasture or idle. Some areas are used for cultivated crops or hay. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. In some areas, a system of surface and subsurface drains can help to control the wetness. In some of the wettest areas, wetland regulations may prohibit or restrict alteration of the drainage. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock during wet periods, rotating livestock grazing, and using proper stocking rates help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple and white ash and moderate for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are Norway spruce, white spruce, Japanese larch, and eastern arborvitae (northern white cedar).

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Better drained areas should be considered as alternative sites.

Septic tank absorption fields

The slow permeability in the substratum and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Installing curtain drains around the absorption field and using diversions to intercept runoff from higher areas reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Better drained, more permeable areas should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. In some of the wettest areas of this unit, wetland regulations may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 3w.

MaC—Manheim silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, somewhat poorly drained soil is on footslopes and toeslopes of hillsides and on hilltops of glaciated uplands in the northern part of the county. It formed in glacial till derived from limestone and black calcareous shale. Individual areas typically are long and narrow or are oblong. They generally range from 6 to 35 acres in size but may be as large as 90 acres.

Typical Profile

Surface layer:

0 to 4 inches—very dark grayish brown silt loam; 5 percent rock fragments

4 to 9 inches—very dark grayish brown and dark brown silt loam; 10 percent rock fragments

Subsoil:

9 to 19 inches—channery silt loam, dark brown with brown surfaces of peds and a few yellowish brown and grayish brown mottles; 15 percent rock fragments

19 to 29 inches—channery silt loam that has thin lenses of very fine sandy loam, dark brown with dark grayish brown surfaces of peds and common dark yellowish brown and a few grayish brown mottles; 15 percent rock fragments

Substratum:

29 to 41 inches—dark grayish brown channery silt loam that has thin lenses of silty clay loam and common yellowish brown mottles; 20 percent rock fragments; strongly effervescent

41 to 72 inches—dark grayish brown gravelly silty clay loam that has common yellowish brown mottles; 30 percent rock fragments; violently effervescent

Minor Components

Included with this unit in mapping are unnamed, Lima, Conesus, and Lyons soils. Some of the unnamed soils, which are similar to Manheim soils but not as dark colored as is typical for the Manheim series, are on the same landform as the Manheim soils. Other unnamed soils, which are similar to Manheim soils but have more rock fragments in the substratum, are in depressional areas between east-west oriented drumlins. The moderately well drained Lima and Conesus soils are in small, slightly higher areas. The poorly drained Lyons soils are in the slightly lower depressions and along small drainageways. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum

Available water capacity: High

Reaction: Moderately acid to neutral in the surface layer and subsoil and neutral to moderately alkaline in the substratum

Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May

Flooding: None

Depth to bedrock: More than 60 inches

Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or idle. A few areas are used for cultivated crops or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope, erosion, and wetness due to the seasonal high water table are limitations. In some areas, a system of surface and subsurface drains can help to control the wetness. In some of the wettest areas, wetland regulations may prohibit or restrict alteration of the drainage. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock during wet periods, rotating livestock grazing, and using proper stocking rates help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple and white ash and moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are Norway spruce, white spruce, Japanese larch, and eastern arborvitae (northern white cedar).

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained and less sloping should be considered as alternative sites. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slow permeability in the substratum and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Installing curtain drains around the absorption field and using diversions to intercept runoff from higher areas reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Better drained, more permeable, less sloping areas should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. In some of the wettest areas of this unit, wetland regulations may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 3e.

McB—Manlius channery silt loam, 3 to 8 percent slopes

This moderately deep, gently sloping, well drained soil is on glaciated uplands that are bedrock controlled. It formed in glacial till underlain by shale and siltstone. It is principally in the northern part of the county. Some areas of this unit have a stairstep appearance because of the bedrock structure. Individual areas are either long and narrow or are oblong. They generally range from 6 to 30 acres in size but may be as large as 55 acres.

Typical Profile

Surface layer:
0 to 3 inches—dark brown channery silt loam; 15 percent rock fragments
3 to 6 inches—dark brown channery silt loam; 25 percent rock fragments

Subsoil:
6 to 11 inches—dark yellowish brown channery silt loam; 30 percent rock fragments
11 to 17 inches—yellowish brown very channery silt loam; 35 percent rock fragments

Substratum:
17 to 28 inches—dark brown extremely channery silt loam; 60 percent rock fragments

Bedrock:
28 inches—dark gray, horizontally bedded, fractured shale and siltstone

Minor Components

Included with this unit in mapping are Lordstown, Arnot, Towerville, Greene, Tuller, Patchin, Chadakoin, Conesus, Lansing, and Honeoye soils. The small areas of well drained Lordstown soils have an average of less than 35 percent rock fragments above the bedrock and are on the same landforms as the Manlius soil. The glacial till is thinner over bedrock in the shallow Arnot soils than in the Manlius soil. The moderately well drained Towerville soils are on the slightly lower landforms. The somewhat poorly drained Greene soils; the shallow, poorly drained Tuller soils; and the poorly drained Patchin soils are on the flatter ridgetops and in depressional areas. The deep, well drained Chadakoin soils are on toeslopes and on sides of valleys. The very deep, moderately well drained Conesus soils are on the slightly lower landforms and on toeslopes where the glacial till is deeper to bedrock. The very deep, well drained Lansing and Honeoye soils are in areas where the glacial till is deeper over bedrock. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are used for cultivated crops or forestland.

Crops and pasture

This unit is well suited to cultivated crops. Droughtiness may be a problem during extended dry periods because of the low available water capacity. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. However, droughtiness may be a problem during extended dry periods because of the low available water capacity. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage include Norway spruce, eastern white pine, and European larch.

Dwellings

The depth to bedrock is the main limitation affecting dwellings with basements. This is unit is better suited to dwellings without basements. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome this limitation in some areas.

Septic tank absorption fields

The depth to bedrock and, in a few areas, bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are very deep to bedrock are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock, potential for frost action, and, in a few areas, bedrock outcrops are the main limitations on sites for local roads and streets. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed help to overcome these limitations in some areas. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 2s.

McC—Manlius channery silt loam, 8 to 15 percent slopes

This moderately deep, strongly sloping, well drained soil is in glaciated uplands that are bedrock controlled. It formed in glacial till underlain by shale and siltstone. It is principally in the northern part of the county. Slopes generally are convex. Individual areas either are long and narrow or are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 45 acres.

Typical Profile

Surface layer:
0 to 3 inches—dark brown channery silt loam; 15 percent rock fragments
3 to 6 inches—dark brown channery silt loam; 25 percent rock fragments

Subsoil:
6 to 11 inches—dark yellowish brown channery silt loam; 30 percent rock fragments
11 to 17 inches—yellowish brown very channery silt loam; 35 percent rock fragments

Substratum:
17 to 28 inches—dark brown extremely channery silt loam; 60 percent rock fragments

Bedrock:
28 inches—dark gray, horizontally bedded, fractured shale and siltstone

Minor Components

Included with this unit in mapping are Lordstown, Arnot, Towerville, Greene, Tuller, Patchin, Chadakoin, Conesus, Lansing, and Honeoye soils. The small areas of well drained Lordstown soils average less than 35 percent rock fragments above the bedrock and are on the same landforms as the Manlius soil. The glacial till is thinner over bedrock in the shallow Arnot soils than in the Manlius soil. The moderately well drained Towerville soils are on the slightly lower landforms. The somewhat poorly drained Greene soils; the shallow, poorly drained Tuller soils; and the poorly drained Patchin soils are on the flatter ridgetops and in depressional areas. The deep, well drained Chadakoin soils are on toeslopes and on sides of valleys. The very deep, moderately well drained Conesus soils are on the slightly lower landforms and on toeslopes where the glacial till is deeper to bedrock. The glacial till is deeper over bedrock in the very deep, well drained Lansing and Honeoye soils than in the Manlius soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are forestland. A few areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Also, droughtiness may be a problem during extended dry periods because of the low available water capacity. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. However, droughtiness may be a problem during extended dry periods because of the low available water capacity. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are Norway spruce, eastern white pine, and European larch.

Dwellings

The depth to bedrock and the slope are the main limitations affecting dwellings with basements. This unit is better suited to dwellings without basements. Designing dwellings to conform to the natural slope of the land, constructing dwellings above the bedrock, and landscaping with additional fill as needed help to overcome the limitations in many areas. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The depth to bedrock is the main limitation on sites for conventional septic tank absorption fields. Adjacent soils that are very deep to bedrock are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, the depth to bedrock, and potential for frost action are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock, and adding fill as needed help to overcome the slope and bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3e.

McD—Manlius channery silt loam, 15 to 25 percent slopes

This moderately deep, moderately steep, well drained soil is in glaciated uplands that are bedrock controlled. It formed in glacial till underlain by shale and siltstone. It is principally in the northern part of the county. Individual areas either are long and narrow or are irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 60 acres.

Typical Profile

Surface layer:
0 to 3 inches—dark brown channery silt loam; 15 percent rock fragments
3 to 6 inches—dark brown channery silt loam; 25 percent rock fragments

Subsoil:
6 to 11 inches—dark yellowish brown channery silt loam; 30 percent rock fragments
11 to 17 inches—yellowish brown very channery silt loam; 35 percent rock fragments

Substratum:
17 to 28 inches—dark brown extremely channery silt loam; 60 percent rock fragments

Bedrock:
28 inches—dark gray, horizontally bedded, fractured shale and siltstone

Minor Components

Included with this unit in mapping are Lordstown, Arnot, Towerville, Greene, Tuller, Patchin, Chadakoin, Conesus, Lansing, and Honeoye soils. The small areas of well drained Lordstown soils have an average of less than 35 percent rock fragments above the bedrock and are on the same landforms as the Manlius soil. The glacial till is thinner over bedrock in the shallow Arnot soils than in the Manlius soil. The moderately well drained Towerville soils are on the slightly lower landforms. The somewhat poorly drained Greene soils; the shallow, poorly drained Tuller soils; and the poorly drained Patchin soils are on the flatter ridgetops and in depressional areas. The deep, well drained Chadakoin soils are on toeslopes and on sides of valleys. The very deep, moderately well drained Conesus soils are on the slightly lower landforms and on toeslopes where the glacial till is deeper to bedrock. The glacial till is deeper over bedrock in the very deep, well drained Lansing and Honeoye soils than in the Manlius soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland or idle. A few areas are pasture or hayland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Also, droughtiness may be a problem during extended dry periods because of the low available water capacity. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Also, droughtiness may be a problem during extended dry periods because of the low available water capacity. Minimizing tillage during pasture renovation helps to control erosion. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are Norway spruce, eastern white pine, and European larch.

Dwellings

The slope and the depth to bedrock are the main limitations affecting dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are very deep to bedrock and less sloping are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope and, in some areas, the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. The locations and grades of roads should be planned to minimize the removal of bedrock. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

MeB—Mardin channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on hilltops and hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 30 acres in size but may be as large as 260 acres.

Typical Profile

Surface layer:
0 to 12 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
12 to 15 inches—light yellowish brown channery silt loam; 20 percent rock fragments
15 to 21 inches—olive brown channery silt loam that has common yellowish brown mottles; 20 percent rock fragments
21 to 31 inches—dark grayish brown channery silt loam that has common light brownish gray and a few dark yellowish brown mottles; very firm; 25 percent rock fragments
31 to 38 inches—olive brown channery silt loam that has common olive gray and a few dark yellowish brown mottles; very firm; 30 percent rock fragments

Substratum:
38 to 72 inches—olive brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Volusia, Chippewa, Bath, Lordstown, and Manlius soils. The small areas of somewhat poorly drained Volusia soils and poorly drained Chippewa soils are in depressions and along small drainageways. The well drained Bath soils are in the higher areas. The moderately deep, well drained Lordstown soils and well drained Manlius soils are on a few shoulder slopes and summits where the bedrock is closer to the surface than in the Mardin soil. Also included in the transition zone between the less-dense, high-lime soils are soils that do not have a brittle subsoil, have carbonates in the profile, and have a higher reaction than the Mardin soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Extremely acid to slightly acid in the surface layer and the upper part of the subsoil, very strongly acid to neutral in the lower part of the subsoil (fragipan), and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle.

Crops and pasture
This unit is well suited to cultivated crops. In some areas, wetness can delay planting or harvesting during extended wet periods. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. Returning crop

residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2w.

MeC—Mardin channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is on hilltops and hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas are oblong or irregular in shape. They generally range from 6 to 50 acres in size but may be as large as 435 acres.

Typical Profile

Surface layer:

0 to 12 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:

12 to 15 inches—light yellowish brown channery silt loam; 20 percent rock fragments

15 to 21 inches—olive brown channery silt loam that has common yellowish brown mottles; 20 percent rock fragments

21 to 31 inches—dark grayish brown channery silt loam that has common light brownish gray and a few dark yellowish brown mottles; very firm; 25 percent rock fragments

31 to 38 inches—olive brown channery silt loam that has common olive gray and a few dark yellowish brown mottles; very firm; 30 percent rock fragments

Substratum:
38 to 60 inches—olive brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Volusia, Bath, Valois, Lordstown, and Manlius soils. The small areas of somewhat poorly drained Volusia soils are in depressions and along footslopes. The well drained Bath and Valois soils are in the higher areas. The moderately deep, well drained Lordstown soils and well drained Manlius soils are on some shoulder slopes and hilltops where the bedrock is closer to the surface than in the Mardin soil. Also included in the transition zone between the less-dense, high-lime soils are areas that do not have a brittle subsoil, have carbonates in the profile, and have a higher reaction than the Mardin soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Extremely acid to slightly acid in the surface layer and the upper part of the subsoil, very strongly acid to neutral in the lower part of the subsoil (fragipan), and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Also, wetness due to the seasonal high water table can delay planting or harvesting during extended wet periods. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

MeD—Mardin channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, moderately well drained soil is on hillsides in glaciated uplands. It formed in firm glacial till derived from sandstone, siltstone, and shale. Individual areas either are long and narrow or are irregular in shape. They generally range from 6 to 40 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:
0 to 12 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
12 to 15 inches—light yellowish brown channery silt loam; 20 percent rock fragments
15 to 21 inches—olive brown channery silt loam that has common yellowish brown mottles; 20 percent rock fragments
21 to 31 inches—dark grayish brown channery silt loam that has common light brownish gray and a few dark yellowish brown mottles; very firm; 25 percent rock fragments
31 to 38 inches—olive brown channery silt loam that has common olive gray and a few dark yellowish brown mottles; very firm; 30 percent rock fragments

Substratum:
38 to 72 inches—olive brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Volusia, Bath, Valois, Lordstown, and Manlius soils. The small areas of somewhat poorly drained Volusia soils are in depressions and along footslopes. The well drained Bath and Valois soils are on hilltops and along sides of valleys areas. The moderately deep, well drained Lordstown soils and well drained Manlius soils are on some shoulder slopes and hilltops where the bedrock is closer to the surface than in the Mardin soil. Also included in the transition zone between the less-dense, high-lime soils are areas that do not have a brittle subsoil, have carbonates in the profile, and have a higher reaction than the Mardin soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Extremely acid to slightly acid in the surface layer and the upper part of the subsoil, very strongly acid to neutral in the lower part of the subsoil (fragipan), and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops, as forestland, or are idle.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and a severe hazard of erosion. Also, wetness can delay planting or harvesting in years that have high rainfall during the planting or harvesting period. Installing a subsurface drainage system in the wetter areas helps to control the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion.

This unit is moderately suited to pasture. Erosion is a hazard, and the seasonal high water table is a management concern. Minimizing tillage during pasture renovation helps to control erosion. Excluding livestock during wet periods helps to maintain the pasture in good condition. Also, rotational grazing, proper stocking rates, applications of fertilizer, and weed control increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope, moderate soil strength, and wetness. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are less sloping and better drained should be considered as alternative sites. In some areas, the wetness can be reduced by grading the land so that surface water moves away from dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation. Erosion is a hazard during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the slow or very slow permeability in the very firm subsoil, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping, more permeable, and better drained are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

MmC—Mongaup-Franklinville complex, 8 to 15 percent slopes

This unit consists of strongly sloping, well drained Mongaup and Franklinville soils. The Mongaup soil is moderately deep. The Franklinville soil is deep. This unit is on hilltops and hillsides in bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in brownish glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 50 acres in size but may be as large as 145 acres. The unit is about 50 percent Mongaup soil, 30 percent Franklinville soil, 20 percent other soils and some rock outcrops. The Mongaup and Franklinville soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Mongaup

Surface layer:
0 to 4 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
4 to 8 inches—dark yellowish brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 29 inches—yellowish brown channery silt loam; 30 percent rock fragments

Substratum:
29 to 34 inches—light olive brown channery silt loam; 34 percent rock fragments

Bedrock:
34 inches—dark gray, massive shale; fractured in the upper 10 inches

Franklinville

Surface layer:
0 to 2 inches—partially decomposed leaf litter
2 to 7 inches—very dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
7 to 22 inches—yellowish brown channery silt loam; 25 percent rock fragments
22 to 34 inches—yellowish brown channery silt loam; 30 percent rock fragments
34 to 40 inches—dark yellowish brown channery silt loam; 34 percent rock fragments

Substratum:
40 to 54 inches—dark grayish brown very channery silt loam; firm; 50 percent rock fragments
54 to 58 inches—grayish brown very channery fine sandy loam; firm; 55 percent rock fragments

Bedrock:
58 inches—dark gray, massive siltstone

Minor Components

Included with this unit in mapping are Hawksnest, Lewbath, Willdin, and unnamed soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Hawksnest soils than in the Mongaup and Franklinville soils. The very deep, well drained Lewbath soils and moderately well drained Willdin soils have a firm or very firm subsoil (fragipan). The unnamed soils are moderately deep and moderately well drained. Also included are scattered areas of rock outcrop. The included areas of minor components are as large as 6 acres.

Soil Properties

Mongaup
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Extremely acid to strongly acid in the surface layer and extremely acid to moderately acid in the subsoil and substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Franklinville
Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately slow in the lower part of the subsoil and in the substratum
Available water capacity: High
Reaction: Very strongly acid to slightly acid in the surface layer, very strongly acid to moderately acid in the subsoil, and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 40 to 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland or hayland. Some areas are pasture or are used for cultivated crops.

Crops and pasture
This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. In areas where the bedrock is closer to the surface,

droughtiness may be a problem. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Minimizing tillage during pasture renovation helps to control erosion. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, red pine, Norway spruce, and white spruce.

Dwellings

The depth to bedrock and slope are the main limitations affecting dwellings. The Mongaup soil has bedrock at a depth of 20 to 40 inches, which is limiting to dwellings with basements. The Franklinville soil has bedrock at a depth of 40 to 60 inches and is better suited to dwellings. Constructing dwellings above the bedrock and designing dwellings to conform to the natural slope of the land help to overcome the limitations. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The depth to bedrock in the Mongaup soil is the main limitation affecting this map unit as a site for conventional septic tank absorption fields. In some areas of the Franklinville soil, moderately slow permeability in the subsoil and substratum is also a limitation. The Mongaup soil commonly is not deep enough over bedrock for conventional septic tank absorption fields. The Franklinville soil is better suited. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this map unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, frost action, and, in areas of the Mongaup soil, depth to bedrock are the main limitations for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock, and adding fill as needed help to overcome the slope and bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3e.

MmD—Mongaup-Franklinville complex, 15 to 25 percent slopes

This unit consists of moderately steep, well drained Mongaup and Franklinville soils. The Mongaup soil is moderately deep. The Franklinville soil is deep. This unit is on hillsides in bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in brownish glacial till underlain by shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 60 acres in size but may be as large as 140 acres. The unit is about 50 percent Mongaup soil, 30 percent Franklinville soil, and 20 percent other soils and some rock outcrops. The Mongaup and Franklinville soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Mongaup

Surface layer:
0 to 4 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
4 to 8 inches—dark yellowish brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 29 inches—yellowish brown channery silt loam; 30 percent rock fragments

Substratum:
29 to 34 inches—light olive brown channery silt loam; 34 percent rock fragments

Bedrock:
34 inches—dark gray, massive shale; fractured in the upper 10 inches

Franklinville

Surface layer:
0 to 2 inches—partially decomposed leaf litter
2 to 7 inches—very dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
7 to 22 inches—yellowish brown channery silt loam; 25 percent rock fragments
22 to 34 inches—yellowish brown channery silt loam; 30 percent rock fragments
34 to 40 inches—dark yellowish brown channery silt loam; 34 percent rock fragments

Substratum:
40 to 54 inches—dark grayish brown very channery silt loam; firm; 50 percent rock fragments
54 to 58 inches—grayish brown very channery fine sandy loam; firm; 55 percent rock fragments

Bedrock:
58 inches—dark gray, massive siltstone

Minor Components

Included with this unit in mapping are Hawksnest, Lewbath, and Willdin soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Hawksnest soils than in the Mongaup and Franklinville soils. The very deep, well drained Lewbath soils and moderately well drained Willdin soils have a firm or very firm subsoil (fragipan). Also included are scattered areas of bedrock outcrop. The included areas of minor components are as large as 6 acres.

Soil Properties

Mongaup
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Extremely acid to strongly acid in the surface layer and extremely acid to moderately acid in the subsoil and substratum

Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Franklinville
Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately slow in the lower part of the subsoil and in the substratum
Available water capacity: High
Reaction: Very strongly acid to slightly acid in the surface layer, very strongly acid to moderately acid in the subsoil, and very strongly acid to slightly acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 40 to 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland. Some areas are pasture and hayland. A few areas are idle.

Crops and pasture
This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. In areas where the bedrock is closer to the surface, droughtiness may be a problem. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland
The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, red pine, Norway spruce, and white spruce.

Dwellings
The slope and the depth to bedrock are the main limitations affecting dwellings. The Mongaup soil has bedrock at a depth of 20 to 40 inches, which is limiting to dwellings with basements. The Franklinville soil has bedrock at a depth of 40 to 60 inches and is better suited to dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slope and the depth to bedrock in the Mongaup soil are the main limitations on sites for conventional septic tank absorption fields. In some areas of the Franklinville soil, the moderately slow permeability in the substratum is also a limitation. The Mongaup soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Franklinville soil is deeper over the bedrock and is generally better suited than the Mongaup soil. Adjacent soils that are very deep to bedrock and less sloping are better suited than either the Mongaup or Franklinville soil. In some areas, the effectiveness of the system can be increased by using a raised absorption bed that has a curtain drain surrounding it, by placing distribution lines on the contour, and by using distribution boxes or other structures to ensure even distribution of effluent. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit because of the slope or the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation for local roads and streets. Designing roads to conform to the contour of the land and grading and filling help to overcome this limitation. The locations and grades of roads should be planned to minimize the removal of bedrock. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

MnB—Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky

This unit consists of nearly level and gently sloping Mongaup and Hawksnest soils. The Mongaup soil is moderately deep and well drained. The Hawksnest soil is shallow and somewhat excessively drained. This unit is on hilltops and hillsides in bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in brownish glacial till underlain by shale, siltstone, or sandstone bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 50 acres in size but may be as large as 170 acres. The unit is about 50 percent Mongaup soil, 30 percent Hawksnest soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Mongaup and Hawksnest soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Mongaup

Surface layer:
0 to 4 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
4 to 8 inches—dark yellowish brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 29 inches—yellowish brown channery silt loam; 30 percent rock fragments

Substratum:
29 to 34 inches—light olive brown channery silt loam; 34 percent rock fragments

Bedrock:
34 inches—dark gray, massive shale; fractured in the upper 10 inches

Hawksnest

Surface layer:
0 to 1 inch—partially decomposed leaf litter and pine needles
1 to 7 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
7 to 11 inches—yellowish brown channery silt loam; 25 percent rock fragments
11 to 19 inches—strong brown channery silt loam; 30 percent rock fragments

Bedrock:
19 inches—very dark gray and dark gray, massive siltstone

Minor Components

Included with this unit in mapping are Franklinville, Torull, Gretor, Lewbath, Willdin, and unnamed soils. The glacial till is deeper over bedrock in the deep, well drained Franklinville soils than in the Mongaup and Hawksnest soils. The shallow, poorly drained Torull soils and the moderately deep, somewhat poorly drained Gretor soils are in some shallow depressions and slightly concave areas. The very deep, well drained Lewbath soils and moderately well drained Willdin soils have a firm or very firm subsoil (fragipan). The several areas of unnamed soils are moderately deep and moderately well drained. Also included are a few small areas where the depth to bedrock is less than 10 inches. The included areas of minor components are as large as 6 acres.

Soil Properties

Mongaup
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Extremely acid to strongly acid in the surface layer and extremely acid to moderately acid in the subsoil and substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Hawksnest
Permeability: Moderate in the surface layer and moderate or moderately rapid in the subsoil
Available water capacity: Low
Reaction: Extremely acid to strongly acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are forestland or hayland. Some areas are used for cultivated crops or pasture. This unit meets the requirements for prime farmland.

Crops and pasture
Areas of this unit that are dominated by the Hawksnest soil are poorly suited to

cultivated crops because of the shallow depth to bedrock, the low available water capacity, and numerous areas of rock outcrops. Areas that are dominated by the moderately deep Mongaup soil are better suited to cultivated crops, although droughtiness may be a problem during extended dry periods. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. A conservation tillage system that leaves residue on the surface after planting helps to control erosion in the steeper areas and in the areas having longer slope lengths. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase the available water capacity of the soil.

This unit is poorly suited to pasture in areas that are dominated by the Hawksnest soil because of the shallow depth to bedrock, numerous rock outcrops, and the low available water capacity. The areas dominated by the Hawksnest soil are commonly quite droughty during extended dry periods. Areas that are dominated by the moderately deep Mongaup soil are better suited to pasture. Some areas of the Mongaup soil also tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in the areas of Mongaup soil and low in the areas of Hawksnest soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. Also, rock outcrops may interfere with equipment use in some areas. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations affecting dwellings. Because it is moderately deep to bedrock, the Mongaup soil is poorly suited to dwellings with basements and moderately suited to dwellings without basements. The Hawksnest soil is generally not suited to dwellings because it is shallow to bedrock. Much of the bedrock is massive and hard sandstone and siltstone that are not easily ripped. Other areas that have deep or very deep soils should be considered as alternative sites. If a better site is unavailable, development should be in the deeper areas of this unit. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome limitations caused by the bedrock.

Septic tank absorption fields

The depth to bedrock and, in some areas, bedrock outcrops, are the main limitations affecting this map unit as a site for conventional septic tank absorption fields. The Mongaup soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Hawksnest soil is not suited because of the shallow depth to bedrock. Adjacent soils that are very deep to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock in the Hawksnest soil, potential for frost action, and bedrock outcrops in some areas are the main limitations on sites for local roads and streets. The moderately deep Mongaup soil is better suited to this use than the Hawksnest soil. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed help to overcome these limitations in some areas. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 2s.

MnE—Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky

This unit consists of steep and very steep Mongaup and Hawksnest soils. The Mongaup soil is moderately deep and well drained. The Hawksnest soil is shallow and somewhat excessively drained. This unit is on hillsides in bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in brownish glacial till underlain by shale, siltstone, or sandstone bedrock. Many areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit commonly are long and narrow or are irregular in shape. They generally range from 6 to 75 acres in size but may be as large as 720 acres. The unit is about 55 percent Mongaup soil, 25 percent Hawksnest soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Mongaup and Hawksnest soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Mongaup

Surface layer:
0 to 4 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
4 to 8 inches—dark yellowish brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—reddish brown channery silt loam; 20 percent rock fragments
16 to 29 inches—yellowish brown channery silt loam; 30 percent rock fragments

Substratum:
29 to 34 inches—light olive brown channery silt loam; 34 percent rock fragments

Bedrock:
34 inches—dark gray, massive shale; fractured in the upper 10 inches

Hawksnest

Surface layer:
0 to 1 inch—partially decomposed leaf litter and pine needles
1 to 7 inches—dark brown silt loam; 10 percent rock fragments

Subsoil:
7 to 11 inches—yellowish brown channery silt loam; 25 percent rock fragments
11 to 19 inches—strong brown channery silt loam; 30 percent rock fragments

Bedrock:
19 inches—very dark gray and dark gray, massive siltstone

Minor Components

Included with this unit in mapping are Franklinville and Lewbath soils. The glacial till is deeper over bedrock in the few areas of deep, well drained Franklinville soils than in the Mongaup and Hawksnest soils. The glacial till is also deeper over bedrock in the few areas of very deep, well drained Lewbath soils than in the Mongaup and Hawksnest soils, and the Lewbath soils have a firm or very firm subsoil (fragipan). Also included are a few areas of Mongaup and Hawksnest soils that have slopes of more than 50 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Mongaup
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Extremely acid to strongly acid in the surface layer and extremely acid to moderately acid in the subsoil and substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very Rapid

Hawksnest
Permeability: Moderate in the surface layer and moderate or moderately rapid in the subsoil
Available water capacity: Low
Reaction: Extremely acid to strongly acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. A few areas are idle.

Crops and pasture
This unit is generally not suited to cultivated crops because of the severe hazard of erosion, the steep and very steep slopes, and the rock outcrops. The unit is also generally not suited to pasture in most areas for the same reasons.

Forestland
The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in the areas of Mongaup soil and low in the areas of Hawksnest soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings
This unit is generally not suited to dwellings because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are needed to make areas of this unit suitable for dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited to dwellings.

Septic tank absorption fields
This unit is not suited to conventional septic tank absorption fields because of

the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent areas that are less sloping and deeper to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The steep and very steep slopes, the depth to bedrock, and rock outcrops in some areas are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops, and adding fill as needed help to overcome these limitations in some areas.

Capability classification

The capability subclass is 7e.

MoB—Morris channery silt loam, 2 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is in depressions and slightly concave areas on the flatter parts of till plains in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It occurs predominantly in the southwestern part of the county. Individual areas are broad or oblong. They generally range from 6 to 30 acres in size but may be as large as 70 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish gray channery silt loam; 15 percent rock fragments

Upper subsoil:
5 to 9 inches—reddish brown channery silt loam; 15 percent rock fragments

Subsurface layer:
9 to 18 inches—pinkish gray and weak red channery silt loam that has common yellowish red and a few yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
18 to 26 inches—reddish brown gravelly silt loam that has common strong brown mottles; firm; 20 percent rock fragments
26 to 50 inches—reddish brown channery silt loam; very firm; 20 percent rock fragments

Substratum:
50 to 72 inches—dark yellowish brown very channery loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Norwich, Lackawanna, Wellsboro, and Greene soils. The small areas of poorly drained Norwich soils are in the lower depressions and along small drainageways. The well drained Lackawanna soils and moderately well drained Wellsboro soils are in the higher areas. The moderately deep, somewhat poorly drained Greene soils are on a few shoulder slopes and flat narrow benches where the bedrock is closer to the surface. Also included are a few areas that have stones or boulders on the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Very Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil and strongly acid to slightly acid in the lower part of the subsoil (fragipan) and in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or forestland. A few areas are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. The wetness commonly delays planting or harvesting following periods of heavy rainfall. Erosion can be a hazard in the steeper areas having long slopes. A conservation tillage system that leaves crop residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and the slow or very slow permeability in the lower subsoil (fragipan) and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness and slow permeability. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

MoC—Morris channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, somewhat poorly drained soil is on toeslopes and slightly concave hillsides in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It occurs predominantly in the southwestern part of the county. Individual areas are broad or oblong. They generally range from 6 to 25 acres in size but may be as large as 60 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish gray channery silt loam; 15 percent rock fragments

Upper subsoil:
5 to 9 inches—reddish brown channery silt loam; 15 percent rock fragments

Subsurface layer:
9 to 18 inches—pinkish gray and weak red channery silt loam that has common yellowish red and a few yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
18 to 26 inches—reddish brown gravelly silt loam that has common strong brown mottles; firm; 20 percent rock fragments
26 to 50 inches—reddish brown channery silt loam; very firm; 20 percent rock fragments

Substratum:
50 to 72 inches—dark yellowish brown very channery loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping are Norwich, Lackawanna, Wellsboro, and Greene soils. The small areas of poorly drained Norwich soils are in the lower depressions and along small drainageways. The well drained Lackawanna soils and moderately well drained Wellsboro soils are in the higher areas. The moderately deep, somewhat poorly drained Greene soils are on a few shoulder slopes and flat narrow benches where the bedrock is closer to the surface than in the Morris soil. Also included are a few areas that have stones or boulders on the surface and a few areas where the slope is more than 15 percent. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Very Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper

part of the subsoil and strongly acid to slightly acid in the lower part of the subsoil (fragipan) and in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are forestland or idle. A few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table and because of the hazard of erosion. The wetness commonly delays planting or harvesting following periods of heavy rainfall. A conservation tillage system that leaves crop residue on the surface after planting and contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth. Minimum tillage, winter cover crops, and a crop rotation that includes sod crops also help to maintain tilth and to control erosion.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings. Minimizing the removal of vegetative cover and using temporary erosion-control practices help to control erosion during construction.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and slow or very slow permeability in the lower subsoil (fragipan) and the substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness and slow permeability. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3e.

MpC—Morris and Volusia soils, 3 to 15 percent slopes, very stony

This unit consists of very deep, gently sloping and strongly sloping, somewhat poorly drained soils. It is principally in concave areas of till plains and hillsides in glaciated uplands in the southern part of the county. The Morris soil formed in glacial till derived from reddish sandstone, siltstone, and shale. The Volusia soil formed in glacial till derived from brownish sandstone, siltstone, and shale. Individual areas of this unit commonly are oval or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 110 acres. Some areas consist mainly of the Morris soil, other areas consist mainly of the Volusia soil. The very stony Morris and Volusia soils are mapped together because they have similar potential for use and management. The unit is about 50 percent Morris soil, 30 percent Volusia soil, and 20 percent other soils. Stones on the surface are up to 48 inches in diameter, cover 3 to 15 percent of the surface, and are approximately 1 to 20 feet apart.

Typical Profile

Morris

Surface layer:
0 to 5 inches—dark reddish gray channery silt loam; 15 percent rock fragments

Upper subsoil:
5 to 9 inches—reddish brown channery silt loam; 15 percent rock fragments

Subsurface layer:
9 to 18 inches—pinkish gray and weak red channery silt loam that has common yellowish red and a few yellowish brown mottles; 15 percent rock fragments

Lower subsoil:
18 to 26 inches—reddish brown gravelly silt loam that has common strong brown mottles; firm; 20 percent rock fragments
26 to 50 inches—reddish brown channery silt loam; very firm; 20 percent rock fragments

Substratum:
50 to 72 inches—dark yellowish brown very channery loam; firm; 35 percent rock fragments

Volusia

Surface layer:
0 to 6 inches—dark brown silt loam; 10 percent rock fragments

Subsurface layer:
6 to 10 inches—gray channery silt loam that has common yellowish red and yellowish brown mottles; 15 percent rock fragments

Subsoil:
10 to 19 inches—dark grayish brown and olive brown channery silt loam that has common strong brown and yellowish brown mottles; 20 percent rock fragments
19 to 32 inches—olive channery silt loam that has many strong brown, common yellowish brown, and a few gray mottles; firm; 20 percent rock fragments
32 to 42 inches—olive gray and dark grayish brown very channery silt loam that has common strong brown and a few gray mottles; very firm; 40 percent rock fragments

Substratum:
42 to 85 inches—dark grayish brown and olive brown very channery loam that has a few strong brown mottles; firm; 45 percent rock fragments

Bedrock:
85 inches—dark gray, very fractured shale and siltstone

Minor Components

Included with this unit in mapping in the areas of reddish soils are Wellsboro, Norwich, Oquaga, and Greene soils. The small areas of moderately well drained Wellsboro soils are on the slightly higher and more convex landforms. The poorly drained Norwich soils are in depressional areas and along drainageways. The few small areas of moderately deep, well drained Oquaga soils and moderately deep, somewhat poorly drained Greene soils are in the higher areas where the bedrock is closer to the surface.

Included with this unit in mapping in the areas of brown soils are Mardin, Chippewa, Lordstown, and Greene soils. The small areas of moderately well drained Mardin soils are on the slightly higher and more convex landforms. The poorly drained Chippewa soils are in depressional areas and along drainageways. The few small areas of moderately deep, well drained Lordstown soils and moderately deep, somewhat poorly drained Greene soils are in the higher areas where the bedrock is closer to the surface.

Also included in both the areas of red soils and the areas of brown soils are small areas where surface stoniness is not a limitation and a few small areas where the slope is greater than 15 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Morris
Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Very Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil and strongly acid to slightly acid in the lower part of the subsoil (fragipan) and in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Volusia
Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer, very strongly acid

to slightly acid in the subsurface layer and subsoil, and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or idle. Some areas are forestland.

Crops and pasture

This unit is generally not suited to cultivated crops because surface stones interfere with most tillage and harvesting operations. Also, wetness due to the seasonal high water table is a limitation.

This unit is poorly suited to pasture because of the surface stones and wetness due to the seasonal high water table. Stones on the surface commonly interfere with mechanical seeding, weed control, and application of lime and fertilizer. Excluding livestock during wet periods, rotating livestock grazing, and using proper stocking rates benefit the pasture condition. Conservation tillage may be helpful during pasture renovation in a few areas.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Surface stones are likely to interfere with construction of dwellings and drains. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings. Minimizing the removal of vegetative cover and using temporary erosion-control practices help to control erosion during construction, especially in strongly sloping areas.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and slow or very slow permeability in the lower subsoil (fragipan) and substratum. Typically, surface stones have to be removed before an absorption field can be installed. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness and slow permeability. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitations. Surface stones may interfere with construction in some areas.

Capability classification

The capability subclass is 6s.

Np—Norchip channery silt loam

This very deep, nearly level, poorly drained soil is in depressional areas and along drainageways in glaciated uplands at elevations over 1,750 feet. It formed in reddish or brownish glacial till derived from sandstone, siltstone, and shale. Individual areas are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 75 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 5 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
5 to 10 inches—light brownish gray channery silt loam that has many strong brown mottles; 15 percent rock fragments
10 to 13 inches—gray channery silt loam that has common reddish yellow and yellowish brown mottles; 15 percent rock fragments

Subsoil:
13 to 24 inches—grayish brown gravelly silt loam that has many gray and common dark yellowish brown mottles; very firm; 20 percent rock fragments
24 to 32 inches—grayish brown gravelly silt loam that has common dark yellowish brown and a few gray mottles; firm; 25 percent rock fragments

Substratum:
32 to 72 inches—dark brown gravelly silt loam that has common reddish brown and strong brown and a few gray mottles; firm; 30 percent rock fragments

Minor Components

Included with this unit in mapping are Ontusia, Willdin, and Carbondale soils. The somewhat poorly drained Ontusia soils and moderately well drained Willdin soils are in the slightly higher areas where the water table is deeper. The few small areas of very poorly drained Carbondale soils are in organic bogs. Also included are areas of Norchip soils that have very stony or bouldery surfaces, especially in the extreme southern part of the county, and a few areas where the soil has a slope of more than 3 percent. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate above the fragipan and slow or very slow in the fragipan and substratum
Available water capacity: Very Low
Reaction: Very strongly acid to slightly acid in the surface layer and subsurface layers, moderately acid to neutral in the subsoil, and slightly acid or neutral in the substratum
Seasonal high water table: At the surface to a depth of 1.0 foot from November through May
Flooding: None

Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are forestland or idle. Idle areas typically have water-tolerant herbaceous vegetation and brush. A few areas are pasture.

Crops and pasture

This unit is generally not suited to cultivated crops because of wetness due to the seasonal high water table. This unit is poorly suited to pasture because of the same limitation. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing benefit the pasture condition. Weed control and applications of lime and fertilizer increase forage yields. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Prolonged wetness due to the seasonal high water table and, in some areas, ponding are the main limitations affecting dwellings. A site that has better suited soils should be selected. Wetland regulations may affect the use of this unit and should be investigated before dwellings are constructed.

Septic tank absorption fields

Prolonged wetness due to the seasonal high water table and slow or very slow permeability in the firm and very firm subsoil are severe limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

The seasonal high water table, ponding in some areas, and potential for frost action are the main limitations on sites for local roads and streets. Adding the considerable amount of coarse-grained material necessary to raise the subgrade and base to the thickness of the frost depth can help to overcome these limitations. Wetland regulations, however, may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

ObB—Onteora channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is in slightly concave areas in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are broad or oblong. They generally range from 6 to 20 acres in size but may be as large as 35 acres.

Typical Profile

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:
8 to 11 inches—light brownish gray channery loam that has common strong brown mottles; 15 percent rock fragments

Subsoil:
11 to 14 inches—reddish brown channery silt loam that has many strong brown and common light brownish gray mottles; 25 percent rock fragments
14 to 28 inches—dark reddish brown channery silt loam that has common dark gray manganese coats; firm; 20 percent rock fragments
28 to 60 inches—dark reddish brown channery silt loam; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Willowemoc, Norchip, and Vly soils. The small areas of moderately well drained Willowemoc soils are in the slightly higher, convex positions. The poorly drained Norchip soils are in depressions and along small drainageways. The bedrock is closer to the surface in the few areas of moderately deep, well drained Vly soils than in the Onteora soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum, where present
Available water capacity: Very Low
Reaction: Extremely acid to moderately acid in the surface layer and subsurface layer and very strongly acid to moderately acid in the subsoil and substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Also, there are fewer than average frost-free days in areas where this soil occurs. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings.

Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

ObC—Onteora channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, somewhat poorly drained soil is in slightly concave areas in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are irregular in shape or oblong. They generally range from 6 to 20 acres in size but may be as large as 60 acres.

Typical Profile

Surface layer:

0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsurface layer:

8 to 11 inches—light brownish gray channery loam that has common strong brown mottles; 15 percent rock fragments

Subsoil:

11 to 14 inches—reddish brown channery silt loam that has many strong brown and common light brownish gray mottles; 25 percent rock fragments

14 to 28 inches—dark reddish brown channery silt loam that has common dark gray manganese coats; firm; 20 percent rock fragments

28 to 60 inches—dark reddish brown channery silt loam; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Willowemoc, Norchip, and Vly soils. The small areas of moderately well drained Willowemoc soils are in the slightly higher, convex positions. The poorly drained Norchip soils are in depressions and along small drainageways. The bedrock is closer to the surface in the few areas of moderately deep, well drained Vly soils than in the Onteora soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum
Available water capacity: Very Low
Reaction: Extremely acid to moderately acid in the surface layer and subsurface layer and very strongly acid to moderately acid in the subsoil and substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or idle. Some areas are hayland or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table and because of the hazard of erosion. Also, there are fewer than average frost-free days in areas where this soil occurs. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. A conservation tillage system that leaves residue on the surface after planting and either contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3e.

OeB—Ontusia channery silt loam, 2 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is in slightly concave areas of glaciated uplands. It formed in firm glacial till derived from brownish or grayish sandstone, siltstone, and shale. It is at elevations over 1,750 feet. Individual areas are either long and narrow or are oblong. They generally range from 6 to 40 acres in size but may be as large as 170 acres.

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 15 percent rock fragments

Upper subsurface layer:
5 to 8 inches—light brownish gray channery silt loam that has dark grayish brown organic stains; 15 percent rock fragments

Upper subsoil:
8 to 12 inches—dark brown silt loam that has common strong brown and a few grayish brown mottles; 10 percent rock fragments

Lower subsurface layer:
12 to 14 inches—light brownish gray channery silt loam that has common light olive brown and a few strong brown mottles; firm; 15 percent rock fragments

Lower subsoil:
14 to 20 inches—grayish brown channery silt loam that has common strong brown and a few brown mottles; firm; 20 percent rock fragments
20 to 42 inches—dark grayish brown and dark yellowish brown channery silt loam that has common yellowish brown mottles; very firm; 25 percent rock fragments

Substratum:
42 to 51 inches—olive very channery loam; firm; 35 percent rock fragments
51 to 72 inches—olive very channery fine sandy loam; firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Norchip, and Mongaup soils. The small areas of moderately well drained Willdin soils are in the slightly higher, more convex positions. The poorly drained Norchip soils are in depressions and along small drainageways. The moderately deep, well drained Mongaup soils are on a few shoulder slopes and summits where the bedrock is closer to the surface. Also included, in the eastern part of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Ontusia soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layers, and upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum
Available water capacity: Very Low
Reaction: Very strongly acid to slightly acid in the surface layer, subsurface layers, and subsoil and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Also, there are fewer than average frost-free days in areas where this soil occurs. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

OeC—Ontusia channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, somewhat poorly drained soil is in slightly concave areas of glaciated uplands. It formed in firm glacial till derived from brownish or grayish sandstone, siltstone, and shale. It is at elevations over 1,750 feet. Individual areas are irregular in shape or oblong. They generally range from 6 to 25 acres in size but may be as large as 50 acres.

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 15 percent rock fragments

Upper subsurface layer:
5 to 8 inches—light brownish gray channery silt loam that has dark grayish brown organic stains; 15 percent rock fragments

Upper subsoil:
8 to 12 inches—dark brown silt loam that has common strong brown and a few grayish brown mottles; 10 percent rock fragments

Lower subsurface layer:
12 to 14 inches—light brownish gray channery silt loam that has common light olive brown and a few strong brown mottles; firm; 15 percent rock fragments

Lower subsoil:
14 to 20 inches—grayish brown channery silt loam that has common strong brown and a few brown mottles; firm; 20 percent rock fragments
20 to 42 inches—dark grayish brown and dark yellowish brown channery silt loam that has common yellowish brown mottles; very firm; 25 percent rock fragments

Substratum:
42 to 51 inches—olive very channery loam; firm; 35 percent rock fragments
51 to 72 inches—olive very channery fine sandy loam; firm; 40 percent rock fragments

Minor Components

Included with this unit in mapping are Willdin, Norchip, and Mongaup soils. The small areas of moderately well drained Willdin soils are in the slightly higher, more convex positions. The poorly drained Norchip soils are in depressions and along small drainageways. The moderately deep, well drained Mongaup soils are on a few shoulder slopes and summits where the bedrock is closer to the surface. Also included are a few areas of Ontusia soils that have slopes of more than 15 percent. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layers, and upper part of the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum
Available water capacity: Very Low
Reaction: Very strongly acid to slightly acid in the surface layer, subsurface layers, and subsoil layers and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or idle. Some areas are hayland or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table and because of the hazard of erosion. Also, there are fewer than average frost-free days in areas where this soil occurs. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. A conservation tillage system that leaves residue on the surface after planting and either contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple and moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3e.

OgB—Oquaga-Arnot complex, 1 to 8 percent slopes, rocky

This unit consists of nearly level and gently sloping Oquaga and Arnot soils. The Oquaga soil is moderately deep and well drained. The Arnot soil is shallow and somewhat excessively drained. This unit is on hilltops and hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 85 acres. Slopes generally are slightly convex, or the soils are on flat benches. The unit is about 60 percent Oquaga soil, 20 percent Arnot soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Oquaga and Arnot soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Arnot

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 30 percent rock fragments

Subsoil:
5 to 7 inches—dark brown channery silt loam; 15 percent rock fragments
7 to 17 inches—strong brown very channery silt loam; 40 percent rock fragments

Substratum:
17 to 19 inches—dark brown very flaggy silt loam; 45 percent rock fragments

Bedrock:
19 inches—greenish gray, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are unnamed, Lackawanna, and Wellsboro soils. Some of the small areas of unnamed soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. Other areas of unnamed soils are somewhat poorly drained and are in shallow depressions or in slightly concave areas. A few other areas of unnamed soils have brownish subhorizons and are less than 10 inches deep over bedrock. The very deep, well drained Lackawanna soils and moderately well drained Wellsboro soils have a firm or very firm subsoil (fragipan). The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Slow or very slow

Arnot
Permeability: Moderate throughout the soil
Available water capacity: Very low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Slow or very slow

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are hayland or are used for cultivated crops. A few areas are idle.

Crops and pasture
Areas of this unit that are dominated by the Arnot soil are not suited to cultivated crops because of the shallow depth to bedrock, the very low available water capacity, and numerous areas of bedrock outcrops. Areas that are dominated by the moderately deep Oquaga soil are better suited to cultivated crops, although droughtiness may be a problem, especially during extended dry periods, and numerous bedrock outcrops are a limitation in some areas. A conservation tillage system that leaves residue on the surface after planting helps to control erosion in the steeper areas and the areas having longer slope lengths. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is poorly suited to pasture in areas that are dominated by the Arnot soil because of the shallow depth to bedrock, numerous rock outcrops, and the very low available water capacity. Areas that are dominated by the moderately deep Oquaga soil are better suited to pasture. Some areas of the Oquaga soil also tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in areas of the Oquaga soil and low in areas of the Arnot soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The moderate soil strength of the Oquaga soil is a limitation. Also, rock outcrops may interfere with equipment use in some areas. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations affecting dwellings. Because it is moderately deep to bedrock, the Oquaga soil is poorly suited to dwellings with basements and moderately suited to dwellings without basements. The Arnot soil is generally not suited to dwellings because it is shallow to bedrock. If a better site is unavailable, construction should be in the deeper areas of soil. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome the bedrock limitations in some areas.

Septic tank absorption fields

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. The Oquaga soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Arnot soil is not suited because of the shallow depth to bedrock. Adjacent soils that are very deep to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock in the Arnot soil and bedrock outcrops in some areas are the main limitations on sites for local roads and streets. The moderately deep Oquaga soil is better suited to this use even though depth to bedrock and potential for frost action are limitations. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed can help to overcome these limitations in some areas. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3s.

OgC—Oquaga-Arnot complex, 8 to 15 percent slopes, rocky

This unit consists of strongly sloping Oquaga and Arnot soils. The Oquaga soil is moderately deep and well drained. The Arnot soil is shallow and somewhat excessively drained. This unit is on hilltops and hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 115 acres. The unit is about 60 percent Oquaga soil, 20 percent Arnot soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Oquaga and Arnot soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Arnot

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 30 percent rock fragments

Subsoil:
5 to 7 inches—dark brown channery silt loam; 15 percent rock fragments
7 to 17 inches—strong brown very channery silt loam; 40 percent rock fragments

Substratum:
17 to 19 inches—dark brown very flaggy silt loam; 45 percent rock fragments

Bedrock:
19 inches—greenish gray, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are unnamed, Lackawanna, and Wellsboro soils. Some of the small areas of unnamed soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. Other areas of unnamed soils are somewhat poorly drained and are in shallow depressions or in slightly concave areas. A few other areas of unnamed soils have brownish subhorizons and are less than 10 inches deep over bedrock. The very deep, well drained Lackawanna soils and moderately well drained Wellsboro soils have a firm or very firm subsoil (fragipan). The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Arnot
Permeability: Moderate throughout the soil
Available water capacity: Very low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are hayland or are used for cultivated crops.

Crops and pasture

Areas of this unit that are dominated by the Arnot soil are not suited to cultivated crops because of the shallow depth to bedrock, the very low available water capacity, and numerous areas of bedrock outcrops. Areas that are dominated by the moderately deep Oquaga soil are moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Droughtiness may also be a problem, especially during extended dry periods, and numerous bedrock outcrops are a limitation in some areas. The Oquaga soil has low available water capacity, and the Arnot soil has very low available water capacity. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is poorly suited to pasture in areas that are dominated by the Arnot soil because of the shallow depth to bedrock, numerous rock outcrops, and the very low available water capacity. Areas that are dominated by the moderately deep Oquaga soil are better suited to pasture. Some areas of the Oquaga soil tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in areas of the Oquaga soil and low in areas of the Arnot soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings because of the slope and the moderate strength of the Oquaga soil. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock, the slope, and, in some areas, bedrock outcrops are the main limitations affecting dwellings. Because it is moderately deep to bedrock, the Oquaga soil is poorly suited to dwellings with basements and moderately suited to dwellings without basements. The Arnot soil is generally not suited to dwellings because it is shallow to bedrock. If a better site is unavailable, construction should be in the deeper areas of soil. Designing dwellings to conform to the natural slope of the land, constructing dwellings above the bedrock, and landscaping with additional fill as needed help to overcome the slope and bedrock limitations in some areas. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. The Oquaga soil is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. The Arnot soil is not suited because of the shallow depth to bedrock. Adjacent soils that are very deep to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The shallow depth to bedrock in the Arnot soil and the bedrock outcrops in some areas are serious limitations for local roads and streets. The moderately deep Oquaga soil is better suited to this use even though the slope, the depth to bedrock, and potential for frost action are limitations. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to avoid areas of bedrock outcrops and to minimize the removal of bedrock, and adding fill as needed can help to overcome the slope and bedrock limitations in some areas. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3e.

OgD—Oquaga-Arnot complex, 15 to 25 percent slopes, rocky

This unit consists of moderately steep Oquaga and Arnot soils. The Oquaga soil is moderately deep and well drained. The Arnot soil is shallow and somewhat excessively drained. This unit is on hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 170 acres. The unit is about 60 percent Oquaga soil, 20 percent Arnot soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Oquaga and Arnot soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments

19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Arnot

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 30 percent rock fragments

Subsoil:
5 to 7 inches—dark brown channery silt loam; 15 percent rock fragments
7 to 17 inches—strong brown very channery silt loam; 40 percent rock fragments

Substratum:
17 to 19 inches—dark brown very flaggy silt loam; 45 percent rock fragments

Bedrock:
19 inches—greenish gray, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are unnamed, Lackawanna, and Wellsboro soils. Some of the small areas of unnamed soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. Other areas of unnamed soils are somewhat poorly drained and are in shallow depressions or in slightly concave areas. A few other areas of unnamed soils have brownish subhorizons and are less than 10 inches deep over bedrock. The very deep, well drained Lackawanna soils and moderately well drained Wellsboro soils have a firm or very firm subsoil (fragipan). The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Arnot
Permeability: Moderate throughout the soil
Available water capacity: Very low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland. Some areas are hayland and pasture or are idle.

Crops and pasture
This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Droughtiness may also be a problem,

especially during extended dry periods. In some areas, numerous bedrock outcrops are also a limitation. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and the use of cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is poorly suited to pasture in areas that are dominated by the Arnot soil because of the shallow depth to bedrock, numerous rock outcrops, and the very low available water capacity. Areas that are dominated by the moderately deep Oquaga soil are better suited to pasture. Some areas of the Oquaga soil may also tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in areas of the Oquaga soil and low in areas of the Arnot soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The slope and the depth to bedrock are the main limitations affecting dwellings. The Arnot soil is generally not suited to dwellings because it is shallow to bedrock. Adjacent areas that are less sloping and deeper to bedrock are better suited. The Oquaga soil is better suited to dwellings than the Arnot soil because the Oquaga soil is deeper to bedrock. Designing dwellings to conform to the natural slope of the land, constructing dwellings above the bedrock, and landscaping with additional fill as needed help to overcome the slope and bedrock limitations in some areas. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the depth to bedrock, and, in some areas, bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are very deep to bedrock and less sloping are better suited. State and local health codes may prohibit conventional septic tank absorption fields in this unit because of the slope and the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope and the depth to bedrock in the Arnot soil are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to avoid areas of bedrock outcrops and to minimize the removal of bedrock, and adding fill as needed can help to overcome the slope and bedrock limitations in some areas. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

OgE—Oquaga-Arnot complex, 25 to 45 percent slopes, rocky

This unit consists of steep and very steep Oquaga and Arnot soils. The Oquaga soil is moderately deep and well drained. The Arnot soil is shallow and somewhat excessively drained. This unit is on hillsides in bedrock-controlled uplands. These soils formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. Individual areas of this unit commonly are oblong or irregular in shape. They generally range from 6 to 75 acres in size but may be as large as 290 acres. Slopes generally are slightly convex. The unit is about 60 percent Oquaga soil, 20 percent Arnot soil, and 20 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent. In most areas, the Oquaga and Arnot soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Arnot

Surface layer:
0 to 5 inches—very dark grayish brown channery silt loam; 30 percent rock fragments

Subsoil:
5 to 7 inches—dark brown channery silt loam; 15 percent rock fragments
7 to 17 inches—strong brown very channery silt loam; 40 percent rock fragments

Substratum:
17 to 19 inches—dark brown very flaggy silt loam; 45 percent rock fragments

Bedrock:
19 inches—greenish gray, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are unnamed, Lackawanna, and Wellsboro soils. Some of the small areas of unnamed soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. A few other areas of unnamed soils have brownish subhorizons and are less than 10 inches deep over bedrock. The very deep, well drained Lackawanna soils and moderately well drained Wellsboro soils have a firm or very firm subsoil (fragipan). Also included are a few areas of Oquaga or Arnot soils that have slopes of more than 45 percent. The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very rapid

Arnot
Permeability: Moderate throughout the soil
Available water capacity: Very low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland. A few areas are hayland and pasture or are idle.

Crops and pasture
This unit is generally not suited to cultivated crops because of the steep and very steep slopes, the severe hazard of erosion, droughtiness, and rock outcrops. This unit is also generally not suited to pasture in most areas for the same reasons. A few areas where the unit is dominated by the Oquaga soil with a slope of less than 35 percent and without rock outcrops are moderately suited to pasture.

Forestland
The potential productivity is moderately high for sugar maple, black cherry, and northern red oak in areas of the Oquaga soil and low in areas of the Arnot soil. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings
This unit is generally not suited to dwellings because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are needed to make this unit suitable for dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited to dwellings.

Septic tank absorption fields
This unit is not suited to conventional septic tank absorption fields because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent areas that are less sloping and deeper to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields in this unit because of the slope and the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets
The steep and very steep slopes and the rock outcrops are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of

the land, planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops, and adding fill as needed can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 7e.

OpB—Oquaga and Lordstown soils, 1 to 8 percent slopes, very rocky

This unit consists of moderately deep, nearly level and gently sloping, well drained Oquaga and Lordstown soils. This unit is on hilltops and hillsides in bedrock-controlled uplands. Oquaga soils formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. Lordstown soils formed in glacial till underlain by brownish shale, siltstone, or sandstone bedrock. Slopes generally are slightly convex, or the soils are on nearly level benches. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit commonly are oblong or oval. They generally range from 6 to 25 acres in size but may be as large as 60 acres. Some areas consist mainly of the Oquaga soil, other areas consist mainly of the Lordstown soil. A few areas consist of both soils. The very rocky Oquaga and Lordstown soils are mapped together because they have similar potential for use and management. The unit is about 40 percent Oquaga soil, 35 percent Lordstown soil, and 25 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 7 percent but ranges from 2 to 10 percent.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are Arnot, Chadakoin, and unnamed soils. The glacial till is thinner over the bedrock in the small areas of shallow, somewhat excessively drained Arnot soils than in the Oquaga and Lordstown soils. The deep, well drained Chadakoin soils and the unnamed reddish soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. The moderately well drained or somewhat poorly drained unnamed soils are in flat or slightly concave areas on some hilltops and bedrock benches. Also included are a few areas where the depth to bedrock is less than 10 inches. The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are hayland.

Crops and pasture

This unit is generally not suited to cultivated crops because of the numerous rock outcrops, which limit the use of equipment. The low available water capacity is also a limitation in areas dominated by the Oquaga soil. Some areas that are dominated by the Lordstown soil and where bedrock outcrops would not hinder tillage may be suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture in many areas. Areas that are dominated by rock outcrops, however, are poorly suited to pasture. The use of conservation tillage helps to control erosion in some areas during pasture renovation. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings because of the moderate soil strength. Also, rock outcrops may interfere with equipment use in some areas. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and bedrock outcrops are the main limitations affecting dwellings. Because of the moderate depth to bedrock, both the Oquaga and Lordstown soils are poorly suited to dwellings with basements and moderately suited to dwellings without basements. Much of the bedrock is massive, hard, and not easily ripped. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome bedrock limitations. Dwellings should not be constructed in the areas that have rock outcrops.

Septic tank absorption fields

The depth to bedrock and bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. Both the Oquaga and Lordstown soils are generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. Adjacent soils that are very deep to bedrock may be better suited. State and local health codes may prohibit conventional septic tank absorption fields on this unit because of the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock, potential for frost action, and, in some areas, bedrock outcrops are the main limitations on sites for local roads and streets. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed help to overcome the bedrock limitation. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 6s.

OpC—Oquaga and Lordstown soils, 8 to 15 percent slopes, very rocky

This unit consists of moderately deep, strongly sloping, well drained Oquaga and Lordstown soils. This unit is on hilltops and hillsides in bedrock-controlled uplands. The Oquaga soil formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. The Lordstown soil formed in glacial till underlain by brownish shale, siltstone, or sandstone bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit commonly are oblong or oval. They generally range from 6 to 25 acres in size but may be as large as 55 acres. Some areas consist mainly of the Oquaga soil, other areas consist mainly of the Lordstown soil. A few areas consist of both soils. The very rocky Oquaga and Lordstown soils are mapped together because they have similar potential for use and management. The unit is about 40 percent Oquaga soil, 35 percent Lordstown soil, and 25 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 7 percent but ranges from 2 to 10 percent.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are Arnot, Chadakoin, and unnamed soils. The glacial till is thinner over the bedrock in the small areas of shallow, somewhat excessively drained Arnot soils than in the Oquaga and Lordstown soils. The deep, well drained Chadakoin soils and the unnamed reddish soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. The moderately well drained or somewhat poorly drained unnamed soils are in flat or slightly concave areas on some hilltops and bedrock benches. Also included are a few areas where the depth to bedrock is less than 10 inches. The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None

Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are hayland.

Crops and pasture

This unit is generally not suited to cultivated crops because of the numerous rock outcrops, which limit the use of equipment; the strong slope; and the hazard of erosion. Droughtiness may also be a limitation, especially during extended dry periods. In those areas where rock outcrops do not interfere with tillage operations, a conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and the use of cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture in many areas. Areas that are dominated by rock outcrops, however, are poorly suited to pasture. Conservation tillage practices help to control erosion during pasture renovation in some areas. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock, the slope, and bedrock outcrops are the main limitations affecting dwellings. Because they are moderately deep to bedrock, both the Oquaga and Lordstown soils are poorly suited to dwellings with basements and moderately suited to dwellings without basements. Much of the bedrock is massive, hard, and not easily ripped. Designing dwellings to conform to the natural slope of the land, constructing dwellings above the bedrock, and landscaping with additional fill as needed help to overcome the slope and bedrock limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion. Dwellings should not be constructed in the areas that have rock outcrops.

Septic tank absorption fields

The depth to bedrock and bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. Both the Oquaga and Lordstown soils are generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. Adjacent areas that are less sloping and deeper to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, the depth to bedrock, potential for frost action, and, in some areas, bedrock outcrops are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops, and adding fill as needed help to overcome the slope and bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 6s.

OpD—Oquaga and Lordstown soils, 15 to 25 percent slopes, very rocky

This unit consists of moderately deep, moderately steep, well drained Oquaga and Lordstown soils. This unit is on hillsides in bedrock-controlled uplands. The Oquaga soil formed in glacial till underlain by reddish shale, siltstone, or sandstone bedrock. The Lordstown soil formed in glacial till underlain by brownish shale, siltstone, or sandstone bedrock. Slopes generally are slightly convex. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit commonly are oblong or oval. They generally range from 6 to 25 acres in size but may be as large as 50 acres. Some areas consist mainly of the Oquaga soil, other areas consist mainly of the Lordstown soil. A few areas consist of both soils. The very rocky Oquaga and Lordstown soils are mapped together because they have similar potential for use and management. The unit is about 40 percent Oquaga soil, 35 percent Lordstown soil, and 25 percent other soils and rock outcrops. The extent of exposed bedrock outcrops typically is about 7 percent but ranges from 2 to 10 percent.

Typical Profile

Oquaga

Surface layer:
0 to 1 inch—very dark brown partially decomposed leaf litter
1 to 5 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 13 inches—yellowish red channery silt loam; 25 percent rock fragments

Substratum:
13 to 19 inches—dark reddish brown very channery silt loam; 40 percent rock fragments
19 to 28 inches—reddish brown extremely channery silt loam; firm; 65 percent rock fragments

Bedrock:
28 inches—dusky red shale

Lordstown

Surface layer:
0 to 8 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
8 to 16 inches—yellowish brown channery silt loam; 20 percent rock fragments
16 to 26 inches—olive brown channery loam; 30 percent rock fragments

Substratum:
26 to 28 inches—olive brown channery loam that has a few light brownish gray and dark yellowish brown mottles; 30 percent rock fragments

Bedrock:
28 inches—very dark grayish brown, massive, fine-grained sandstone

Minor Components

Included with this unit in mapping are Arnot, Chadakoin, and unnamed soils. The glacial till is thinner over the bedrock in the small areas of shallow, somewhat excessively drained Arnot soils than in the Oquaga and Lordstown soils. The deep, well drained Chadakoin soils and unnamed reddish soils are more than 40 inches deep over bedrock and have friable subsoil and substratum layers. The moderately well drained or somewhat poorly drained unnamed soils are in flat or slightly concave areas on some hilltops and bedrock benches. Also included are a few areas where the depth to bedrock is less than 10 inches. The included areas of minor components are as large as 6 acres.

Soil Properties

Oquaga
Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Lordstown
Permeability: Moderate throughout the soil
Available water capacity: Moderate
Reaction: Very strongly acid to neutral in the surface layer, very strongly acid to moderately acid in the subsoil, and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland or pasture. A few areas are hayland.

Crops and pasture

This unit is generally not suited to cultivated crops because of the numerous rock outcrops, which limit the use of equipment; the moderately steep slope; and the severe hazard of erosion. Droughtiness may also be a limitation, especially during extended dry periods.

This unit is moderately suited to pasture in many areas. Erosion is a hazard, and the rock outcrops are a limitation. Areas that are dominated by rock outcrops are poorly suited to pasture. Conservation tillage practices help to control erosion during pasture renovation in some areas. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple, black cherry, and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock, the slope, and bedrock outcrops are the main limitations affecting dwellings. Because they are moderately deep to bedrock, both the Oquaga and Lordstown soils are poorly suited to dwellings with basements and moderately suited to dwellings without basements. Much of the bedrock is massive, hard, and not easily ripped. Adjacent areas that are less sloping and deeper to bedrock are better suited. Designing dwellings to conform to the natural slope of the land, constructing dwellings above the bedrock, and landscaping with additional fill as needed can help to overcome the slope and bedrock limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures during construction help to control the erosion. Dwellings should not be constructed in the areas that have rock outcrops.

Septic tank absorption fields

The slope, the depth to bedrock, and bedrock outcrops are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping and deeper to bedrock are better suited. State and local health codes may prohibit conventional septic tank absorption fields in this unit because of the slope and the depth to bedrock. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, the depth to bedrock, and bedrock outcrops are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops, and adding fill as needed can help to overcome these limitations in some areas.

Capability classification

The capability subclass is 6s.

Ot—Otego silt loam

This very deep, nearly level, moderately well drained soil is on the flood plains along the larger streams and rivers in the county. It formed in silty alluvial deposits. Individual areas are long and narrow. They generally range from 6 to 25 acres in size but may be as large as 140 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 13 inches—dark grayish brown silt loam

Subsoil:
13 to 25 inches—olive brown silt loam that has many grayish brown and a few dark yellowish brown mottles
25 to 35 inches—grayish brown and brown silt loam that has common gray and yellowish brown mottles

Substratum:
35 to 60 inches—gray silt loam that has common strong brown and many dark brown mottles
60 to 72 inches—gray loam that has many strong brown and reddish brown mottles; 5 percent rock fragments
72 to 80 inches—multicolored very gravelly sandy loam; 45 percent rock fragments

Minor Components

Included with this unit in mapping are Hamplain, Wakeville, Chenango, Deposit, Trestle, Unadilla, and Scio soils. The small areas of well drained Hamplain soils are on the slightly higher parts of the flood plain. The somewhat poorly drained Wakeville soils and poorly drained Wayland soils are on the lower parts of the flood plain. The small areas of well drained Chenango soils are on gravelly alluvial fans. The Deposit soils and well drained Trestle soils have a gravelly surface layer and subsoil. They are on flood plains and low terraces. The few areas of well drained Unadilla soils and moderately well drained Scio soils are on low terraces that are not prone to flooding. Also included are a few areas of rarely flooded Otego soils on the slightly higher flood plains along the Susquehanna River. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsoil, and upper part of the substratum and moderate or moderately rapid below
Available water capacity: High
Reaction: Strongly acid to neutral (where limed) in the surface layer, strongly acid to slightly acid in subsoil and the upper part of the substratum, and strongly acid to neutral in the lower part of the substratum
Seasonal high water table: At a depth of 1.5 to 2.5 feet from November through June
Flooding: Occasional, brief, November through June
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops. Some areas are hayland and pasture or are idle. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although the unit is susceptible to flooding, the flooding does not normally occur during the growing season. On the lower parts of some flood plains, however, wetness due to the seasonal high water table and flooding can cause planting delays and minor crop damage in some years. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is well suited to pasture. Excluding livestock from the pasture during flooding or wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. The application of lime, fertilizer, or herbicide during periods that are subject to flooding can result in lower water quality.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the flooding and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Trees to manage are black walnut, black locust, and Norway spruce.

Dwellings

Flooding and wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are not subject to flooding are better suited to dwellings. State or local regulations may prohibit or restrict the construction of dwellings.

Septic tank absorption fields

Flooding and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and streams during flood periods. Nearby areas that are not subject to flooding are better suited to conventional septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding and potential for frost action are the main limitations on sites for local roads and streets. Constructing roads on raised additions of coarse-grained subgrade and base material can help to overcome these limitations in some areas. However, it would be better to construct local roads and streets on nearby soils that are not subject to flooding because strong floodwater currents could wash out or otherwise damage roadbeds.

Capability classification

The capability subclass is 2w.

Pa—Palms muck

This very deep, nearly level, very poorly drained soil is in depressions and bogs on till plains, lake plains, and other areas that were formerly lakes or ponds. It formed in well decomposed organic materials that range from 16 to 51 inches in thickness. The organic materials are overlying loamy mineral deposits. Individual areas typically are irregular in shape or oval. They generally range from 6 to 20 acres in size but may be as large as 40 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:

0 to 8 inches—muck (sapric material), black broken face and rubbed; about 37 percent fiber undisturbed and about 13 percent fiber rubbed

Subsurface layer:

8 to 12 inches—muck (sapric material), black broken face and rubbed; about 22 percent fiber undisturbed and about 5 percent fiber rubbed

12 to 21 inches—muck (sapric material), black broken face and rubbed; about 22 percent fiber undisturbed and about 5 percent fiber rubbed

21 to 27 inches—muck (sapric material), black broken face and rubbed; about 32 percent fiber undisturbed and about 5 percent fiber rubbed

27 to 34 inches—mucky peat (hemic material), black broken face and very dark brown rubbed; about 67 percent fiber undisturbed and about 40 percent fiber rubbed

34 to 36 inches—muck (sapric material), dark reddish brown broken face and very dark brown rubbed; about 23 percent fiber undisturbed and about 7 percent fiber rubbed

36 to 46 inches—muck (sapric material), dark reddish brown broken face and very dark brown rubbed; about 23 percent fiber undisturbed and about 7 percent fiber rubbed

Mineral substratum:

46 to 72 inches—gray silty clay loam

Minor Components

Included with this unit in mapping are Carlisle, Canandaigua, Fonda, Alden, and Edwards soils and Saprists and Aquents. The small areas of Carlisle soils, which have thicker deposits of organic materials than the Palms soil, are on the same landform as the Palms soil, generally toward the center of the map unit. The very poorly drained Canandaigua and Fonda soils, which formed in lacustrine or water-sorted deposits, and Alden soils, which formed in glacial till, are in the slightly higher areas and near the periphery of the mapped areas. The Edwards soils are in a few bogs that are underlain by marl in the towns of Springfield and Richfield. The few small areas of Saprists and Aquents have water on the surface most of the year. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderately slow to moderately rapid in the surface layer and subsurface layers and moderately slow or moderate in the mineral substratum
Available water capacity: High
Reaction: Strongly acid to mildly alkaline in the surface layer and subsurface layers and slightly acid to moderately alkaline in the mineral substratum
Seasonal high water table: 1.0 foot above the surface to 1.0 foot below from September through June
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Ponded

Use and Management

Most areas of this map unit are forestland. A few areas are idle and support water-tolerant brush, trees, and herbaceous vegetation.

Crops and pasture
This unit is generally unsuited to cultivated crops and pasture because of wetness due to the prolonged seasonal high water table and surface ponding. The low strength of the organic materials is also a limitation affecting pasture. Wetland regulations may prohibit or restrict the alteration of the drainage of this soil.

Forestland
The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. Also, ponding on the surface during much of the year is a limitation affecting these uses. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings
Prolonged wetness due to the seasonal high water table, ponding in some areas, low strength, and subsidence are serious limitations affecting dwellings. A site that has better suited soils should be selected. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields
Prolonged wetness due to the seasonal high water table, subsidence, and ponding in some areas are serious limitations on sites for conventional septic tank absorption fields. A site that has better suited soils should be selected because extensive alterations would be required to overcome these limitations. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets
The seasonal high water table, potential for frost action, low strength, subsidence, and, in some areas, ponding are the main limitations on sites for local roads and streets. Extensive alterations would be required to overcome these limitations.

Selecting a site that has better suited soils reduces construction costs and minimizes potential problems. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 5w.

PdB—Patchin silt loam, 1 to 4 percent slopes

This moderately deep, nearly level and gently sloping, poorly drained soil is in the flatter areas of dissected glacial uplands. It formed in glacial till derived from shale and siltstone and is underlain by soft shale bedrock. It is principally in the northern part of the county. Individual areas are irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 40 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown silt loam that has a few dark yellowish brown mottles

Subsurface layer:
7 to 12 inches—grayish brown silt loam that has common dark yellowish brown mottles

Subsoil:
12 to 22 inches—gray silt loam that has many yellowish brown mottles
22 to 26 inches—gray silty clay loam that has many yellowish brown mottles

Substratum:
26 to 32 inches—olive gray silty clay loam that has many yellowish brown mottles; 10 percent rock fragments

Bedrock:
32 inches—black, soft shale

Minor Components

Included with this unit in mapping are unnamed, Lyons, and Greene soils. The few areas of unnamed soils are similar to the Patchin soil but are somewhat poorly drained. The glacial till is thicker over the bedrock in the small areas of very deep, poorly drained Lyons soils than in the Patchin soil. The few areas of somewhat poorly drained Greene soils are in areas where the underlying bedrock is not easily ripped. Also included are a few areas of soils that are similar to the Patchin soil but are less than 20 inches deep to bedrock. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderately slow in the surface layer and slow in the subsurface layer, subsoil, and substratum
Available water capacity: High
Reaction: Very strongly acid or strongly acid throughout
Seasonal high water table: At the surface to a depth of 0.5 foot from October through May
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are pasture or idle. A few areas are forestland or are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Wetland regulations may prohibit or restrict the alteration of drainage and should be investigated before the drainage is altered.

This unit is moderately suited to pasture. Wetness due to the seasonal high water table is a limitation. Excluding livestock and equipment during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for red maple. This soil is poorly suited to logging roads and log landings because of wetness and low soil strength. There is a moderate hazard of erosion on roads and trails because of slope and the erodibility of the soil. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

Wetness due to the seasonal high water table and, in some areas, depth to bedrock are the main limitations affecting dwellings. A site that has better suited soils should be considered. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of prolonged wetness due to the seasonal high water table and, in some areas, the depth to bedrock. Adjacent areas that are better drained and deeper to the bedrock should be considered as alternative sites for conventional septic tank absorption fields. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields in this unit. These regulations should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. In some areas, constructing roads on raised additions of coarse-grained subgrade and base material helps to overcome these limitations. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of drainage.

Capability classification

The capability subclass is 4w.

Pt—Pits, gravel and sand

This unit consists of areas that have been excavated for gravel and sand. The gravel and sand are used as construction material and road fill and are applied to roads in the winter. Individual areas are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 60 acres. Slopes generally range from 0 to 3 percent. Many of the pits, however, have short, steep slopes along the edges and have areas with complex slopes due to disturbance and stockpiling of materials.

Permeability is generally rapid or very rapid. Most areas are excessively drained, somewhat excessively drained, or well drained. There are a few level or depressional areas, however, where the water table is at or near the surface part of the year.

Included with this unit in mapping are small areas of undisturbed soils, including well drained Chenango, Howard, Tunkhannock, and Valois soils. Also included are areas of spoil consisting of sandy or gravelly overburden and a few small ponds.

Pits that are actively being mined have no vegetative cover. Older, abandoned pits generally have not been reclaimed and commonly support some drought-tolerant grasses, shrubs, and trees. Most of these pits could be smoothed, vegetated, and reclaimed to prevent erosion. Depending upon the slope, reclaimed pit areas may have potential for other uses. More recently abandoned pits are commonly reclaimed and revegetated with grasses or trees. Several of these reclaimed areas are used for cultivated crops.

Most areas, either abandoned or reclaimed, provide habitat for wildlife.

The potential for timber is low because of droughtiness. Also, rates of windthrow and seedling mortality are high. In some areas, bigtooth aspen and trembling aspen can be planted. Because of the low productivity, however, this unit is generally not recommended as a site for planting trees.

Even after reclamation, gravel pits have variable suitability for community development and recreation. Onsite investigation is needed to determine the suitability of reclaimed pits for alternative uses.

This unit is not assigned a capability classification.

Pu—Pits, quarry

This unit consists of areas from which sandstone, siltstone, shale, or limestone has been quarried from original bedrock formations. The exposed bedrock in the quarries tends to be limestone or black shale in the northern part of the county, reddish shale and sandstone in the southern and western parts of the county, and gray or brown sandstone, siltstone, and shale in the remainder of the county.

Included with this unit in mapping are Arnot, Oquaga, Mongaup, Vly, and Lordstown soils on adjoining landscapes where sandstone, siltstone, and shale are dominant. Also included in the northern part of the county are Manlius soils where the shale or siltstone is very fractured or thinly-bedded in the upper part and Farmington and Wassaic soils where limestone bedrock is dominant.

Limestone from quarry pits in the northern part of the county was previously used for building stone and road construction material. Limestone bedrock was also quarried and used to make lime and mortar. The rock was crushed and then burnt in the small kilns that once existed in the northern part of the county. The towns of Springfield and Cherry Valley had numerous kilns.

In other parts of the county, the pits are in areas of sandstone and siltstone that were quarried to obtain flagstone. Many of the shale and siltstone pits were used as a source of hard fill material for road construction. The pits vary in shape. They generally range from 6 to 10 acres in size but may be as large as 30 acres. Slopes generally range from 0 to 5 percent. Many of the pits, however, have short steep slopes along the edges. Also complex slopes are adjacent to the pits where rubble or spoil has been dumped.

This unit is generally unsuited to cultivated crops and pasture because of the shallow depth to bedrock and the very low available water capacity in most areas.

Forestland productivity is poor because of the shallow depth to bedrock and, in some areas, discarded quarry rubble.

Community development and other nonfarm uses are severely limited by the shallowness to bedrock, short steep slopes, and the presence of quarry rock debris.

This unit is not assigned a capability classification.

Ra—Raynham silt loam

This very deep, nearly level, somewhat poorly drained soil formed in silty glaciolacustrine deposits on glacial lake plains and terraces. Individual areas are irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 270 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 9 inches—very dark gray silt loam

Subsoil:
9 to 14 inches—grayish brown silt loam that has many yellowish brown mottles
14 to 21 inches—dark grayish brown and olive gray loam that has a few yellowish brown and gray mottles
21 to 24 inches—yellowish brown and grayish brown silt loam that has a few brownish yellow mottles

Substratum:
24 to 34 inches—brown and yellowish brown silt loam that has many gray and a few yellowish brown mottles
34 to 47 inches—brown and yellowish brown silt loam that has many gray and a few yellowish brown mottles; firm
47 to 72 inches—gray silt loam that has common yellowish brown mottles; firm; violently effervescent

Minor Components

Included with this unit in mapping are Scio, Canandaigua, Wakeville, and Wayland soils. The moderately well drained Scio soils are in the slightly higher areas where the water table is deeper. The poorly drained or very poorly drained Canandaigua soils are in the slightly lower areas where the water table is closer to the surface. The few areas of somewhat poorly drained Wakeville soils and poorly drained Wayland soils are on nearby flood plains. Also included are a few areas of Raynham soils that are subject to rare flooding. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderately slow or moderate in the surface layer and subsoil and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsoil and moderately acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are idle or pasture. A few areas are forestland. A few drained areas are used for cultivated crops. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Soil compaction is a concern if the fields are worked when wet. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and the slow permeability in the substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

Re—Red Hook silt loam

This very deep, nearly level, somewhat poorly drained soil is in depressions and in slightly concave areas of glacial outwash terraces, old stream terraces, and moraines. It formed in water-sorted material containing varying amounts of pebbles, cobbles, and channers. Individual areas are broad or oblong. They generally range from 6 to 20 acres in size but may be as large as 135 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 12 inches—very dark brown and very dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
12 to 17 inches—grayish brown silt loam that has many strong brown and common dark yellowish brown mottles; 10 percent rock fragments
17 to 31 inches—very dark grayish brown and dark yellowish brown gravelly sandy loam that has a few yellowish brown mottles; 20 percent rock fragments

Substratum:
31 to 35 inches—grayish brown gravelly loam that has common dark yellowish brown and a few olive brown mottles; 15 percent rock fragments
35 to 40 inches—dark grayish brown gravelly sandy loam; 15 percent rock fragments
40 to 72 inches—very dark grayish brown and olive brown very channery loam stratified with gravelly loamy sand and gravelly silty clay loam; common dark yellowish brown mottles; firm; 40 percent rock fragments; slightly effervescent

Minor Components

Included with this unit in mapping are Atherton, Castile, Chenango, and unnamed soils. The small areas of poorly drained Atherton soils are in the lower depressions and along small drainageways. The moderately well drained Castile soils and well drained Chenango soils are in the higher areas. The unnamed soils are similar to Red Hook soils but have a denser substratum and have fewer rock fragments. Also included are a few small areas of Red Hook soils that are subject to rare flooding. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and moderate or moderately slow in the substratum
Available water capacity: Moderate
Reaction: Strongly acid to slightly acid in the surface layer, moderately acid to neutral in the subsoil, and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are forestland. A few areas are drained and used for cultivated crops. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture
This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Soil compaction is a concern if the fields are worked when wet. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock during wet periods, rotating livestock grazing, and using proper stocking rates help to control soil compaction and help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are Japanese larch, Norway spruce, white spruce, and eastern arborvitae (northern white cedar).

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. Placing drains around footings and foundations and adequately sealing the foundation walls help to overcome the wetness. Better drained adjacent areas should be considered as alternative sites.

Septic tank absorption fields

Wetness due to the seasonal high water table is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of the ground water supply because of this limitation. Areas that are better drained should be considered as alternative sites. In a few areas, installing a drainage system and diversions to intercept runoff upslope of the absorption field can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. In some of the wettest areas of this unit, wetland regulations may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 3w.

RhA—Rhinebeck silty clay loam, 0 to 3 percent slopes

This very deep, nearly level, somewhat poorly drained soil is on old glacial lake plains and terraces. It formed in water-deposited, fine-textured materials. Individual areas typically are broad and oval. They generally range from 6 to 20 acres in size but may be as large as 55 acres.

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown silty clay loam

Subsurface layer:
8 to 14 inches—grayish brown silty clay loam that has light brownish gray faces of peds and many strong brown mottles

Subsoil:
14 to 25 inches—dark brown silty clay loam that has common brown and strong brown mottles; firm
25 to 34 inches—dark grayish brown and dark gray silty clay loam that has common strong brown and many brown mottles

Substratum:
34 to 40 inches—dark gray and gray clay that has many olive brown mottles; firm; slightly effervescent
40 to 72 inches—dark gray clay that has common yellowish brown mottles; firm; strongly effervescent

Minor Components

Included with this unit in mapping are Fonda, Canandaigua, Scio, Raynham, and Herkimer soils. The very poorly drained Fonda soils and poorly drained or very poorly drained Canandaigua soils are in small, lower areas on the lake plain and in drainageways. The moderately well drained Scio soils are in the slightly higher areas where the water table is deeper. The somewhat poorly drained Raynham soils have a higher content of silt to a depth of 40 inches. The well drained Herkimer soils are in areas where gravelly material has washed on to lake plains or low terraces from side streams. The included areas of minor components are as large as 6 acres and make up 20 percent of the unit.

Soil Properties

Permeability: Moderately slow in the surface layer and subsurface layer and slow in the subsoil and substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsurface layer, strongly acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from January through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Soil compaction is a concern if the fields are worked when wet. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. This soil should be tilled at the proper moisture conditions because it is sticky when wet and subject to compaction and formation of a cloddy, crusty surface. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and the slow permeability in the subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness due to the seasonal high water table, potential for frost action, and low strength are the main limitations on sites for local roads and streets. In some areas, adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system can help to overcome these limitations.

Capability classification

The capability subclass is 3w.

RhB—Rhinebeck silty clay loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is on undulating glacial lake plains and terraces. It formed in water-deposited, fine-textured materials. Individual areas typically are long and irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:
0 to 8 inches—very dark grayish brown silty clay loam

Subsurface layer:
8 to 14 inches—grayish brown silty clay loam that has light brownish gray faces of peds and many strong brown mottles

Subsoil:
14 to 25 inches—dark brown silty clay loam that has common brown and strong brown mottles; firm
25 to 34 inches—dark grayish brown and dark gray silty clay loam that has common strong brown and many brown mottles

Substratum:
34 to 40 inches—dark gray and gray clay that has many olive brown mottles; firm; slightly effervescent
40 to 72 inches—dark gray clay that has common yellowish brown mottles; firm; strongly effervescent

Minor Components

Included with this unit in mapping are Fonda, Canandaigua, Scio, Raynham, and Herkimer soils. The very poorly drained Fonda soils and poorly drained or very poorly drained Canandaigua soils are in the lower areas on the lake plain and in drainageways. The moderately well drained Scio soils are in the slightly higher areas where the water table is deeper. The somewhat poorly drained Raynham soils have a higher silt content to a depth of 40 inches. The well drained Herkimer soils are in areas where gravelly material has washed on to lake plains or low terraces from side streams. Also included are steeper soils in areas where the lake plain has been dissected by streams. The included areas of minor components are as large as 6 acres and make up 20 percent of the unit.

Soil Properties

Permeability: Moderately slow in the surface layer and subsurface layer and slow in the subsoil and substratum
Available water capacity: High
Reaction: Strongly acid to neutral in the surface layer and subsurface layer, strongly acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from January through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Soil compaction is a concern if the fields are worked when wet. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. This soil should be tilled at the proper moisture conditions because it is sticky when wet and subject to compaction and formation of a cloddy, crusty surface. In the steeper areas that have longer slope lengths, erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing the foundation walls also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness and the slow permeability in the subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness due to the seasonal high water table, potential for frost action, and low strength are the main limitations on sites for local roads and streets. In some areas, adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system can help to overcome these limitations.

Capability classification

The capability subclass is 3w.

RIA—Riverhead sandy loam, loamy substratum, 0 to 3 percent slopes

This very deep, nearly level, well drained soil is on the flatter parts of broad glacial outwash plains, terraces, old lake beaches, and deltas. It formed in sandy outwash and inwash deposits. Individual areas are broad and irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 490 acres.

Typical Profile

Surface layer:
0 to 13 inches—dark brown sandy loam; 3 percent rock fragments

Subsoil:
13 to 18 inches—dark yellowish brown sandy loam
18 to 31 inches—brown coarse sandy loam
31 to 39 inches—brown sandy loam; 3 percent rock fragments

Substratum:
39 to 60 inches—dark brown and brown loamy fine sand; 5 percent rock fragments
60 to 72 inches—dark brown sandy loam; 5 percent rock fragments

Minor Components

Included with this unit in mapping are Unadilla, Scio, Chenango, Howard, and Atherton soils. The few areas of Unadilla soils and moderately well drained Scio soils have less sand than the Riverhead soil and have more silt in the upper 3 feet. The well drained Chenango and Howard soils have gravelly subsoil and substratum layers. The poorly drained Atherton soils are in depressional areas. Also included are some areas where the soil contains free carbonates within a depth of 72 inches. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to moderately acid in the lower part of the subsoil, and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops. Some areas are hayland or pasture. A few areas are forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. During extended dry periods, droughtiness is a limitation affecting shallow-rooted crops in some areas. Wind erosion and water erosion can result in localized blowing and surface crusting. Returning crop residue to the soil and regularly adding other organic material help to maintain good tilth, conserve moisture, and minimize erosion. Irrigation systems are used for vegetable crops in some areas.

This unit is also well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is well suited to logging roads and log landings. This unit has a slight hazard of erosion on roads and trails. Trees to manage are red pine, black walnut, and black locust.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Poor filtering is the main limitation on sites for conventional septic tank absorption fields. Contamination of the ground water and nearby water bodies is possible in some areas because of the rapid or very rapid permeability in the substratum. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability classification is 1.

RIB—Riverhead sandy loam, loamy substratum, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on undulating sides of outwash plains and terraces, on old lake beaches, and on deltas. It formed in sandy outwash and inwash deposits. Individual areas are oval. They generally range from 6 to 20 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:
0 to 13 inches—dark brown sandy loam; 3 percent rock fragments

Subsoil:
13 to 18 inches—dark yellowish brown sandy loam
18 to 31 inches—brown coarse sandy loam
31 to 39 inches—brown sandy loam; 3 percent rock fragments

Substratum:
39 to 60 inches—dark brown and brown loamy fine sand; 5 percent rock fragments
60 to 72 inches—dark brown sandy loam; 5 percent rock fragments

Minor Components

Included with this unit in mapping are Unadilla, Scio, Chenango, Howard, and Atherton soils. The few areas of Unadilla soils and moderately well drained Scio soils have less sand than the Riverhead soil and have more silt in the upper 3 feet. The well drained Chenango and Howard soils have gravelly subsoil and substratum layers. The poorly drained Atherton soils are in depressional areas. Also included are some areas where the soil contains free carbonates within a depth of 72 inches and areas of steeper soils near the margins of the mapped areas. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to moderately acid in the lower part of the subsoil, and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops. Some areas are hayland or pasture. A few areas are forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. During extended dry periods, droughtiness is a limitation affecting shallow-rooted crops in some areas. Wind erosion and water erosion can result in localized blowing and surface crusting. Returning crop residue to the soil and regularly adding other organic material help to maintain good tilth, conserve moisture, and minimize erosion. Irrigation systems are used for vegetable crops in some areas.

This unit is also well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings because of the slope. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are red pine, black walnut, and black locust.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Poor filtering is the main limitation on sites for conventional septic tank absorption fields. Contamination of the ground water and nearby water bodies is possible in some areas because of the rapid or very rapid permeability in the substratum. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

Sa—Saprists and Aquents, inundated

This unit consists of very deep, very poorly drained organic and mineral soils that formed in impounded areas (commonly impounded by beaver activity) along some small streams, on lacustrine plains, on outwash plains, in dead-ice sinks, and on till uplands. The water table is at or above the surface most of the year. Individual areas are round or oblong. They generally range from 6 to 20 acres in size but may be as large as 75 acres. Slopes are 0 to 1 percent. This unit consists of about 45 percent Saprists, 40 percent Aquents, and 15 percent other soils. Soil characteristics, such as thickness of organic materials over mineral soil material and texture of the mineral layers, are variable in the Saprists. Texture and reaction are variable in the Aquents. Individual areas consist Saprists, Aquents, or both.

Typically, Saprists have 16 to 72 inches of black or very dark gray muck (sapric material). Some pedons have a surface layer that is up to 6 inches thick and consists of peat (fibric material) or mucky peat (hemic material). Below the organic layers is a mixture of organic and mineral sediments that consist of gray or dark gray silty clay loam, varved layers of silt and silty clay, or loamy sand. The content of rock fragments in the mineral substratum is as high as 45 percent.

Typically, the surface layer of the Aquents is about 4 inches thick and consists of fibrous roots and mixed black organic matter. The surface layer is underlain by very dark brown silt loam to a depth of about 10 inches. Some pedons have a thin subsurface layer of grayish brown or olive gray sandy loam through silt loam. The substratum consists of stratified layers of gray, dark gray, dark bluish gray, or olive gray loamy sand through silty clay. The content of rock fragments ranges from 0 to 50 percent, by volume.

Included with this unit in mapping are very poorly drained Palms, Carlisle, Alden, and Canandaigua soils, which are subject to ponding. Also included are small areas of frequently flooded Wayland soils. The included areas are as large as 3 acres.

Cattails, rushes, loosestrife, and phragmites are commonly the dominant vegetation. Trees are typically absent or dead. Prolonged periods of ponding or wetness and variability of the soil properties preclude the use of this soil for most agricultural and developmental purposes. Some areas may have potential as pond sites. Generally, areas of this unit are maintained as wildlife habitat for muskrat, beaver, and waterfowl (fig. 18). Wetland regulations may prohibit or restrict alteration of the drainage as well as any other type of alteration, filling, or disturbance. These regulations should be investigated before commencing any type of alteration on this unit.

Capability classification

The capability subclass is 8w.

Figure 18.—An area of Saprists and Aquents, inundated, which provides excellent wildlife habitat for beavers, muskrats, and ducks. Most of the trees have died as a result of prolonged inundation of water, probably due to beaver activity and rising water levels.

SbB—Scio fine sandy loam, 1 to 6 percent slopes

This very deep, nearly level and gently sloping, moderately well drained soil is on broad outwash plains, on terraces, and in slightly concave drainageways that dissect outwash terraces, predominantly in the northwestern part of the county. It formed in water-sorted silts and very fine sands. Some areas are underlain by sandy and gravelly materials. Individual areas typically are oval or oblong. They generally range from 6 to 25 acres in size but may be as large as 75 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown fine sandy loam

Subsoil:
9 to 18 inches—yellowish brown silt loam
18 to 27 inches—light olive brown very fine sandy loam that has common light brownish gray and yellowish brown mottles

Substratum:
27 to 49 inches—brown very fine sandy loam that has many olive and strong brown mottles
49 to 72 inches—variegated light olive brown and dark brown very fine sandy loam that has many olive gray and common strong brown mottles

Minor Components

Included with this unit in mapping are Riverhead, Raynham, and Atherton soils. The few areas of well drained Riverhead soils are on the same landforms as the Scio soil but in the slightly higher areas where the water table is deeper. The several small areas of somewhat poorly drained Raynham soils and poorly drained Atherton soils are in the slightly lower landform positions, where the water table is closer to the surface. Also included are a few areas of a Scio fine sandy loam that has a slope of more than 6 percent and a few small areas of Scio soils that have a surface layer of silt loam. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Erosion is a hazard in some of the steeper areas that have long slope lengths. A conservation system that leaves residue on the surface after planting helps to control erosion. In a few areas, wetness due to the seasonal high water table is also a limitation. A system of surface and subsurface drains can help to control the wetness. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, eastern white pine, and European larch.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. This map unit is better suited to dwellings without basements then to dwellings with basements. Placing tile drains around the footings of dwellings without basements reduces the wetness. The wetness can also be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas.

Septic tank absorption fields

Wetness due to the seasonal high water table is the main limitation on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage, and, in some areas, wetness are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and, in some areas, installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

ScA—Scio silt loam, 0 to 2 percent slopes

This very deep, nearly level, moderately well drained soil is on stream terraces and old alluvial fans. It formed in water-sorted silts and very fine sands. Individual areas typically are oval or oblong. They generally range from 6 to 25 acres in size but may be as large as 65 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam

Subsoil:
9 to 18 inches—yellowish brown silt loam
18 to 27 inches—light olive brown very fine sandy loam that has common light brownish gray and yellowish brown mottles

Substratum:
27 to 49 inches—brown very fine sandy loam that has many olive and strong brown mottles
49 to 72 inches—variegated light olive brown and dark brown very fine sandy loam that has many olive gray and common strong brown mottles

Minor Components

Included with this unit in mapping are Unadilla, Chenango, Otego, and Hamplain soils. The small areas of well drained Unadilla soils are on the slightly higher parts of the landform where the water table is deeper. The well drained Chenango soils contain more gravel and less silt than the Scio soil and are in areas where the water table is deeper. The few areas of Otego soils and well drained Hamplain soils are on nearby flood plains. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: Rare, brief, March to May
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Norway spruce, eastern white pine, and European larch.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. Some areas are better suited to dwellings without basements then to dwellings with basements. Placing tile drains around the footings of dwellings reduces the wetness. The wetness can also be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas.

In some areas, this unit is poorly suited to dwellings because of the potential for flooding. Adjacent areas that are not subject to flooding are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

Wetness due to the seasonal high water table is the main limitation on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage and, in some areas, wetness are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and, in some areas, installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2w.

ScB—Scio silt loam, 2 to 6 percent slopes

This very deep, gently sloping, moderately well drained soil is on stream terraces and old alluvial fans. It formed in water-sorted silts and very fine sands. Individual areas typically are oval or oblong. They generally range from 6 to 25 acres in size but may be as large as 65 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam

Subsoil:
9 to 18 inches—yellowish brown silt loam
18 to 27 inches—light olive brown very fine sandy loam that has common light brownish gray and yellowish brown mottles

Substratum:
27 to 49 inches—brown very fine sandy loam that has many olive and strong brown mottles
49 to 72 inches—variegated light olive brown and dark brown very fine sandy loam that has many olive gray and common strong brown mottles

Minor Components

Included with this unit in mapping are Unadilla, Chenango, Otego, and Hamplain soils. The small areas of well drained Unadilla soils are on the slightly higher parts of the landform where the water table is deeper. The well drained Chenango soils contain more gravel and less silt than the Scio soil and are in areas where the water table is deeper. The few areas of Otego soils and well drained Hamplain soils are on nearby flood plains. Also included are a few areas of soils that are similar to the Scio soil but are more sloping. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from March through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is generally well suited to cultivated crops. Erosion is a hazard, however, in the steeper areas and in areas where the slope is long. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, eastern white pine, and European larch.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. In some areas, this map unit is better suited to dwellings without basements then to dwellings with basements. Placing tile drains around the footings of dwellings reduces the wetness. The wetness can also be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas.

Septic tank absorption fields

Wetness due to the seasonal high water table is the main limitation on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage, and, in some areas, wetness are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and, in some areas, installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2e.

ThB—Torull-Gretor complex, 1 to 6 percent slopes

This unit consists of nearly level and gently sloping Torull and Gretor soils. The Torull soil is poorly drained and shallow. The Gretor soil is somewhat poorly drained and moderately deep. This unit is principally on sandstone, siltstone, and shale ridgetops and benches in the eastern part of the county at elevations over 1,750 feet. These soils are formed in glacial till underlain by bedrock. Some areas of this unit have a stairstep appearance because of bedrock ledges. Individual areas of this unit either are broad or are long and narrow. They generally range from 6 to 25 acres in size but may be as large as 50 acres. This unit is about 50 percent Torull soil, 30 percent Gretor soil, and 20 percent other soils. The Torull and Gretor soils are in such an intricate pattern that it was not practical to separate them in mapping.

Typical Profile

Torull

Surface layer:
0 to 5 inches—very dark grayish brown silt loam; 1 percent rock fragments
5 to 7 inches—very dark gray silt loam; 5 percent rock fragments

Subsoil:
7 to 15 inches—grayish brown silt loam that has common dark yellowish brown and a few gray mottles; 10 percent rock fragments

Bedrock:
15 inches—grayish brown, massive sandstone

Gretor

Surface layer:
0 to 9 inches—very dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
9 to 17 inches—dark grayish brown channery silt loam that has common light yellowish brown and a few yellowish brown mottles; 20 percent rock fragments
17 to 22 inches—grayish brown channery silt loam that has many dark yellowish brown and common dark brown mottles; 15 percent rock fragments

Substratum:
22 to 29 inches—brown channery loam that has many dark yellowish brown and common gray mottles; firm; 20 percent rock fragments

Bedrock:
29 inches—dark gray, massive, fine-grained sandstone; fractured in the upper 6 inches

Minor Components

Included with this unit in mapping are unnamed, Hawksnest, Mongaup, and Ontusia soils. The small areas of unnamed soils are moderately deep and poorly drained. The shallow, somewhat excessively drained Hawksnest soils and moderately deep, well drained Mongaup soils are on the same landform as the Torull and Gretor soils. The glacial till is deeper over bedrock in the pockets of deep and very deep, somewhat poorly drained Ontusia soils than in the Torull and Gretor soils. Also included are a few areas that have a very stony or flaggy surface and small, narrow areas of rock outcrops at the edge of the map unit. The included areas of minor components are as large as 6 acres.

Soil Properties

Torull
Permeability: Moderate in the surface layers and slow or moderately slow in the subsoil and substratum
Available water capacity: Very low
Reaction: Very strongly acid to moderately acid throughout the soil
Seasonal high water table: At the surface to a depth of 1.0 foot from November through June
Flooding: None
Depth to bedrock: 10 to 20 inches
Surface runoff: Very slow or slow

Gretor
Permeability: Moderate in the surface layer and subsoil and slow or very slow in the substratum

Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 0.5 to 1.0 foot from December through June
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are idle. Some areas are forestland or hayland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the depth to bedrock, seasonal wetness, and the very low available water capacity of the Torull soil, especially during droughty periods.

This unit is poorly suited to pasture. The shallow soil depth of the Torull soil commonly results in droughtiness during the summer. Also, wetness in spring and late fall is commonly a limitation in areas of both the Torull and Gretor soils. Excluding livestock during wet periods and droughty periods benefits the pasture condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for red maple. This unit is poorly suited to logging roads and log landings because of seasonal wetness and moderate soil strength. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage in areas dominated by the Gretor soil are eastern white pine, white spruce, and Norway spruce.

Dwellings

Wetness due to the seasonal high water table and the depth to bedrock are the main limitations affecting dwellings. Many areas of this unit have bedrock that is massive and is not easily ripped. If a better site is unavailable, development should be in the better drained, deeper areas. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. Wetland regulations should be investigated before dwellings are constructed in the wettest areas.

Septic tank absorption fields

Wetness and the depth to bedrock are serious limitations on sites for conventional septic tank absorption fields. Also, the slow or very slow permeability in the substratum of the Gretor soil is a limitation. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness, the depth to bedrock, and potential for frost action are the main limitations on sites for local roads and streets. Planning roads to avoid poorly drained areas and areas that are shallow to bedrock reduces construction costs and minimizes potential problems. In some areas, constructing roads on raised additions of coarse-grained subgrade and base material helps to overcome the limitations. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alterations of drainage in the wettest areas of this unit. These regulations should be investigated before roads and streets are constructed.

Capability classification

The capability subclass is 4w.

TkB—Towerville silt loam, 3 to 8 percent slopes

This moderately deep, gently sloping, moderately well drained soil is on glaciated, dissected uplands. It formed in glacial till derived from shale and siltstone. It is principally in the northern part of the county. Individual areas typically are oblong. They generally range from 6 to 25 acres in size but may be as large as 60 acres.

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown silt loam; 5 percent rock fragments

Subsoil:
6 to 21 inches—dark brown silt loam that has a few dark yellowish brown mottles; 10 percent rock fragments
21 to 28 inches—dark brown channery silt loam that has a few strong brown and common dark grayish brown and dark yellowish brown mottles; 15 percent rock fragments

Substratum:
28 to 35 inches—gray and dark grayish brown very channery silt loam that has common dark yellowish brown and dark grayish brown mottles; 40 percent rock fragments

Bedrock:
35 inches—very dark grayish brown and black, horizontally bedded, fractured shale

Minor Components

Included with this unit in mapping are Manlius, Patchin, Conesus, and Lansing soils. The small areas of well drained Manlius soils are on the slightly higher landforms and on ridgetops. The poorly drained Patchin soils are on the flatter ridgetops and in depressional areas of the same landscapes as the Towerville soil. The very deep Conesus soils are on the slightly lower landforms and on some toeslopes. The glacial till is deeper over bedrock in the very deep, well drained Lansing soils than in the Towerville soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or moderately slow in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from December through May
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are used for cultivated crops or forestland. This unit meets the requirements for prime farmland.

Crops and pasture
This unit is well suited to most cultivated crops. In some areas, wetness can delay planting or harvesting during extended wet periods. In the areas where the soil is deepest and wettest, a system of surface and subsurface drains can help to control the wetness. Erosion is a hazard in the steeper areas that have a long

slope. A conservation tillage system that leaves crop residue on the surface after planting and either contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Excluding livestock and equipment during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Seasonal wetness and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage include European larch, eastern white pine, and Norway spruce.

Dwellings

Wetness due to the seasonal high water table and the depth to bedrock are the main limitations affecting dwellings with basements. Development should be in the better drained, deeper areas. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. In some areas, the wetness can be reduced by installing interceptor drains. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

Wetness due to the seasonal high water table, the depth to bedrock, and the slow or moderately slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are deeper to the bedrock and better drained should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. In some areas, the depth to bedrock is also a limitation. Planning the grades and locations of roads to minimize the removal of bedrock and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations. In some areas, a drainage system may be needed to reduce the wetness.

Capability classification

The capability subclass is 2e.

TkC—Towerville silt loam, 8 to 15 percent slopes

This moderately deep, strongly sloping, moderately well drained soil is on glaciated, dissected uplands. It formed in glacial till derived from shale and siltstone. It is principally in the northern part of the county. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 15 acres in size but may be as large as 45 acres.

Typical Profile

Surface layer:
0 to 6 inches—very dark grayish brown silt loam; 5 percent rock fragments

Subsoil:

6 to 21 inches—dark brown silt loam that has a few dark yellowish brown mottles; 10 percent rock fragments

21 to 28 inches—dark brown channery silt loam that has a few strong brown mottles and common dark grayish brown and dark yellowish brown mottles; 15 percent rock fragments

Substratum:

28 to 35 inches—gray and dark grayish brown very channery silt loam that has common dark yellowish brown and dark grayish brown mottles; 40 percent rock fragments

Bedrock:

35 inches—very dark grayish brown and black, horizontally bedded, fractured shale

Minor Components

Included with this unit in mapping are Manlius, Patchin, Conesus, and Lansing soils. The small areas of well drained Manlius soils are on the slightly higher landforms and on ridgetops. The poorly drained Patchin soils are on the flatter ridgetops and in depressional areas of the same landscapes as the Towerville soil. The very deep Conesus soils are on the slightly lower landforms and on some toeslopes. The glacial till is deeper over bedrock in the very deep, well drained Lansing soils than in the Towerville soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or moderately slow in the substratum

Available water capacity: Moderate

Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to slightly acid in the substratum

Seasonal high water table: At a depth of 1.5 to 2.0 feet from December through May

Flooding: None

Depth to bedrock: 20 to 40 inches

Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture or hayland. Some areas are used for cultivated crops or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. In some areas, wetness can delay planting or harvesting during extended wet periods. In the areas where the soil is deepest and wettest, a system of surface and subsurface drains can help to control the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Excluding livestock and equipment during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage include European larch, eastern white pine, and Norway spruce.

Dwellings

Wetness due to the seasonal high water table, the depth to bedrock, and the slope are the main limitations affecting dwellings. Development should be in the better drained, deeper areas. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. In some areas, the installation of interceptor drains can reduce the wetness. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the slope of the land helps to overcome the slope. Erosion is a hazard during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

Wetness due to the seasonal high water table, the depth to bedrock, and the slow or moderately slow permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are deeper to the bedrock and better drained should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. In some areas, the depth to bedrock is also a limitation. Planning the grades and locations of roads to minimize removal of the bedrock and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations. Some areas may also require the installation of a drainage system to reduce the wetness.

Capability classification

The capability subclass is 3e.

TkD—Towerville silt loam, 15 to 25 percent slopes

This moderately deep, moderately steep, moderately well drained soil is on glaciated, dissected uplands. It formed in glacial till derived from shale and siltstone. It is principally in the northern part of the county. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 95 acres.

Typical Profile

Surface layer:

0 to 6 inches—very dark grayish brown silt loam; 5 percent rock fragments

Subsoil:

6 to 21 inches—dark brown silt loam that has a few dark yellowish brown mottles; 10 percent rock fragments

21 to 28 inches—dark brown channery silt loam that has a few strong brown mottles and common dark grayish brown and dark yellowish brown mottles; 15 percent rock fragments

Substratum:
28 to 35 inches—gray and dark grayish brown very channery silt loam that has common dark yellowish brown and dark grayish brown mottles; 40 percent rock fragments

Bedrock:
35 inches—very dark grayish brown and black, horizontally bedded, fractured shale

Minor Components

Included with this unit in mapping are Manlius, Patchin, Conesus, and Lansing soils. The small areas of well drained Manlius soils are on the slightly higher landforms and on ridgetops. The poorly drained Patchin soils are on the flatter ridgetops and in depressional areas of the same landscapes as the Towerville soil. The very deep Conesus soils are on the slightly lower landforms and on some toeslopes. The glacial till is deeper over bedrock in the very deep, well drained Lansing soils than in the Towerville soil. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and slow or moderately slow in the substratum
Available water capacity: Moderate
Reaction: Very strongly acid to moderately acid in the surface layer and subsoil and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.5 to 2.0 feet from December through May
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture or forestland. Some areas are hayland or are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. In some areas, wetness can delay planting or harvesting during extended wet periods. In the areas where the soil is deepest and wettest, a system of surface and subsurface drains can help to control the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is moderately suited to pasture. Erosion is a hazard, and the seasonal high water table is a limitation. Minimizing tillage during pasture renovation helps to control erosion. Excluding livestock and equipment during wet periods, using proper stocking rates, and rotating livestock grazing help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope, moderate soil strength, and wetness. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage include European larch, eastern white pine, and Norway spruce.

Dwellings

The slope, wetness due to the seasonal high water table, and the depth to bedrock are the main limitations affecting dwellings. Adjacent areas that are less sloping, deeper to bedrock, and better drained should be considered because they are better suited to dwellings. Development should be in the better drained, deeper areas. Dwellings without basements require less extensive alterations and can be built above the bedrock and landscaped with additional fill as needed. In some areas, the installation of interceptor drains reduces the wetness. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the depth to bedrock, the slow or moderately slow permeability in the substratum, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping, deeper to bedrock, more permeable, and better drained are better suited and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope, the depth to bedrock, and wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land can help to overcome the slope limitation. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

TIB—Trestle-Deposit complex, 1 to 4 percent slopes

This unit consists of very deep, nearly level and gently sloping Trestle and Deposit soils. The Trestle soil is well drained. The Deposit soil is moderately well drained. This unit is on the higher parts of flood plains and on low terraces along high-gradient streams. Individual areas of this unit either are broad or are long and narrow. They generally range from 6 to 30 acres in size but may be as large as 125 acres. The unit is about 50 percent Trestle soil, 35 percent Deposit soil, and 15 percent other soils. In most areas, the Trestle and Deposit soils are in such an intricate pattern that it was not practical to separate them in mapping. A few areas, however, are dominated by one soil.

Typical Profile

Trestle

Surface layer:
0 to 9 inches—dark brown gravelly silt loam; 20 percent rock fragments

Subsoil:
9 to 16 inches—dark brown very gravelly loam; 40 percent rock fragments

Substratum:

16 to 38 inches—dark brown very gravelly sandy loam that has thin lenses of gravelly sand; 60 percent rock fragments

38 to 50 inches—light brownish gray very channery loam that has many olive yellow mottles; 55 percent rock fragments

50 to 72 inches—light olive brown very channery sandy loam that has lenses of clay loam; 60 percent rock fragments

Deposit

Surface layer:

0 to 9 inches—dark brown gravelly loam; 20 percent rock fragments

Subsoil:

9 to 19 inches—olive brown very gravelly sandy loam that has lenses of dark grayish brown and a few strong brown mottles; 45 percent rock fragments

Substratum:

19 to 42 inches—very dark grayish brown stratified very gravelly loam that has thin bands of pebbles and flagstones and common strong brown and light brownish gray mottles; 55 percent rock fragments

42 to 72 inches—dark brown stratified extremely gravelly sandy loam; 65 percent rock fragments

Minor Components

Included with this unit in mapping are Otego, Chenango, Castile, Scio, and unnamed soils and Fluvaquents-Udifluvents. The Otego soils have fewer rock fragments and more silt than the Trestle and Deposit soils. The Chenango and Castile soils are not subject to flooding and generally have more gravel throughout the profile. The Scio soils are in the slightly higher areas. The Fluvaquents-Udifluvents are in lower-lying, more frequently flooded areas. The small area of an unnamed soil, which is in the town of Springfield, is similar to Trestle soil but has rock fragments that are mainly limestone and has a higher reaction than is than typical for Trestle soils. Also included in the southwestern part of the county are Trestle and Deposit soils that have a reddish profile. The included areas of minor components are as large as 6 acres.

Soil Properties

Trestle

Permeability: Moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum

Available water capacity: Moderate

Reaction: Strongly acid or moderately acid in the surface layer and moderately acid or slightly acid in the subsoil and substratum

Seasonal high water table: At a depth of 3.0 to 6.0 feet from November through May

Flooding: Occasional, brief, November through May

Depth to bedrock: More than 60 inches

Surface runoff: Slow

Deposit

Permeability: Moderate or moderately rapid in the surface layer, moderately rapid in the subsoil, and rapid in the substratum

Available water capacity: Moderate

Reaction: Strongly acid to neutral (where limed) in the surface layer and subsoil and strongly acid to slightly acid in the substratum

Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May

Flooding: Occasional, brief, November through May
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Although the unit is susceptible to flooding, the flooding does not normally occur during the growing season. In the low-lying areas, however, flooding can delay planting and cause minor crop damage in some years. The delays and damage typically occur along streams during extended wet periods or adverse weather conditions. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is well suited to pasture. Excluding livestock from the pasture during flooding or wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. The application of lime, fertilizer, or herbicide during periods that are subject to flooding can result in lower water quality.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the flooding and moderate soil strength. In areas of the Deposit soil, seasonal wetness can also be a limitation. The hazard of erosion on roads and trails is moderate to slight. Trees to manage are black walnut, black locust, Norway spruce, and eastern white pine.

Dwellings

Flooding and, in some areas, wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are not subject to flooding are better suited to dwellings. State or local regulations may prohibit or restrict the construction of dwellings.

Septic tank absorption fields

Flooding, poor filtering capacity, and wetness are severe limitations on sites for conventional septic tank absorption fields. The rapid rate of water movement in the substratum can result in contamination of the ground water and nearby water bodies in some areas. Poor filtering capacity can result in contamination of ground water and streams during flood periods. Nearby areas that are not subject to flooding are better suited. State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding and potential for frost action are the main limitations on sites for local roads and streets. Constructing roads on raised additions of coarse-grained subgrade and base material can help to overcome these limitations in some areas. However, it would be better to construct local roads and streets on nearby soils that are not subject to flooding because strong floodwater currents could wash out or otherwise damage roadbeds.

Capability classification

The capability subclass is 2w.

TpB—Tunkhannock gravelly loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is on glacial outwash plains and kames. It formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 220 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly loam; 20 percent rock fragments

Subsoil:
7 to 17 inches—dark brown very gravelly loam; 35 percent rock fragments
17 to 33 inches—brown very gravelly loam; 40 percent rock fragments

Substratum:
33 to 72 inches—dark brown extremely gravelly sandy loam that has thin strata of silt; 65 percent rock fragments

Minor Components

Included with this soil in mapping are Castile and Valois soils. The few areas of moderately well drained Castile soils are in the slightly lower areas where the water table is closer to the surface. The well drained Valois soils are in the slightly higher positions where the deposits are not water-sorted or the upper 3 feet of the soil contains less gravel than the Tunkhannock soil. Also included are some areas that are subject to rare flooding and a few areas where the upper part of the solum has a coarser texture than the Tunkhannock soil. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this soil are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This soil is well suited to cultivated crops. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

The rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

Potential for frost action is a limitation for local roads and streets in some areas. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

TpC—Tunkhannock gravelly loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on glacial outwash plains and kames. It formed in water-sorted, gravelly, outwash and inwash deposits. Individual areas are irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark brown gravelly loam; 20 percent rock fragments

Subsoil:
7 to 17 inches—dark brown very gravelly loam; 35 percent rock fragments
17 to 33 inches—brown very gravelly loam; 40 percent rock fragments

Substratum:
33 to 72 inches—dark brown extremely gravelly sandy loam that has thin strata of silts; 65 percent rock fragments

Minor Components

Included with this soil in mapping are Castile and Valois soils. The few areas of moderately well drained Castile soils are in the slightly lower areas where the water table is closer to the surface. The well drained Valois soils are in the slightly higher positions where the deposits are not water-sorted or the upper 3 feet of the soil contains less gravel than the Tunkhannock soil. Also included are a few areas where the upper part of the solum has a coarser texture than the Tunkhannock soil. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderately rapid in the surface layer and subsoil and moderately rapid or rapid in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid throughout

Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this soil are used for cultivated crops or hay. A few areas are pasture or forestland.

Crops and pasture

This soil is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Droughtiness may be a problem during extended dry periods in some areas. The high content of gravel in some areas may interfere with certain tillage operations. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings because of the slope. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The rapid permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and nearby water bodies. In some areas, adjacent soils that have better filtering capabilities should be considered as alternative sites. In a few areas, specially designed systems may be needed to prevent ground water contamination.

Local roads and streets

The slope and potential for frost action in some areas are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations.

Capability classification

The capability subclass is 3e.

Ud—Udorthents, refuse substratum

This unit consists of very deep, nearly level to moderately steep, moderately well drained to somewhat excessively drained soil material in areas that have been used as landfills. Some of these areas are still used as landfills. In many areas, the landfills have been closed and the area has been smoothed or leveled. In some areas, a cap layer of fine textured soil fill material was added above the landfill to reduce the amount of water infiltrating into the substratum. The soil material in this unit is commonly derived from glacial till, glacial outwash, or old alluvium. Typically, the original surface layer and subsoil have been removed. Some of the largest areas of this map unit are near the city of Oneonta. Areas of this unit are typically irregular in shape. They generally range from 6 to 20 acres in size but may be as large as 35 acres. Slopes range from 0 to 15 percent but generally are less than 10 percent in areas that have been smoothed.

Typically, the surface layer is grayish brown gravelly loam about 10 inches thick. The layers below the surface to a depth of 72 inches or more are highly variable, ranging from gray clay and silty clay to yellowish brown sandy loam. The content of rock fragments, mainly pebbles and channers, ranges from 0 to 60 percent, by volume. The substratum consists of stratified or alternating layers of soil material about 6 to 12 inches in thickness and refuse materials about 6 to 48 inches in thickness.

Included with this unit in mapping are areas that have been filled with such materials as garbage; tires; coal ash and cinders; construction and demolition materials, including wood, bricks, blocks, and concrete chunks; and tree stumps or branches. Also included are some areas that have sand in the lower part of the substratum below the refuse material and a few small areas of Udorthents, smoothed, which are similar to the Udorthents, refuse substratum, but do not have refuse in the substratum. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

A few areas of this unit are less than 6 acres in size and are shown as spot symbols on the soil maps.

This composition of this unit is highly variable. The soil properties, such as permeability, available water capacity, and reaction, vary from area to area. Adjacent map units commonly provide clues as to the soil properties of the unit or at least to some of the properties the soil had before being disturbed.

Use and Management

Most areas of this map unit are idle. A few areas are still used as landfills. Many of the idle areas have been reclaimed and have a vegetative cover of grass and weeds.

The suitability of this unit for rural and agricultural uses varies greatly. Onsite evaluation is needed. Some reclaimed areas may have potential for use as parks or parking lots. A few areas are currently used for these purposes. Suitability for most urban uses, however, is poor because of the refuse substratum. Also, ground water pollution is already a problem in some areas because of the composition of the refuse and the permeability of the substratum. Construction and further disturbance could accelerate the problems with ground water quality.

A capability subclass is not assigned.

Ue—Udorthents, smoothed

This unit consists of moderately deep to very deep, nearly level to steep, moderately well drained to somewhat excessively drained soil material in areas that have been altered for construction operations or that are the result of cuts and fills. These areas have been smoothed or leveled in an attempt to restore the area to a more natural appearance. The soil material in this unit is commonly derived from glacial till and glacial outwash. Typically, the original surface layer and subsoil have been removed. In a few areas, the soil material is derived from bedrock or old alluvium. One of the largest areas of this unit is in the southern part of the county along Interstate 88. This large area is the result of road construction. Much of the rest of the acreage of this unit is the result of reclaimed gravel pits and borrow pits. In a few small areas, the unit is the result of reclaiming small quarry areas. Areas of this unit are typically long and narrow, rectangular, or irregular in shape. They generally range from 6 to 50 acres in size but may be as large as 205 acres. Slopes range from 0 to 15 percent.

Typically, the surface layer is dark brown gravelly sandy loam about 4 inches thick. The layers below the surface to a depth of 72 inches or more are variable, ranging from dark yellowish brown or yellowish brown to light olive brown. The fine-earth fraction is commonly silt loam, loam, or sandy loam. Some pedons have stratified sand and gravel in the substratum. The content of rock fragments, mainly pebbles and channers, ranges from 0 to 60 percent, by volume, throughout the soil. In and around the city of Oneonta, areas of this unit have a substratum that is largely coal ash and cinders.

Included with this unit in mapping are undisturbed areas of Chenango, Valois, and Hamplain soils that have not been smoothed or covered with a surface layer of loamy fill. Also included are a few very small spots that have a refuse substratum containing such fill materials as garbage; tires; coal ash and cinders; construction and demolition materials, including wood, bricks, blocks, and concrete chunks; and tree stumps or branches. Some areas of this unit along the Susquehanna River are subject to flooding. Also included are a few areas that have a wet substratum, especially where old stream channels and wet holes were filled in, and some areas that have a slope that ranges to more than 35 percent. The included areas of minor components are as large as 6 acres and make up about 30 percent of the unit.

This composition of this unit is highly variable. The soil properties, such as permeability, available water capacity, and reaction, vary from area to area. Adjacent map units commonly provide clues to the soil properties of the unit or at least to some of the properties the soil had before being disturbed. Many areas of this unit originally had a gravelly or cobbly substratum of sandy material that contained thin lenses or layers of silts in some places. These areas have rapid permeability and low available water capacity.

Use and Management

Most areas of this map unit are idle. A few areas are pasture and hayland.

The suitability of this unit for rural and agricultural uses ranges from poorly suited to well suited. Onsite evaluation is needed. Many areas have potential as pasture and hayland if large amounts of organic matter, fertilizer, and, in some areas, lime are applied before seeding. Droughtiness can be a problem during extended dry periods in many areas if this unit is used for agricultural purposes.

A capability subclass is not assigned.

UnA—Unadilla silt loam, 0 to 2 percent slopes

This very deep, nearly level, well drained soil is on stream terraces and lacustrine plains. It formed in water-sorted silts and very fine sands. Individual areas typically are oval or oblong. They generally range from 6 to 50 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam
9 to 12 inches—dark grayish brown silt loam

Subsoil:
12 to 22 inches—yellowish brown silt loam
22 to 41 inches—dark yellowish brown very fine sandy loam

Substratum:
41 to 55 inches—brown and dark brown silt loam stratified with thin lenses of very fine sandy loam; common light brownish gray and a few strong brown mottles
55 to 72 inches—grayish brown very fine sandy loam that has common yellowish brown mottles

Minor Components

Included with this unit in mapping are Scio, Chenango, Otego, and Hamplain soils. The small areas of moderately well drained Scio soils are on the slightly lower parts of the landform where the water table is closer to the surface. The well drained Chenango soils contain more gravel and less silt than the Unadilla soil. The few areas of moderately well drained Otego soils and well drained Hamplain soils are on nearby flood plains. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and moderately rapid in the substratum
Available water capacity: High
Reaction: Very strongly acid to neutral (where limed) in the surface layer and subsoil and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture. This unit meets the requirements for prime farmland.

Crops and pasture
This unit is well suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.
This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland
The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Norway spruce, eastern white pine, and European larch.

Dwellings
Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields
This unit is well suited to conventional septic tank absorption fields. It has few or no limitations as a site for septic tank absorption fields, except for in a few areas that have poor filtering capacity because the substratum is gravelly or coarse textured.

Local roads and streets
Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability classification is 1.

UnB—Unadilla silt loam, 2 to 6 percent slopes

This very deep, gently sloping, well drained soil is on stream terraces and lacustrine plains. It formed in water-sorted silts and very fine sands. Individual areas typically are oval or oblong. They generally range from 6 to 30 acres in size but may be as large as 80 acres.

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam
9 to 12 inches—dark grayish brown silt loam

Subsoil:
12 to 22 inches—yellowish brown silt loam
22 to 41 inches—dark yellowish brown very fine sandy loam

Substratum:
41 to 55 inches—brown and dark brown silt loam stratified with thin lenses of very fine sandy loam; common light brownish gray and a few strong brown mottles
55 to 72 inches—grayish brown very fine sandy loam that has common yellowish brown mottles

Minor Components

Included with this unit in mapping are Scio, Chenango, Otego, and Hamplain soils. The small areas of moderately well drained Scio soils are on the slightly lower parts of the landform where the water table is closer to the surface. The well drained Chenango soils contain more gravel and less silt than the Unadilla soil. The few areas of moderately well drained Otego soils and well drained Hamplain soils are on nearby flood plains. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and subsoil and moderately rapid in the substratum
Available water capacity: High
Reaction: Very strongly acid to neutral (where limed) in the surface layer and subsoil and strongly acid or moderately acid in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is generally well suited to cultivated crops. In the steeper areas and the areas that have a long slope, however, erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer and lime increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, eastern white pine, and European larch.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

This unit is well suited to conventional septic tank absorption fields. It has few or no limitations as a site for septic tank absorption fields, except for a few areas that have poor filtering capacity because the substratum is gravelly or coarse textured.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 2e.

VaB—Valois gravelly loam, 3 to 8 percent slopes

This very deep, gently sloping, well drained soil is in valleys and on the flatter parts of some foothills and till plains. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are broad and irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 65 acres.

Typical Profile

Surface layer:

0 to 3 inches—very dark grayish brown gravelly loam; 20 percent rock fragments
3 to 10 inches—dark brown gravelly silt loam; 25 percent rock fragments

Subsoil:

10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments
14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments
26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:

41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Lordstown, and Bath soils. The more gravelly Chenango soils are in areas of glacial outwash. The moderately deep Lordstown soils are on side slopes where bedrock is closer to the surface. The well drained Bath soils are on uplands where the glacial till is dense. Also included are some areas of Valois soils that have a mantle of glacial till overlying glacial outwash. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and black cherry. This unit is moderately suited to logging roads and log landings. Slope is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Many areas of this unit have few or no limitations as a site for conventional septic tank absorption fields. In some areas, the moderate permeability in the substratum is a limitation. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action is the main limitation on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

VaC—Valois gravelly loam, 8 to 15 percent slopes

This very deep, strongly sloping, well drained soil is on the sides of valleys and foothills near areas of glacial outwash. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are broad and irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown gravelly loam; 20 percent rock fragments
3 to 10 inches—dark brown gravelly silt loam; 25 percent rock fragments

Subsoil:
10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments
14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments
26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:
41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Lordstown, and Bath soils. The more gravelly Chenango soils are in areas of glacial outwash. The moderately deep Lordstown soils are on side slopes where bedrock is closer to the surface. The well drained Bath soils are on uplands where the glacial till is dense. Also included are some areas of Valois soils that have a mantle of glacial till overlying glacial outwash. Also included on stream terraces are areas that have more silt and fewer rock fragments. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland or pasture. A few areas are used for cultivated crops or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture (fig. 19). Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Figure 19.—Forage crops in an area of Valois gravelly loam. The soil is strongly sloping and moderately steep. The valley has lateral moraine deposits (center of photo). Gently sloping Chenango soils are in the immediate foreground. Small inclusions of Atherton and Canandaigua soils are in the kettle-hole depressions.

Septic tank absorption fields

Moderate permeability in the substratum is the main limitation on sites for conventional septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using distribution boxes or other structures to ensure even distribution of effluent increase the effectiveness of the system.

Local roads and streets

The slope and potential for frost action are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land and adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth help to overcome these limitations.

Capability classification

The capability subclass is 3e.

VaD—Valois gravelly loam, 15 to 25 percent slopes

This very deep, moderately steep, well drained soil is on the sides of valleys and foothills adjacent to areas of glacial outwash. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 200 acres.

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown gravelly loam; 20 percent rock fragments
3 to 10 inches—dark brown gravelly silt loam; 25 percent rock fragments

Subsoil:
10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments
14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments
26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:
41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Lordstown, and Bath soils. The more gravelly Chenango soils are in areas of glacial outwash. The moderately deep Lordstown soils are on side slopes where bedrock is closer to the surface. The well drained Bath soils are on uplands where the glacial till is dense. Also included are some areas of Valois soils that have a mantle of glacial till overlying glacial outwash. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are hayland or pasture. A few areas are used for cultivated crops or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that includes several years of hay or small grains help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is moderately suited to pasture. Erosion is a hazard. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. Minimizing tillage during pasture renovation helps to control erosion.

Forestland

The potential productivity of this unit is moderately high for sugar maple. In the southern part of the county, the potential productivity is moderately high for black cherry. This unit is poorly suited to logging roads and log landings because of the slope. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. Designing dwellings to conform to the natural slope helps to overcome this limitation. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slope and, in some areas, moderate permeability in the substratum are the main limitations on sites for conventional septic tank absorption fields. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. Placing distribution lines on the contour and using distribution boxes or other structures to ensure even distribution of effluent increase the effectiveness of the system. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

VaE—Valois gravelly loam, 25 to 35 percent slopes

This very deep, steep, well drained soil is on the sides of valleys and foothills adjacent to areas of glacial outwash. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 75 acres.

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown gravelly loam; 20 percent rock fragments
3 to 10 inches—dark brown gravelly silt loam; 25 percent rock fragments

Subsoil:
10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments
14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments
26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:
41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Lordstown, and Bath soils. The more gravelly Chenango soils are in small areas of glacial outwash. The moderately deep Lordstown soils are on side slopes where bedrock is closer to the surface. The well drained Bath soils are on uplands where the glacial till is dense. Also included are small areas of Valois soils that have slopes of more than 35 percent, mainly along sides of deeply incised valleys, and some areas of Valois soils that have a mantle of glacial till overlying glacial outwash. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland or pasture. A few areas are hayland.

Crops and pasture

This unit is generally not suited to cultivated crops because of the steep slopes and the severe hazard of erosion. The unit is poorly suited to pasture for the same reasons. Rotational grazing, proper stocking rates, weed control, and applications of fertilizer increase forage yields and benefit the condition of the pasture. Conservation tillage practices may be helpful during the renovation of pasture in some areas.

Forestland

The potential productivity of this unit is moderately high for sugar maple. In the southern part of the county, the potential productivity is moderately high for black cherry. This unit is poorly suited to logging roads and log landings because of the slope. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. The slope is steep and commonly requires extensive landscaping and grading. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope is the main limitation on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is a hazard. Inclusions in this unit and adjacent areas that are less sloping may be better suited and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land and to minimize cutting and filling can help to overcome this limitation in some areas. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 6e.

VaF—Valois gravelly loam, 35 to 55 percent slopes

This very deep, very steep, well drained soil is on the sides of valleys and foothills adjacent to areas of glacial outwash. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 120 acres.

Typical Profile

Surface layer:
0 to 3 inches—very dark grayish brown gravelly loam; 20 percent rock fragments
3 to 10 inches—dark brown gravelly silt loam; 25 percent rock fragments

Subsoil:
10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments
14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments
26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:
41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Lordstown, and Bath soils. The more gravelly Chenango soils are in small areas of glacial outwash. The moderately deep Lordstown soils are on side slopes where bedrock is closer to the surface. The well drained Bath soils are on uplands where the glacial till is dense. Also included are small areas of Valois soils that have slopes of more than 55 percent, mainly along sides of deeply incised valleys, and some areas of Valois soils that have a mantle of glacial till overlying glacial outwash. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Very rapid

Use and Management

Most areas of this map unit are forestland or pasture. Some areas are idle.

Crops and pasture

This unit is generally not suited to cultivated crops because of the very steep slopes and the severe hazard of erosion. The unit is also generally not suited to pasture for the same reasons. Weed control and applications of lime and fertilizer increase forage yields in the less sloping areas of this unit. Conservation tillage practices may be helpful during the renovation of pasture in some areas.

Forestland

The potential productivity of this unit is moderately high for sugar maple. In the southern part of the county, the potential productivity is moderately high for black cherry. This unit is poorly suited to logging roads and log landings because of the slope. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, and red pine.

Dwellings

The slope is the main limitation affecting dwellings. The slopes are very steep and commonly require extensive landscaping and grading. Adjacent areas that are less sloping may be better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

The slope is the main limitation on sites for conventional septic tank absorption fields. Lateral movement of effluent resulting in seepage at the surface downslope is a hazard. Adjacent areas that are less sloping may be better suited and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land and to minimize cutting and filling can help to overcome this limitation in some areas. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 7e.

VcB—Valois fine gravelly silt loam, 2 to 6 percent slopes

This very deep, nearly level and gently sloping, well drained soil is on the flatter parts of some till plains and stream terraces. It formed in glacial till derived from sandstone, siltstone, and shale. Individual areas are broad and irregular in shape. They generally range from 6 to 75 acres in size but may be as large as 110 acres.

Typical Profile

Surface layer:

0 to 3 inches—very dark grayish brown fine gravelly silt loam; 20 percent rock fragments

3 to 10 inches—dark brown fine gravelly silt loam; 25 percent rock fragments

Subsoil:

10 to 14 inches—dark brown gravelly silt loam; 30 percent rock fragments

14 to 26 inches—dark brown gravelly silt loam; 30 percent rock fragments

26 to 41 inches—dark yellowish brown gravelly silt loam; 30 percent rock fragments

Substratum:

41 to 72 inches—dark grayish brown very gravelly loam; 55 percent rock fragments

Minor Components

Included with this unit in mapping are Chenango, Scio, and Raynham soils. The more gravelly Chenango soils are in areas of glacial outwash. The moderately well drained Scio soils and somewhat poorly drained Raynham soils have more silt and less gravel than the Valois soil. Also included are a few areas that are similar to the Valois soil but have a slope of more than 6 percent. The included areas of minor components are as large as 6 acres and make up about 15 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and moderate or moderately rapid in the lower part of the subsoil and in the substratum
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid in the surface layer and subsoil and very strongly acid to neutral in the substratum
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to cultivated crops. In the steeper areas and the areas that have a long slope, however, erosion is a hazard. A conservation tillage system that leaves residue on the surface after planting helps to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. This unit has a slight hazard of erosion on roads and trails. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

Few or no limitations affect the construction of dwellings in areas of this unit.

Septic tank absorption fields

Many areas of this unit have few or no limitations as a site for conventional septic tank absorption fields. In some areas, the moderate permeability in the substratum is a limitation. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action is the main limitation for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth helps to overcome this limitation.

Capability classification

The capability subclass is 2e.

VlB—Vly channery silt loam, 1 to 8 percent slopes, rocky

This moderately deep, nearly level and gently sloping, well drained soil is on hilltops and benches in bedrock-controlled uplands. It formed in reddish glacial till underlain by reddish sandstone, siltstone, or shale bedrock. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to

50 acres in size but may be as large as 130 acres. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish brown channery silt loam; 25 percent rock fragments

Subsoil:
5 to 9 inches—dark reddish brown very channery silt loam; 35 percent rock fragments
9 to 18 inches—dark reddish brown very gravelly silt loam; 45 percent rock fragments
18 to 23 inches—dark reddish brown very channery silt loam that has common brown and a few strong brown mottles; 35 percent rock fragments

Bedrock:
23 inches—weak red, massive sandstone

Minor Components

Included with this unit in mapping are small areas of very deep, well drained Lewbeach soils and moderately well drained Willowemoc soils in areas that have a firm or very firm subsoil. Also included are areas where the depth to bedrock is less than 20 inches or more than 40 inches. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout the soil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very slow or slow

Use and Management

Most areas of this map unit are forestland or hayland. Some areas are pasture or are used for cultivated crops.

Crops and pasture

This unit is well suited to cultivated crops. In a few areas, droughtiness is a limitation during extended dry periods. Bedrock outcrops are also a problem in some areas. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Some areas, however, tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is well suited to logging roads and log landings. Rock outcrops, however, may interfere with equipment use in some areas. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations affecting dwellings. Because of the moderate depth to bedrock, this unit is poorly suited to dwellings with basements and moderately suited to dwellings without basements. Many areas of this unit have bedrock that is massive, hard, and not easily ripped. Other areas with deep and very deep soils should be considered for dwellings. If a better site is unavailable, development should be in the deeper areas of the map unit. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome the bedrock limitations in some areas.

Septic tank absorption fields

The depth to bedrock is the main limitation on sites for conventional septic tank absorption fields. This unit is generally poorly suited to conventional septic tank absorption fields because of this limitation. Adjacent soils that are very deep to bedrock are better suited to conventional septic systems. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock, potential for frost action, and bedrock outcrops in some areas are the main limitations on sites for local roads and streets. Planning locations and grades of roads to minimize the removal of bedrock and to avoid areas of bedrock outcrops and adding fill as needed help to overcome the bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 2s.

VlC—Vly channery silt loam, 8 to 15 percent slopes, rocky

This moderately deep, strongly sloping, well drained soil is on hilltops and benches in bedrock-controlled uplands. It formed in reddish glacial till underlain by reddish sandstone, siltstone, or shale bedrock. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 60 acres in size but may be as large as 150 acres. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish brown channery silt loam; 25 percent rock fragments

Subsoil:
5 to 9 inches—dark reddish brown very channery silt loam; 35 percent rock fragments
9 to 18 inches—dark reddish brown very gravelly silt loam; 45 percent rock fragments
18 to 23 inches—dark reddish brown very channery silt loam that has common brown and a few strong brown mottles; 35 percent rock fragments

Bedrock:
23 inches—weak red, massive sandstone

Minor Components

Included with this unit in mapping are small areas of very deep, well drained Lewbeach soils and moderately well drained Willowemoc soils that have a firm or very firm subsoil. Also included are areas where the depth to bedrock is less than 20 inches or more than 40 inches. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout the soil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are forestland or hayland. Some areas are pasture or are used for cultivated crops.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. In a few areas, droughtiness is a limitation during extended dry periods. Bedrock outcrops are also a problem in some areas. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Some areas, however, tend to be somewhat droughty during extended dry periods. Excluding livestock during extended dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is moderately suited to logging roads and log landings because of the slope. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The depth to bedrock and slope are the main limitations affecting dwellings. Because it is moderately deep to bedrock, this unit is poorly suited to dwellings with basements and moderately suited to dwellings without basements. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the slope and bedrock limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The depth to bedrock and, in some areas, bedrock outcrops are the main limitations affecting this map unit as a site for conventional septic tank absorption fields. This unit is generally poorly suited to conventional septic tank absorption fields because of the depth to bedrock. Adjacent soils that are very deep to bedrock and less sloping are better suited to conventional septic systems. In some areas, the effectiveness of the system can be increased by using a raised absorption bed that has a curtain drain surrounding it, by placing distribution lines on the contour, and by using distribution boxes or other structures to ensure even distribution of effluent. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope, the depth to bedrock, potential for frost action, and bedrock outcrops in some areas are the main limitations on sites for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock, and adding fill as needed help to overcome the slope and bedrock limitations. Adding sufficient coarse-grained material to raise the subgrade to the thickness of the frost depth helps to overcome the frost action.

Capability classification

The capability subclass is 3e.

VlD—Vly channery silt loam, 15 to 25 percent slopes, rocky

This moderately deep, moderately steep, well drained soil is on hillsides in bedrock-controlled uplands. It formed in reddish glacial till underlain by reddish sandstone, siltstone, or shale bedrock. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 50 acres in size but may be as large as 170 acres. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish brown channery silt loam; 25 percent rock fragments

Subsoil:
5 to 9 inches—dark reddish brown very channery silt loam; 35 percent rock fragments
9 to 18 inches—dark reddish brown very gravelly silt loam; 45 percent rock fragments
18 to 23 inches—dark reddish brown very channery silt loam that has common brown and a few strong brown mottles; 35 percent rock fragments

Bedrock:
23 inches—weak red, massive sandstone

Minor Components

Included with this unit in mapping are small areas of very deep, well drained Lewbeach soils and moderately well drained Willowemoc soils that have a firm or very firm subsoil. Also included are areas where the depth to bedrock is less than 20 inches or more than 40 inches. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout the soil
Seasonal high water table: None within a depth of 6 feet

Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are forestland or hayland. Some areas are pasture, are used for cultivated crops, or are idle.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. In a few areas, droughtiness is a limitation during extended dry periods. Bedrock outcrops are also a problem in some areas. Crops and varieties that mature early in the season are preferable because this unit is in areas that have fewer growing degree days than the average for the county. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, crop rotations, and cover crops help to control erosion. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Droughtiness is also a limitation during extended dry periods. Excluding livestock during dry periods, rotating livestock grazing, and using proper stocking rates help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The slope and the depth to bedrock are the main limitations affecting dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited. Designing dwellings to conform to the natural slope of the land and constructing dwellings above the bedrock help to overcome the slope and bedrock limitations. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. This unit is generally poorly suited to conventional septic tank absorption fields because of these limitations. Adjacent areas that are very deep to bedrock and less sloping are better suited to conventional septic systems. The effectiveness of the system can be increased by using a raised absorption bed that has a curtain drain surrounding it, by placing distribution lines on the contour, and by using distribution boxes or other structures to ensure even distribution of effluent. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. The locations and grades of roads should be planned to minimize the removal of bedrock. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

VlE—Vly channery silt loam, 25 to 45 percent slopes, rocky

This moderately deep, steep and very steep, well drained soil is on hillsides in bedrock-controlled uplands. It formed in reddish glacial till underlain by reddish sandstone, siltstone, or shale bedrock. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are long and narrow or are irregular in shape. They generally range from 6 to 60 acres in size but may be as large as 110 acres. The extent of exposed bedrock outcrops typically is about 1 percent but ranges from 0.1 to 2 percent.

Typical Profile

Surface layer:
0 to 5 inches—dark reddish brown channery silt loam; 25 percent rock fragments

Subsoil:
5 to 9 inches—dark reddish brown very channery silt loam; 35 percent rock fragments
9 to 18 inches—dark reddish brown very gravelly silt loam; 45 percent rock fragments
18 to 23 inches—dark reddish brown very channery silt loam that has common brown and a few strong brown mottles; 35 percent rock fragments

Bedrock:
23 inches—weak red, massive sandstone

Minor Components

Included with this unit in mapping are small areas of very deep, well drained Lewbeach soils and moderately well drained Willowemoc soils that have a firm or very firm subsoil. Also included are areas where the depth to bedrock is less than 20 inches or more than 40 inches and areas where the slope is more than 45 percent. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout the soil
Seasonal high water table: None within a depth of 6 feet
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very Rapid

Use and Management

Most areas of this map unit are forestland. A few areas are idle.

Crops and pasture

This unit is generally not suited to cultivated crops because of the steep and very steep slopes, the severe hazard of erosion, and the rock outcrops. The unit is also generally not suited to pasture in the steeper areas for the same reasons. Weed control and applications of lime and fertilizer increase forage yields in the less sloping areas. Conservation tillage practices may be helpful during pasture renovation in some areas.

Forestland

The potential productivity of this unit is moderately high for sugar maple and northern red oak. The northern red oak grow predominantly on south- and west-facing slopes. This unit is poorly suited to logging roads and log landings because of the slope. Also, rock outcrops may interfere with equipment use in some areas. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, Norway spruce, and European larch.

Dwellings

The slope and the depth to bedrock are the main limitations affecting dwellings. Because of the steep and very steep slopes, most areas require extensive landscaping and grading to make this unit suitable for dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited to dwellings and should be considered as alternative sites.

Septic tank absorption fields

This unit is generally not suited to conventional septic tank absorption fields because of the slope, the depth to bedrock, and, in some areas, bedrock outcrops. Extensive alterations are required for conventional systems to function satisfactorily. Adjacent areas that are less sloping and deeper to bedrock are better suited to conventional septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land, planning locations and grades of roads to minimize the removal of bedrock, and adding fill as needed can help to overcome this limitation in some areas.

Capability classification

The capability subclass is 7e.

VoA—Volusia silt loam, 0 to 3 percent slopes

This very deep, nearly level, somewhat poorly drained soil is in depressions and on the flatter parts of hills and till plains of glaciated uplands. It formed in firm glacial till derived from gray or brownish sandstone, siltstone, and shale. Individual areas are broad or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 40 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark brown silt loam; 10 percent rock fragments

Subsurface layer:
6 to 10 inches—gray channery silt loam that has common yellowish red and yellowish brown mottles; 15 percent rock fragments

Subsoil:
10 to 19 inches—dark grayish brown and olive brown channery silt loam that has common strong brown and yellowish brown mottles; 20 percent rock fragments

19 to 32 inches—olive channery silt loam that has many strong brown, common yellowish brown, and a few gray mottles; firm; 20 percent rock fragments
32 to 42 inches—olive gray and dark grayish brown very channery silt loam that has common strong brown and a few gray mottles; very firm; 40 percent rock fragments

Substratum:
42 to 85 inches—dark grayish brown and olive brown very channery loam that has a few strong brown mottles; firm; 45 percent rock fragments

Bedrock:
85 inches—dark gray, very fractured shale and siltstone

Minor Components

Included with this unit in mapping are Chippewa, Mardin, Bath, and Greene soils. The small areas of poorly drained Chippewa soils are in the lower depressions and along small drainageways. The moderately well drained Mardin soils and well drained Bath soils are in the higher areas. The moderately deep, somewhat poorly drained Greene soils are on a few shoulder slopes and flat narrow benches where the bedrock is closer to the surface. Also included are a few areas having stones or boulders on the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer, very strongly acid to slightly acid in the subsurface layer and subsoil, and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops, are forestland, or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This soil is moderately suited to logging roads and log landings. Wetness and moderate soil strength are limitations. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

VoB—Volusia silt loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is in depressions and in slightly concave areas of glaciated uplands. It formed in firm glacial till derived from gray or brownish sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 30 acres in size but may be as large as 130 acres.

Typical Profile

Surface layer:

0 to 6 inches—dark brown silt loam; 10 percent rock fragments

Subsurface layer:

6 to 10 inches—gray channery silt loam that has common yellowish red and yellowish brown mottles; 15 percent rock fragments

Subsoil:

10 to 19 inches—dark grayish brown and olive brown channery silt loam that has common strong brown and yellowish brown mottles; 20 percent rock fragments

19 to 32 inches—olive channery silt loam that has many strong brown, common yellowish brown, and a few gray mottles; firm; 20 percent rock fragments

32 to 42 inches—olive gray and dark grayish brown very channery silt loam that has common strong brown and a few gray mottles; very firm; 40 percent rock fragments

Substratum:
42 to 85 inches—dark grayish brown and olive brown very channery loam that has a few strong brown mottles; firm; 45 percent rock fragments

Bedrock:
85 inches—dark gray, very fractured shale and siltstone

Minor Components

Included with this unit in mapping are Chippewa, Mardin, Bath, and Greene soils. The small areas of poorly drained Chippewa soils are in the lower depressions and along small drainageways. The moderately well drained Mardin soils and well drained Bath soils are in the higher areas. The moderately deep, somewhat poorly drained Greene soils are on a few shoulder slopes and flat narrow benches where the bedrock is closer to the surface. Also included are a few areas having stones or boulders on the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer, very strongly acid to slightly acid in the subsurface layer and subsoil, and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops, are forestland, or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3w.

VoC—Volusia silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, somewhat poorly drained soil is on toeslopes and on the slightly concave sides of hills of glaciated uplands. It formed in firm glacial till derived from gray or brownish sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 35 acres in size but may be as large as 165 acres.

Typical Profile

Surface layer:
0 to 6 inches—dark brown silt loam; 10 percent rock fragments

Subsurface layer:
6 to 10 inches—gray channery silt loam that has common yellowish red and yellowish brown mottles; 15 percent rock fragments

Subsoil:
10 to 19 inches—dark grayish brown and olive brown channery silt loam that has common strong brown and yellowish brown mottles; 20 percent rock fragments
19 to 32 inches—olive channery silt loam that has many strong brown, common yellowish brown, and a few gray mottles; firm; 20 percent rock fragments
32 to 42 inches—olive gray and dark grayish brown very channery silt loam that has common strong brown and a few gray mottles; very firm; 40 percent rock fragments

Substratum:
42 to 85 inches—dark grayish brown and olive brown very channery loam that has a few strong brown mottles; firm; 45 percent rock fragments

Bedrock:
85 inches—dark gray, very fractured shale and siltstone

Minor Components

Included with this unit in mapping are Chippewa, Mardin, Bath, and Greene soils. The small areas of poorly drained Chippewa soils are in the lower depressions and along small drainageways. The moderately well drained Mardin soils and well drained Bath soils are in the slightly higher areas. The moderately deep, somewhat poorly drained Greene soils are on a few shoulder slopes and flat narrow benches where the bedrock is closer to the surface. Also included are a few areas that have stones or boulders on the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer, very strongly acid to slightly acid in the subsurface layer and subsoil, and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are forestland or idle. A few areas are used for cultivated crops.

Crops and pasture

This unit is poorly suited to cultivated crops because of wetness due to the seasonal high water table and because of the hazard of erosion. The wetness commonly delays planting or harvesting in years that have high rainfall during the planting or harvesting period. A conservation tillage system that leaves residue on the surface after planting and either contour farming or stripcropping help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is generally suited to pasture. Wetness due to the seasonal high water table, however, is commonly a limitation during spring or following periods of heavy rainfall. Excluding livestock from the pasture during wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are white spruce, Norway spruce, and Japanese larch.

Dwellings

This unit is poorly suited to dwellings because of wetness due to the seasonal high water table and slope. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains. Placing drains around footings and foundations and sealing foundation walls and floors also help to overcome the wetness. Adjacent areas that are better drained should be considered as alternative sites for construction of dwellings.

Septic tank absorption fields

This unit is poorly suited to conventional septic tank absorption fields because of wetness due to the seasonal high water table and the slow or very slow permeability in the firm or very firm subsoil and substratum. Adjacent areas that are better drained and more permeable should be considered as alternative sites. In some areas, drains installed upslope from the absorption field and diversions that intercept runoff can reduce the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the wetness. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 3e.

W—Water

This map unit consists of areas of water 3 to 40 acres in size. The depth of water is generally more than 1.0 foot throughout the year. Areas of this unit support various aquatic species. Areas of water larger than 40 acres are labeled by a designated name.

Wb—Wakeville silt loam

This very deep, nearly level, somewhat poorly drained soil is on flood plains along the larger streams and rivers in the county. It formed in silty alluvial deposits. Individual areas are long and narrow. They generally range from 6 to 25 acres in size but may be as large as 70 acres. Slopes range from 0 to 3 percent.

Typical Profile

Surface layer:
0 to 3 inches—dark brown silt loam
3 to 7 inches—dark brown silt loam

Subsoil:
7 to 16 inches—dark gray silt loam that has common olive gray and dark yellowish brown mottles
16 to 29 inches—gray silt loam that has many yellowish brown and grayish brown mottles

Substratum:
29 to 40 inches—gray silt loam that has common yellowish brown mottles
40 to 72 inches—grayish brown silt loam that has common strong brown mottles

Minor Components

Included with this unit in mapping are Hamplain, Otego, Wayland, Scio, and Raynham soils and Fluvaquents and Udifluvents. The small areas of well drained Hamplain soils and moderately well drained Otego soils are on the slightly higher parts of the flood plain. The poorly drained Wayland soils are on the lower parts of the flood plain that are subject to more frequent flooding. The small areas of Fluvaquents and Udifluvents soils, which have variable drainage and textures, are on the parts of the flood plain that are subject to more frequent flooding. The moderately well drained Scio soils and somewhat poorly drained Raynham soils are in a few areas that are not flooded or are subject to rare flooding. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate throughout the soil
Available water capacity: High
Reaction: Moderately acid to neutral in the surface layer, subsurface layer, and upper part of the substratum and moderately acid to moderately alkaline in the lower part of the substratum
Seasonal high water table: At a depth of 0.5 to 1.5 feet from November through June
Flooding: Occasional, brief, November through June
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are hayland and pasture. Some areas are used for cultivated crops or are idle. Where drained, this unit meets the requirements for prime farmland.

Crops and pasture

This unit is moderately suited to cultivated crops. Wetness due to the seasonal high water table is a limitation. Although the unit is susceptible to flooding, the flooding does not normally occur during the growing season. Soil compaction is a concern if the fields are worked when wet. The wetness commonly delays planting or harvesting in years that have high stream levels or high amounts of rainfall during the planting or harvesting period. Flooding may also cause minor crop damage on the lower parts of some flood plains in some years. Limiting equipment use to periods when the soil is not wet helps to control soil compaction. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth. The application of manure, fertilizer, or pesticides during periods that are subject to flooding can result in lower water quality.

This unit is generally suited to pasture. Wetness due to the seasonal high water table and flooding, however, are commonly limitations during spring. Excluding livestock from the pasture during flooding or wet periods, using proper stocking rates, and rotating livestock grazing help to maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields. The application of lime, fertilizer, or herbicide during periods that are subject to flooding can result in lower water quality.

Forestland

The potential productivity of this unit is moderately high for red maple. This unit is poorly suited to logging roads and log landings because of flooding, wetness, and moderate soil strength. This unit has a slight hazard of erosion on roads and trails. Trees to manage are white spruce, Japanese larch, and Norway spruce.

Dwellings

Flooding and wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are not subject to flooding are better suited to dwellings. State or local regulations may prohibit or restrict the construction of dwellings.

Septic tank absorption fields

Flooding and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Poor filtering capacity can result in contamination of ground water and streams during flood periods. Nearby areas that are not subject to flooding are better suited to conventional septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before a system is installed.

Local roads and streets

Flooding, wetness, and potential for frost action are the main limitations on sites for local roads and streets. Constructing roads on raised additions of coarse-grained subgrade and base material can help to overcome these limitations in some areas. However, it would be better to construct local roads and streets in nearby areas that are not subject to flooding because strong floodwater currents can wash out or otherwise damage roadbeds.

Capability classification

The capability subclass is 3w.

WeA—Wassaic silt loam, 0 to 3 percent slopes

This moderately deep, nearly level, well drained soil is on broad, bedrock-controlled benches or glacial uplands. It is principally on the limestone ridges in the northern part of the county. This soil formed in glacial till and is underlain by limestone bedrock. Individual areas are broad and irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 155 acres.

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
10 to 16 inches—dark brown silt loam; 10 percent rock fragments
16 to 21 inches—yellowish brown and brown gravelly silt loam; 15 percent rock fragments
21 to 27 inches—dark brown cobbly silt loam; 20 percent rock fragments

Substratum:
27 to 31 inches—dark yellowish brown cobbly loam; 25 percent rock fragments; violently effervescent

Bedrock:
31 inches—gray, massive limestone

Minor Components

Included with this unit in mapping are Farmington, unnamed, Honeoye, Lansing, Lima, and Conesus soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Farmington soils than in the Wassaic soil. The few small areas of unnamed soils are more than 40 inches but less than 60 inches deep over limestone bedrock. The glacial till is deeper over bedrock in the small areas of very deep, well drained Honeoye and Lansing soils and moderately well drained Lima and Conesus soils than in the Wassaic soil. Also included are a few small areas of soils that contain less clay in the subsoil layers than is typical for the Wassaic soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderate or moderately slow in the subsoil and substratum

Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer and subsoil and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from March through April
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Very Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to most cultivated crops. Droughtiness may be a problem during extended dry periods in the areas where the bedrock is closest to the surface. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This soil is moderately suited to logging roads and log landings. Moderate soil strength is a limitation. This unit has a slight hazard of erosion on roads and trails. Trees to manage are European larch, eastern white pine, and Norway spruce.

Dwellings

Wetness and the depth to bedrock are the main limitations affecting dwellings. This unit is better suited to dwellings without basements, which require less excavation of bedrock, than to dwellings with basements. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome this limitation in some areas.

Septic tank absorption fields

Wetness and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are very deep to bedrock are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock and frost damage are the main limitations on sites for local roads and streets. Planning locations and grades of roads to avoid removal of rock and, in some areas, constructing roads on raised additions of coarse-grained subgrade and base material help to overcome these limitations.

Capability classification

The capability subclass is 2s.

WeB—Wassaic silt loam, 3 to 8 percent slopes

This moderately deep, gently sloping, well drained soil is on broad, bedrock-controlled benches or glacial uplands. It is principally on the limestone ridges in the northern part of the county. This soil formed in glacial till and is underlain by limestone bedrock. Individual areas are broad and irregular in shape. They generally range from 6 to 60 acres in size but may be as large as 375 acres.

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
10 to 16 inches—dark brown silt loam; 10 percent rock fragments
16 to 21 inches—yellowish brown and brown gravelly silt loam; 15 percent rock fragments
21 to 27 inches—dark brown cobbly silt loam; 20 percent rock fragments

Substratum:
27 to 31 inches—dark yellowish brown cobbly loam; 25 percent rock fragments; violently effervescent

Bedrock:
31 inches—gray, massive limestone

Minor Components

Included with this unit in mapping are Farmington, unnamed, Honeoye, Lansing, Lima, and Conesus soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Farmington soils than in the Wassaic soil. The few small areas of unnamed soils are more than 40 inches but less than 60 inches deep over limestone bedrock. The glacial till is deeper over bedrock in the small areas of very deep, well drained Honeoye and Lansing soils and moderately well drained Lima and Conesus soils than in the Wassaic soil. Also included are a few small areas of soils that contain less clay in the subsoil layers than is typical for the Wassaic soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderate or moderately slow in the subsoil and substratum
Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer and subsoil and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from March through April
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops or hay. A few areas are pasture or forestland. This unit meets the requirements for prime farmland.

Crops and pasture

This unit is well suited to most cultivated crops. Droughtiness may be a problem during extended dry periods in the areas where the bedrock is closest to the surface. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are European larch, eastern white pine, and Norway spruce.

Dwellings

Wetness and the depth to bedrock are the main limitations affecting dwellings. This unit is better suited to dwellings without basements, which require less excavation of bedrock, than to dwellings with basements. Constructing dwellings above the bedrock and landscaping with additional fill as needed help to overcome these limitations in some areas.

Septic tank absorption fields

Wetness and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are very deep to bedrock are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock and frost damage are the main limitations on sites for local roads and streets. Planning locations and grades of roads to avoid removal of rock and, in some areas, constructing roads on raised additions of coarse-grained subgrade and base material help to overcome these limitations.

Capability classification

The capability subclass is 2e.

WeC—Wassaic silt loam, 8 to 15 percent slopes

This moderately deep, strongly sloping, well drained soil is on broad, bedrock-controlled glacial uplands. It is principally on the limestone ridges in the northern part of the county. This soil formed in glacial till and is underlain by limestone bedrock. Slopes generally are irregular and may be in a series of steps. Individual areas are oval, oblong, or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 85 acres.

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
10 to 16 inches—dark brown silt loam; 10 percent rock fragments
16 to 21 inches—yellowish brown and brown gravelly silt loam; 15 percent rock fragments
21 to 27 inches—dark brown cobbly silt loam; 20 percent rock fragments

Substratum:
27 to 31 inches—dark yellowish brown cobbly loam; 25 percent rock fragments; violently effervescent

Bedrock:
31 inches—gray, massive limestone

Minor Components

Included with this unit in mapping are Farmington, unnamed, Honeoye, Lansing, Lima, and Conesus soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Farmington soils than in the Wassaic soil. The few small areas of unnamed soils are more than 40 inches but less than 60 inches deep over limestone bedrock. The glacial till is deeper over bedrock in the small areas of very deep, well drained Honeoye and Lansing soils and moderately well drained Lima and Conesus soils than in the Wassaic soil. Also included are a few small areas of soils that contain less clay in the subsoil layers than is typical for the Wassaic soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderate or moderately slow in the subsoil and substratum
Available water capacity: Moderate
Reaction: Moderately acid to neutral in the surface layer and subsoil and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from March through April
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops or hay. Some areas are pasture or forestland.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. During dry periods, droughtiness may be a problem in the areas where the bedrock is closest to the surface. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is well suited to pasture. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, eastern white pine, and Norway spruce.

Dwellings

Wetness, the slope, and the depth to bedrock are the main limitations affecting dwellings. This unit is better suited to dwellings without basements, which require less excavation of bedrock, than to dwellings with basements. Constructing dwellings above the bedrock, designing the structures to conform to the slope, and landscaping with additional fill as needed reduce these limitations in some areas.

Septic tank absorption fields

Wetness and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. Adjacent soils that are very deep to bedrock are better suited to conventional septic tank absorption fields and should be considered as alternative sites. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The depth to bedrock, frost damage, and the slope are the main limitations on sites for local roads and streets. Planning locations and grades of roads to avoid removal of rock, constructing roads on raised additions of coarse-grained subgrade and base material, and designing roads to conform to the natural slope of the land help to overcome these limitations.

Capability classification

The capability subclass is 3e.

WeD—Wassaic silt loam, 15 to 25 percent slopes

This moderately deep, moderately steep, well drained soil is on bedrock-controlled glacial uplands. It is principally on the limestone ridges in the northern part of the county. This soil formed in glacial till and is underlain by limestone bedrock. Slopes generally are irregular and may be in a series of steps. Individual areas typically are oblong or irregular in shape. They generally range from 6 to 25 acres in size but may be as large as 40 acres.

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown silt loam; 10 percent rock fragments

Subsoil:
10 to 16 inches—dark brown silt loam; 10 percent rock fragments
16 to 21 inches—yellowish brown and brown gravelly silt loam; 15 percent rock fragments
21 to 27 inches—dark brown cobbly silt loam; 20 percent rock fragments

Substratum:
27 to 31 inches—dark yellowish brown cobbly loam; 25 percent rock fragments; violently effervescent

Bedrock:
31 inches—gray, massive limestone

Minor Components

Included with this unit in mapping are Farmington, unnamed, Honeoye, and Lansing soils. The glacial till is thinner over bedrock in the shallow, somewhat excessively drained Farmington soils than in the Wassaic soil. The few small areas of unnamed soils are more than 40 inches but less than 60 inches deep over limestone bedrock. The glacial till is deeper over the bedrock in the small areas of very deep, well drained Honeoye and Lansing soils than in the Wassaic soil. Also included are a few small areas that contain less clay in the subsoil than is typical for the Wassaic soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and moderate or moderately slow in the subsoil and substratum
Available water capacity: Moderate

Reaction: Moderately acid to neutral in the surface layer and subsoil and moderately acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.6 to 3.0 feet from March through April
Flooding: None
Depth to bedrock: 20 to 40 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture. Some areas are hayland or forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. A conservation tillage system that leaves crop residue on the surface after planting and contour farming, stripcropping, cover crops, and a crop rotation that limits the amount of time row crops are grown help to control erosion. During dry periods, droughtiness may be a problem in the areas where the bedrock is closest to the surface. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and increase available water capacity.

This unit is moderately suited to pasture. Erosion is a hazard. Rotational grazing and proper stocking rates help to maintain the pasture in good condition. Weed control and applications of fertilizer increase forage yields. Minimizing tillage during pasture renovation helps to control erosion.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are European larch, eastern white pine, and Norway spruce.

Dwellings

The slope, wetness, and the depth to bedrock are the main limitations affecting dwellings. Adjacent areas that are less sloping and deeper to bedrock are better suited to dwellings. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. This unit is better suited to dwellings without basements, which require less excavation of bedrock, than to dwellings with basements. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, wetness, and the depth to bedrock are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping and very deep to bedrock are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in some areas of this unit. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation affecting this unit as a site for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. The locations and grades of roads should be planned to minimize the removal of bedrock. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

Wg—Wayland silt loam

This very deep, nearly level, poorly drained soil is on flood plains. It formed in recent alluvial deposits along streams. Individual areas are long and narrow. They generally range from 6 to 40 acres in size but may be as large as 245 acres. Slopes range from 0 to 2 percent.

Typical Profile

Surface layer:
0 to 9 inches—very dark gray silt loam

Substratum:
9 to 12 inches—greenish gray silt loam that has a few dark yellowish brown mottles
12 to 24 inches—very dark grayish brown silt loam that has a few dark yellowish brown mottles
24 to 36 inches—greenish gray silty clay loam that has common gray and a few reddish brown mottles; firm
36 to 59 inches—greenish gray stratified silty clay loam that has common gray and a few reddish brown mottles; firm; 1 percent rock fragments
59 to 72 inches—greenish gray stratified silty clay loam that has common gray and a few reddish brown mottles; firm; 1 percent rock fragments; slightly effervescent

Minor Components

Included with this unit in mapping are unnamed, Wakeville, Otego, and Canandaigua soils and Fluvaquents and Udifluvents. The small areas of unnamed soils are similar to the Wayland soil but have a dark colored surface layer that is more than 10 inches thick. The somewhat poorly drained Wakeville soils and moderately well drained Otego soils are in the slightly higher areas on the flood plains. The Fluvaquents and Udifluvents, which have variable texture and drainage, are on the flood plains. The few areas of poorly drained or very poorly drained Canandaigua soils are not subject to flooding. Also included are some areas of Wayland soils where the duration of flooding is not as long. The included areas of minor components are as large as 6 acres and make up about 25 percent of the unit.

Soil Properties

Permeability: Moderate or moderately slow in the surface layer and slow in the substratum
Available water capacity: High
Reaction: Strongly acid to mildly alkaline in the surface layer, strongly acid to moderately alkaline in the upper part of the substratum, and moderately acid to moderately alkaline in the lower part of the substratum
Seasonal high water table: At the surface to a depth of 0.5 foot from November through June
Flooding: Frequent, long, November through June
Depth to bedrock: More than 60 inches
Surface runoff: Very slow

Use and Management

Most areas of this map unit are idle. A few areas are pasture or forestland.

Crops and pasture

This unit is generally not suited to cultivated crops because of the frequent flooding and prolonged periods of wetness during the growing season. This unit is poorly suited to pasture for the same reasons. Excluding livestock during flooding and other wet periods, using proper stocking rates, and using mechanical weed and brush control benefit the pasture condition.

Forestland

The potential productivity of this unit is moderately high for red maple. This soil is poorly suited to logging roads and log landings because of wetness, low soil strength, and the hazard of flooding. This unit has a slight hazard of erosion on roads and trails. Because of the wetness, this unit is generally not recommended as a site for planting trees.

Dwellings

This unit is generally not suited to dwellings because of the frequent flooding and prolonged wetness due to the seasonal high water table and ponding in some areas. Adjacent areas that are better drained and not subject to flooding are better suited to dwellings. State or local regulations may prohibit or restrict the construction of dwellings. Wetland regulations should be investigated before dwellings are constructed.

Septic tank absorption fields

This unit is generally not suited to conventional septic tank absorption fields because of frequent flooding, ponding in some areas, prolonged wetness due to the seasonal high water table, and slow permeability in the substratum. Poor filtering capacity can result in contamination of the water supply during flooding periods. Adjacent areas that are better drained and not subject to flooding are better suited to conventional septic tank absorption fields. Wetland regulations and State and local health codes may prohibit conventional septic tank absorption fields. These regulations should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

This unit is generally not suited to local roads and streets because of the frequent flooding, ponding, prolonged periods of wetness, and frost damage. Wetland regulations may prohibit or restrict construction of roads, additions of fill, or alteration of the drainage. These regulations should be investigated before local roads and streets are constructed.

Capability classification

The capability subclass is 5w.

WlB—Wellsboro channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on slightly convex footslopes of glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 35 acres in size but may be as large as 170 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 15 inches—reddish brown channery silt loam; 15 percent rock fragments
15 to 23 inches—reddish brown channery silt loam that has many strong brown and common grayish brown mottles; 20 percent rock fragments
23 to 40 inches—reddish brown channery loam; firm; 30 percent rock fragments

40 to 70 inches—dark reddish brown very channery loam; firm; 45 percent rock fragments

Minor Components

Included with this unit in mapping are Morris, Norwich, Lackawanna, and Oquaga soils. The small areas of somewhat poorly drained Morris soils and poorly drained Norwich soils are in depressions and along small drainageways. The well drained Lackawanna soils are in the higher areas. The moderately deep, well drained Oquaga soils are on a few shoulder slopes and summits where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle.

Crops and pasture

This unit is well suited to cultivated crops. In some areas, wetness can delay planting or harvesting during extended wet periods. A system of surface and subsurface drains in the wetter areas can help to overcome the wetness. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2w.

WlC—Wellsboro channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is in convex areas of glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 50 acres in size but may be as large as 135 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 15 inches—reddish brown channery silt loam; 15 percent rock fragments
15 to 23 inches—reddish brown channery silt loam that has many strong brown and common grayish brown mottles; 20 percent rock fragments
23 to 40 inches—reddish brown channery loam; firm; 30 percent rock fragments
40 to 70 inches—dark reddish brown very channery loam; firm; 45 percent rock fragments

Minor Components

Included with this unit in mapping are Morris, Norwich, Lackawanna, and Oquaga soils. The small areas of somewhat poorly drained Morris soils and poorly drained Norwich soils are in depressions and along small drainageways. The well drained Lackawanna soils are in the higher areas. The moderately deep, well drained Oquaga soils are on a few shoulder slopes and summits where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are used for cultivated crops, hayland, or pasture. Some areas are forestland or idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The strong slope is a limitation, and erosion is a hazard. Also, wetness due to the seasonal high water table can delay planting or harvesting during extended wet periods. A system of surface and subsurface drains in the wetter areas helps to overcome the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion. Returning crop residue to the soil and regularly adding other organic matter help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Installing diversions to intercept runoff upslope of the absorption field reduces the wetness. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

WlD—Wellsboro channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, moderately well drained soil is on the sides of hills of glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. Individual areas are broad or oblong. They generally range from 6 to 25 acres in size but may be as large as 60 acres.

Typical Profile

Surface layer:
0 to 5 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 15 inches—reddish brown channery silt loam; 15 percent rock fragments
15 to 23 inches—reddish brown channery silt loam that has many strong brown and common grayish brown mottles; 20 percent rock fragments
23 to 40 inches—reddish brown channery loam; firm; 30 percent rock fragments
40 to 70 inches—dark reddish brown very channery loam; firm; 45 percent rock fragments

Minor Components

Included with this unit in mapping are Morris, Lackawanna, and Oquaga soils. The small areas of somewhat poorly drained Morris soils are in depressions and along footslopes. The well drained Lackawanna soils are on tops of hills and along sides of valleys in some areas. The moderately deep, well drained Oquaga soils are on some shoulder slopes and tops of hills where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are hayland and pasture. Some areas are forestland or idle.

Crops and pasture

This unit is poorly suited to cultivated crops because of the slope and the severe hazard of erosion. Also, wetness can delay planting or harvesting in years that have high rainfall during the planting or harvesting period. Installing a subsurface drainage system in the wetter areas helps to control the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion.

This unit is moderately suited to pasture. Erosion is a hazard, and the seasonal high water table is a limitation. Minimizing tillage during pasture renovation helps to control erosion. Excluding livestock during wet periods helps to maintain the pasture in good condition. Rotational grazing, proper stocking rates, applications of fertilizer, and weed control increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope and moderate soil strength. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are less sloping and better drained should be considered as alternative sites. In some areas, the wetness can be reduced by grading the land so that surface water moves away from dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation. There is also a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the slow or very slow permeability in the firm subsoil, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping, more permeable, and better drained are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

Wetness due to the seasonal high water table, the slope, and potential for frost action are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. Using land shaping and grading or designing the road to conform to the natural slope of the land helps to overcome the slope limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

WmC—Wellsboro and Mardin soils, 3 to 15 percent slopes, very stony

This unit consists of very deep, gently sloping and strongly sloping, moderately well drained soils. This unit is principally on glaciated uplands in the southwestern part of the county. The Wellsboro soil formed in glacial till derived from reddish sandstone, siltstone, and shale. The Mardin soil formed in glacial till derived from brownish sandstone, siltstone, and shale. Slopes generally are slightly convex. Individual areas of this unit commonly are oval or irregular in shape. They generally range from 6 to 35 acres in size but may be as large as 150 acres. Many areas consist mainly of the Wellsboro soil, some other areas consist mainly of the Mardin soil. The very stony Wellsboro and Mardin soils are mapped together because they have similar potential for use and management. The unit is about 50 percent Wellsboro soil, 30 percent Mardin soil, and 20 percent other soils. Stones on the surface are up to 48 inches in diameter, cover 3 to 15 percent of the surface, and are approximately 1 to 20 feet apart.

Typical Profile

Wellsboro

Surface layer:
0 to 5 inches—dark brown channery silt loam; 15 percent rock fragments

Subsoil:
5 to 15 inches—reddish brown channery silt loam; 15 percent rock fragments
15 to 23 inches—reddish brown channery silt loam that has many strong brown and common grayish brown mottles; 20 percent rock fragments
23 to 40 inches—reddish brown channery loam; firm; 30 percent rock fragments
40 to 70 inches—dark reddish brown very channery loam; firm; 45 percent rock fragments

Mardin

Surface layer:
0 to 12 inches—dark brown channery silt loam; 20 percent rock fragments

Subsoil:
12 to 15 inches—light yellowish brown channery silt loam; 20 percent rock fragments
15 to 21 inches—olive brown channery silt loam that has common yellowish brown mottles; 20 percent rock fragments
21 to 31 inches—dark grayish brown channery silt loam that has common light brownish gray and a few dark yellowish brown mottles; very firm; 25 percent rock fragments
31 to 38 inches—olive brown channery silt loam that has common olive gray and a few dark yellowish brown mottles; very firm; 30 percent rock fragments

Substratum:
38 to 72 inches—olive brown very channery silt loam; firm; 35 percent rock fragments

Minor Components

Included with this unit in mapping in the areas of reddish soil are Lackawanna, Morris, Norwich, Arnot, and Oquaga soils. The small areas of well drained Lackawanna soils are on the slightly higher and more convex landforms. The somewhat poorly drained Morris soils and poorly drained Norwich soils are in depressional and concave areas. The shallow, somewhat excessively drained Arnot soils and moderately deep, well drained Oquaga soils are in small higher areas where the bedrock is closer to the surface.

Included with this unit in mapping in the areas of brown soil are Volusia, Chippewa, Bath, and Lordstown soils. The somewhat poorly drained Volusia soils and poorly drained Chippewa soils are in small depressional areas and the more concave areas. The well drained Bath soils are on a few of the higher landform positions. The few small areas of moderately deep, well drained Lordstown soils are in the higher areas where the bedrock is closer to the surface. The included areas of minor components are as large as 6 acres.

Soil Properties

Wellsboro

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil
Available water capacity: Low
Reaction: Very strongly acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Mardin

Permeability: Moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum
Available water capacity: Low
Reaction: Extremely acid to slightly acid in the surface layer and the upper part of the subsoil, very strongly acid to neutral in the lower part of the subsoil (fragipan), and strongly acid to mildly alkaline in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are pasture. Some areas are forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the surface stones, which interfere with most tillage and harvesting operations.

This unit is poorly suited to pasture. The large surface stones and, in the steeper areas, the hazard of erosion are management concerns. The surface stones interfere with mechanical weed control and with the application of lime and fertilizer. Rotating livestock grazing, using proper stocking rates, and, in the wetter areas, excluding livestock during wet periods benefit the pasture condition. Conservation tillage practices may be helpful during the renovation of pastures in a few areas.

Forestland

The potential productivity of this unit is moderately high for sugar maple in areas of the Wellsboro soil and moderate in areas of the Mardin soil. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. In many areas, dwellings cannot be constructed unless the surface stones are removed. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Surface stones may interfere with grading and installation of drains in a few areas. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control erosion during construction in the steeper areas.

Septic tank absorption fields

The slow or very slow permeability in the firm or very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Surface stones typically need to be removed before an absorption field can be installed. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Wetness due to the seasonal high water table, potential for frost action, and, in some areas, the slope are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the wetness and frost action. Using land shaping and grading or designing the road to conform to the natural slope of the land helps to overcome the slope limitations. Surface stones may interfere with construction in some areas.

Capability classification

The capability subclass is 6s.

WpB—Willdin channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is in slightly convex areas of glaciated uplands. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, and shale. It is principally in the southern and eastern parts of the county at elevations over 1,750 feet. Individual areas are broad or oblong. They generally range from 6 to 40 acres in size but may be as large as 855 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown channery silt loam; 15 percent rock fragments

Subsoil:
7 to 14 inches—dark yellowish brown channery silt loam; 25 percent rock fragments

Subsurface layer:
14 to 17 inches—brown channery silt loam that has a few yellowish brown mottles; 25 percent rock fragments

Subsoil:
17 to 22 inches—dark brown channery silt loam; firm; 30 percent rock fragments
22 to 27 inches—dark brown channery silt loam that has common yellowish brown mottles; firm; 30 percent rock fragments
27 to 44 inches—grayish brown and dark brown channery silt loam that has common yellowish brown and a few strong brown mottles; very firm; 25 percent rock fragments

Substratum:
44 to 80 inches—dark brown channery silt loam that has common light olive brown mottles; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Ontusia, Norchip, Lewbath, and Mongaup soils. The small areas of somewhat poorly drained Ontusia soils and poorly drained Norchip soils are in depressions and along small drainageways. The well drained Lewbath soils are in the higher areas. The moderately deep, well drained Mongaup soils are on a few shoulder slopes and summits where the bedrock is closer to the surface than in the Willdin soil. Also included, in the eastern part of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Willdin soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum

Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the subsurface layer and lower part of the subsoil, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The main limitations are the wetness, which can delay planting or harvesting during extended wet periods, and the restricted number of frost-free days. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Installing a subsurface drainage system in the wetter areas helps to control the wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the firm or very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential for frost action and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2w.

WpC—Willdin channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is in slightly convex areas of glaciated uplands. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, and shale. It is principally in the southern and eastern parts of the county at elevations over 1,750 feet. Individual areas are broad or oblong. They generally range from 6 to 60 acres in size but may be as large as 145 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown channery silt loam; 15 percent rock fragments

Subsoil:
7 to 14 inches—dark yellowish brown channery silt loam; 25 percent rock fragments

Subsurface layer:
14 to 17 inches—brown channery silt loam that has a few yellowish brown mottles; 25 percent rock fragments

Subsoil:
17 to 22 inches—dark brown channery silt loam; firm; 30 percent rock fragments
22 to 27 inches—dark brown channery silt loam that has common yellowish brown mottles; firm; 30 percent rock fragments
27 to 44 inches—grayish brown and dark brown channery silt loam that has common yellowish brown and a few strong brown mottles; very firm; 25 percent rock fragments

Substratum:
44 to 80 inches—dark brown channery silt loam that has common light olive brown mottles; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Ontusia, Norchip, Lewbath, and Mongaup soils. The small areas of somewhat poorly drained Ontusia soils and poorly drained Norchip soils are in depressions and along small drainageways. The well drained Lewbath soils are in the higher areas. The moderately deep, well drained Mongaup soils are on a few shoulder slopes and summits where the bedrock is closer to the surface than in the Willdin soil. Also included, in the eastern part of the towns of Cherry Valley and Roseboom, are small areas of soils that are similar to the Willdin soil but have a subsoil with a weakly expressed argillic horizon, have slightly higher reaction, and have a less strongly expressed fragipan layer than is typical for the series. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the subsurface layer and lower part of the subsoil, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The main management concerns are the strong slope; the hazard of erosion; wetness, which can delay planting or harvesting during extended wet periods; and the restricted number of frost-free days. A conservation tillage system that leaves residue on the surface after planting and either contour farming or stripcropping help to control erosion. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Installing a subsurface drainage system in the wetter areas helps to control the wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the firm or very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage, the slope, and wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome the frost action and wetness. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

WpD—Willdin channery silt loam, 15 to 25 percent slopes

This very deep, moderately steep, moderately well drained soil is on the sides of hills of glaciated uplands. It formed in firm glacial till derived from brownish or gray sandstone, siltstone, and shale. It is principally in the southern and eastern parts of the county at elevations over 1,750 feet. Individual areas are oblong or irregular in shape. They generally range from 6 to 30 acres in size but may be as large as 90 acres.

Typical Profile

Surface layer:
0 to 7 inches—dark grayish brown channery silt loam; 15 percent rock fragments

Subsoil:
7 to 14 inches—dark yellowish brown channery silt loam; 25 percent rock fragments

Subsurface layer:
14 to 17 inches—brown channery silt loam that has a few yellowish brown mottles; 25 percent rock fragments

Subsoil:
17 to 22 inches—dark brown channery silt loam; firm; 30 percent rock fragments
22 to 27 inches—dark brown channery silt loam that has common yellowish brown mottles; firm; 30 percent rock fragments
27 to 44 inches—grayish brown and dark brown channery silt loam that has common yellowish brown and a few strong brown mottles; very firm; 25 percent rock fragments

Substratum:
44 to 80 inches—dark brown channery silt loam that has common light olive brown mottles; very firm; 25 percent rock fragments

Minor Components

Included with this unit in mapping are Ontusia, Norchip, Lewbath, and Mongaup soils. The small areas of somewhat poorly drained Ontusia soils and poorly drained Norchip soils are in depressions. The well drained Lewbath soils are in the higher areas. The moderately deep, well drained Mongaup soils are on a few shoulder slopes and summits where the bedrock is closer to the surface than in the Willdin soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, subsurface layer, and upper part the subsoil and slow or very slow in the lower part of the subsoil (fragipan) and in the substratum
Available water capacity: Low
Reaction: Very strongly acid to moderately acid in the surface layer and the upper part of the subsoil, very strongly acid to slightly acid in the subsurface layer and lower part of the subsoil, and strongly acid to slightly acid in the substratum
Seasonal high water table: At a depth of 1.2 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Rapid

Use and Management

Most areas of this map unit are pasture, hayland, or idle. Some areas are forestland.

Crops and pasture

This unit is poorly suited to cultivated crops because of the moderately steep slopes and the severe hazard of erosion. Also, wetness can delay planting or harvesting in years that have high rainfall during the planting or harvesting period. Also, there are fewer than average frost-free days in the areas of this soil. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Installing a subsurface drainage system in the wetter areas helps to control the wetness. A conservation tillage system that leaves residue on the surface after planting and contour farming, stripcropping, cover crops, and crop rotations help to control erosion.

This unit is moderately suited to pasture. Erosion is a hazard, and the seasonal high water table is a limitation. Minimizing tillage during pasture renovation helps to control erosion. Excluding livestock during wet periods helps to maintain the pasture in good condition. Rotational grazing, proper stocking rates, applications of fertilizer, and weed control increase forage yields.

Forestland

The potential productivity of this unit is moderate for sugar maple. This unit is poorly suited to logging roads and log landings because of the slope, moderate soil strength, and wetness. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. Adjacent areas that are less sloping and better drained should be considered as alternative sites. In some areas, the wetness can be reduced by grading the land so that surface water moves away from dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations, backfilling with sand and gravel, and sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope limitation. There is a hazard of erosion during construction. Minimizing the removal of vegetative cover, seeding, and using temporary erosion-control structures during construction help to control the erosion.

Septic tank absorption fields

The slope, the slow or very slow permeability in the firm or very firm subsoil, and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. Adjacent areas that are less sloping, more permeable, and better drained are better suited to septic tank absorption fields. State and local health codes may prohibit conventional septic tank absorption fields in areas of this unit because of the slope. These codes should be investigated before an onsite sewage disposal system is installed.

Local roads and streets

The slope is the main limitation on sites for local roads and streets. Designing roads to conform to the natural slope of the land and grading and filling help to overcome this limitation. Using erosion-control structures and seeding help to control erosion in disturbed areas, such as banks and ditches.

Capability classification

The capability subclass is 4e.

WsB—Willowemoc channery silt loam, 3 to 8 percent slopes

This very deep, gently sloping, moderately well drained soil is on slightly convex footslopes in glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are broad or oblong. They generally range from 6 to 30 acres in size but may be as large as 70 acres.

Typical Profile

Surface layer:
0 to 2 inches—very dark gray partially decomposed leaf litter and moss
2 to 7 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
7 to 12 inches—reddish brown channery silt loam; 15 percent rock fragments
12 to 17 inches—reddish brown channery silt loam that has a few reddish gray mottles in the lower part; 20 percent rock fragments

Subsurface layer:
17 to 25 inches—light reddish brown channery loam that has common yellowish red and a few pinkish gray mottles; 15 percent rock fragments

Subsoil:
25 to 37 inches—reddish brown channery silt loam that has a few strong brown and pinkish gray mottles; very firm; 20 percent rock fragments
37 to 70 inches—dark reddish brown channery silt loam that has a few strong brown and pinkish gray mottles; very firm; 30 percent rock fragments

Minor Components

Included with this unit in mapping are Onteora, Norchip, Lewbeach, and Vly soils. The small areas of somewhat poorly drained Onteora soils and poorly drained Norchip soils are in depressions and along small drainageways. The well drained Lewbeach soils are in the higher areas. The moderately deep, well drained Vly soils are in a few areas where the bedrock is closer to the surface than in the Willowemoc soil. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Slow

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The main limitations are wetness, which can delay planting or harvesting during extended wet periods, and the restricted number of frost-free days. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Installing a subsurface drainage system in the wetter areas helps to control the wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. There is a moderate hazard of erosion on roads and trails because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

Wetness due to the seasonal high water table is the main limitation affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness.

Septic tank absorption fields

The slow or very slow permeability in the firm or very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage and, in some areas, wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations.

Capability classification

The capability subclass is 2w.

WsC—Willowemoc channery silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is on hillsides of glaciated uplands. It formed in firm glacial till derived from reddish sandstone, siltstone, and shale. It is principally in the southern and western parts of the county at elevations over 1,750 feet. Individual areas are broad or oblong. They generally range from 6 to 40 acres in size but may be as large as 105 acres.

Typical Profile

Surface layer:
0 to 2 inches—very dark gray partially decomposed leaf litter and moss
2 to 7 inches—dark reddish brown channery silt loam; 15 percent rock fragments

Subsoil:
7 to 12 inches—reddish brown channery silt loam; 15 percent rock fragments

12 to 17 inches—reddish brown channery silt loam that has a few reddish gray mottles in the lower part; 20 percent rock fragments

Subsurface layer:
17 to 25 inches—light reddish brown channery loam that has common yellowish red and a few pinkish gray mottles; 15 percent rock fragments

Subsoil:
25 to 37 inches—reddish brown channery silt loam that has a few strong brown and pinkish gray mottles; very firm; 20 percent rock fragments
37 to 70 inches—dark reddish brown channery silt loam that has a few strong brown and pinkish gray mottles; very firm; 30 percent rock fragments

Minor Components

Included with this unit in mapping are Onteora, Norchip, Lewbeach, and Vly soils. The somewhat poorly drained Onteora soils and poorly drained Norchip soils are in depressions and along small drainageways. The well drained Lewbeach soils are in the higher areas. The moderately deep, well drained Vly soils are in a few areas where the bedrock is closer to the surface than in the Willowemoc soil. Also included are small areas of Willowemoc soils that have slopes of more than 15 percent. The included areas of minor components are as large as 6 acres and make up about 20 percent of the unit.

Soil Properties

Permeability: Moderate in the surface layer, upper part of the subsoil, and subsurface layer and slow or very slow in the lower part of the subsoil (fragipan)
Available water capacity: Moderate
Reaction: Extremely acid to moderately acid throughout
Seasonal high water table: At a depth of 1.5 to 2.0 feet from November through May
Flooding: None
Depth to bedrock: More than 60 inches
Surface runoff: Medium

Use and Management

Most areas of this map unit are hayland or pasture. Some areas are used for cultivated crops or are idle.

Crops and pasture

This unit is moderately suited to cultivated crops. The main management concerns are the strong slope; the hazard of erosion; wetness, which can delay planting or harvesting during extended wet periods; and the restricted number of frost-free days. A conservation tillage system that leaves residue on the surface after planting and either contour farming or stripcropping help to control erosion. Planting crops and varieties that mature early in the season helps to overcome the shorter growing season. Installing a subsurface drainage system in the wetter areas helps to control the wetness. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and the content of organic matter.

This unit is well suited to pasture. Rotational grazing, proper stocking rates, and restricted grazing during wet periods help to control compaction and maintain the pasture in good condition. Weed control and applications of lime and fertilizer increase forage yields.

Forestland

The potential productivity of this unit is moderately high for sugar maple. This unit is moderately suited to logging roads and log landings. The slope, seasonal wetness, and moderate soil strength are limitations. The hazard of erosion on roads and trails is severe because of the slope and the erodibility of the soil. Trees to manage are eastern white pine, European larch, Norway spruce, and white spruce.

Dwellings

The slope and wetness due to the seasonal high water table are the main limitations affecting dwellings. The wetness can be reduced by grading the land so that surface water moves away from the dwellings and by installing interceptor drains to divert water from the higher areas. Placing drains around footings and foundations and adequately sealing foundation walls and floors also help to overcome the wetness. Designing dwellings to conform to the natural slope of the land helps to overcome the slope. There is a moderate hazard of erosion during construction. Minimizing the removal of vegetative cover and using temporary erosion-control structures help to control the erosion.

Septic tank absorption fields

The slow or very slow permeability in the firm or very firm subsoil and wetness due to the seasonal high water table are the main limitations on sites for conventional septic tank absorption fields. The wetness can be reduced by drains that are installed upslope from the absorption field and by diversions that intercept runoff. Enlarging the absorption field or the trenches below the distribution lines increases the rate of absorption of effluent.

Local roads and streets

Potential frost damage, the slope, and, in some areas, wetness due to the seasonal high water table are the main limitations on sites for local roads and streets. Adding sufficient coarse-grained material to raise the subgrade and base to the thickness of the frost depth and installing a drainage system help to overcome these limitations. Using land shaping and grading or designing roads to conform to the natural slope of the land helps to overcome the slope limitation.

Capability classification

The capability subclass is 3e.

Prime Farmland and Other Important Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses (fig. 20). 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

Figure 20.—Map units HnB, Honeoye silt loam, 3 to 8 percent slopes, and LkB, Lima gravelly silt loam, 3 to 8 percent slopes, in the foreground meet the requirements for prime farmland. Map unit HoE, Honeoye and Lansing soils, 25 to 50 percent slopes, on the drumlin in the background does not meet the requirements for prime farmland. This image was taken in the town of Springfield.

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.

The survey area contains about 106,813 acres of prime farmland. That acreage makes up about 16.7 percent of the land area in the county and is located mainly in the northern part of the county and in the large stream valleys.

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 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.

Also listed in the table are map units that are considered additional “Farmland of Statewide Importance.” This farmland is an important part of the agricultural resource base in the area, but it does not meet the requirements for prime farmland. It is seasonally wet, cannot be easily cultivated, is more erodible than prime farmland, or is usually less productive than prime farmland. 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

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

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

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

Crops and Pasture

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

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

Farmland made up about 231,200 acres in Otsego County in 1994. Of that acreage, 119,300 acres was cropland, pasture, or hayland. About 29,100 acres was permanent pasture. Of the 119,300 acres, about 58,500 acres was hayland, 19,400 acres was used for corn, and 2,400 acres was used for oats (NY Agricultural Statistics Service, August 1995).

The potential for increased crop production is good in many parts of the county. An example is the Susquehanna River Valley in the southern part of the county. This area has glaciolacustrine and alluvial soils with a high content of silt. If well managed, these soils can produce high yields. The lower elevation results in a slightly longer

Figure 21.—Corn growing in an area of nearly level Hamplain and Otego soils along the Susquehanna River. These soils are mainly used for cultivated crops and hayland and meet the requirements for prime farmland.

growing season and more growing degree days for mature crops. Figure 21 shows corn growing in nearly level Hamplain and Otego soils, which are prime farmland, along the Susquehanna River. Many other areas in the county have idle land that could be used for high-yield cropping if managed properly.

Information about suitable management practices for the soils in county is available at the offices of the Otsego County Soil and Water Conservation District and the Cooperative Extension Service.

Water erosion is a hazard on many acres of cropland in the county. The hazard of erosion is related to the length and degree of slope, the erodibility of the soil, the amount and intensity of rainfall, and the amount and type of plant cover. Accelerated erosion results in the loss of plant nutrients and soil moisture, the formation of rills and gullies, deterioration of tilth, excessive sedimentation in downstream areas, and the pollution of streams and lakes.

Soil productivity decreases when the surface layer is lost and increasing amounts of material from the subsoil are incorporated into the plow layer, especially in areas of soils that have a fine textured subsoil, such as Rhinebeck soils, and soils that have root restricting layers, such as Volusia and Willdin soils. Soils that are shallow to bedrock, such as Arnot and Farmington soils, are irreparably damaged by erosion.

Erosion control provides a protective cover, reduces the runoff rate, and increases the rate of water infiltration. Many tillage and conservation practices help to control erosion, and a combination of practices is generally needed. Minimum tillage, no-till farming, cover crops, and crop rotations that include grasses and legumes are effective on soils that have short, irregular slopes, such as sloping areas of Chenango, Tunkhannock, Lordstown, and Howard soils. Contour tillage, stripcropping, and diversions are more suitable on soils that have long and more uniform or smooth slopes, such as sloping areas of Mardin, Lackawanna, Valois, and Lewbath soils.

Erosion control is generally needed on soils that have slopes of more than 5 percent. Soils that have a high content of silt and few or no rock fragments, such as Scio and Unadilla soils, are highly susceptible to water erosion.

The effectiveness of a particular conservation practice or combination of conservation practices differs from one soil to another, and different combinations can be equally effective in some areas.

Seasonal wetness can delay planting or cause crop damage in areas of the somewhat poorly drained soils in the county. Examples include Volusia, Red Hook, Raynham, and Morris soils. The poorly drained or very poorly drained soils, such as Chippewa, Lyons, Canandaigua, and Wayland soils, are generally so wet that the production of the commonly grown crops is not practical. Drainage systems have been installed in some areas of the somewhat poorly drained and poorly drained soils in the county. In many areas, the drainage system consists of a subsurface system of plastic drain pipes.

Surface stones, boulders, and rock outcrops severely limit the use of some soils as cropland or pasture. They interfere with the use of equipment. Some very stony or very bouldery soils, such as some areas of Wellsboro and Mardin soils, 3 to 15 percent slopes, very stony, are better suited to permanent pasture than to cultivated crops. Applying fertilizer, reseeding, and mowing are difficult in many pastured areas of the very stony or very bouldery soils.

Removing the larger stones and boulders may be feasible in some soils that have few additional limitations. The limitations are generally not feasible to overcome, however, in areas of rock outcrop. Farmington-Rock outcrop complex, 8 to 15 percent slopes, is an example.

Available water capacity is an important factor affecting crop growth. Some soils in the county tend to be droughty. Soils that are sandy or gravelly, soils that have a restricting layer, and soils that are shallow over bedrock tend to have fairly low available water capacity. The gravelly Castile soils and the shallow Arnot soils have low or very low available water capacity. Maintaining or increasing the content of organic matter and improving soil structure increase the available water capacity of these droughty soils. Green manure crops, crop residue, and manure increase the content of organic matter and improve structure.

Soil tilth is an important factor affecting the emergence of seedlings, the infiltration of water, and the ease of cultivation. Soils with good tilth generally have granular structure and are porous. The soils can be kept granular and porous by cultivating at the proper moisture content; by including sod crops, green manure crops, or cover crops in the crop rotation; and by properly managing crop residue or adding manure.

Tillage operations can influence tilth. Excessive tillage tends to reduce the content of organic matter and break down soil structure. Riverhead, Chenango, and other soils that are very deep, well drained or somewhat excessively drained, and coarse or moderately coarse textured can be tilled throughout a wide range in moisture content without deterioration of tilth. Tilling the wetter and finer textured soils, such as Rhinebeck, Burdett, and Nunda soils, at the proper moisture content helps to prevent deterioration of soil structure. Tilling when these soils are wet results in puddling and in the formation of a hard surface crust and clods as the soils dry. Cultivating the soils at the proper moisture content; including cover crops, green manure crops, and sod crops in the cropping system; returning crop residue to the soil; and adding manure help to keep the soils granular and porous.

Soil fertility is important for optimum crop production. The soils in the county require applications of lime, fertilizer, or both for optimum production. The amount needed depends on the natural content of lime and plant nutrients, the needs of a particular crop, and the level of desired yields.

The content of organic matter is an important factor affecting fertility. Poorly drained and very poorly drained soils that have a dark surface layer have a high content of organic matter. Fonda and Canandaigua soils are examples. The lighter colored Lackawanna and Valois soils have a lower content of organic matter. Carlisle and Carbondale soils are formed entirely in organic matter and are dark throughout.

Nitrogen is released from organic matter, but much of the nitrogen is in complex forms that cannot be used by plants until it is decomposed by microorganisms. Nitrogen fertilizer is needed to supplement the nitrogen available from the organic matter in the soil. Management practices that increase the content of organic matter, such as green manure crops, sod crops, and crop residue management, increase the content of nitrogen.

When nitrogen is applied to a soil, timeliness is important to ensure maximum use by plants. Nitrogen can be lost through leaching in rapidly permeable soils, such as Chenango soils, or by denitrification in the wetter and less permeable soils, such as Volusia soils. The best results can be obtained by applying small amounts of nitrogen at the proper intervals. For example, the nitrogen can be applied at the time of planting and again as a side-dressing when the crop is partially grown.

The native content of phosphorous generally is low in the soils of Otsego County. It tends to be very low in coarse textured soils, such as Tunkhannock and Chenango soils. Additions of the appropriate amounts of phosphate in the form of commercial fertilizer are essential in areas used by crops.

Most of the soils in the county have low or medium levels of available potassium. The potassium-supplying power of a soil depends upon the content of clay in the soil. For example, Rhinebeck and Danley soils have a somewhat higher content of potassium because they have a clayey subsoil. Even soils that have a fairly high content of potassium require additions of potassium for the optimum yields of most crops.

Lime is needed on many of the soils in the county to raise the reaction (pH) to a level that ensures optimum yields of most crops. Many of the soils in the northern part of the county overlie or where formed in deposits derived from limestone or calcareous shale. Typically, these soils do not require as much lime as soils in the other parts of the county. Additions of lime and fertilizer should be based on the results of soil tests. For assistance in obtaining soil tests and recommendations, contact the local office of the Cooperative Extension Service.

Specialty crops are not grown extensively in Otsego County. In 1994, small acreages in the county were used commercially for potatoes, sweet corn, cabbage, strawberries, and beans. Very deep soils that have good natural drainage, have moderate to high available water capacity, and do not have impervious layers are especially well suited to vegetables. Examples are Riverhead, Honeoye, Howard, and Conesus soils.

Information on recent research findings and fertilizer recommendations can be found in the current editions of “Cornell Guide for Integrated Field Crop Management” (Cornell, 2005a) and “The Integrated Crop and Pest Management Guidelines for Vegetables” (Cornell, 2005b). These bulletins are prepared by the New York State College of Agriculture, Cornell University, Ithaca, New York. Additional information can be obtained by contacting the local office of the Cooperative Extension Service.

In Otsego county, the acreage used for crops has decreased in the past decade as numerous farms have gone out of operation. The acreage of pasture has increased slightly. Many farmers rely heavily on the productivity of pastures during the growing season to provide the bulk of the nutritional needs for their animals. Figure 22 shows cows grazing on gently sloping Howard soils. Some farmers have initiated rotational grazing systems and have converted crop fields to pasture in order to obtain the forage required for their operation.

Figure 22.—Cows grazing in a pasture of gently sloping Howard soils on kame-and-kettle topography. Small areas of poorly drained Atherton soils and somewhat poorly drained Red Hook soils are in the kettles and concave depressions.

Yields per Acre

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

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

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

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

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

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

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. 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.

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 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.

The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and in table 6. The acreage of soils in each capability class and subclass is shown in table 7.

Forestland Productivity and Management

The tables in this section can help forestland owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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

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

Forestland Management

In tables 9, 10, and 11, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forestland management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

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 specified forestland management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forestland management practices. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet (http://soils.usda.gov).

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forestland equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. In the case of Histosols, the organic soil is exposed to accelerated oxidation and consequently subsidence. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion of mineral soils or subsidence of organic soils is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. In the case of Histosols, the organic soil is exposed to accelerated oxidation and consequently subsidence. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion of mineral soils or subsidence of organic soils is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Figure 23 shows a gully that formed in what had been a shallow road ditch. The ditch was cut into original soil material and vegetation was not reestablished. Spring snowmelt followed by an intense rainstorm carved this gully in a short period. The dirt road has a long, steep slope, and the surface sets slightly lower that the adjacent roadbanks. Therefore, runoff tends to become concentrated along the road shoulders and ditches making them vulnerable to erosion.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity

Figure 23.—Gully erosion in a road ditch. The strongly sloping and moderately steep Mardin soil is adjacent to a dirt road that has a long, steep slope.

index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Recreation

The soils of the survey area are rated in tables 12 and 13 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 12 and 13 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 cemented pan 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 cemented pan, 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 cemented pan, 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 cemented pan, 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.

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 cemented pan; 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 14, 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 fescue, lovegrass, bromegrass, clover, and alfalfa.

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

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 honeysuckle, silky dogwood, Russian-olive, autumn-olive, elderberry and crabapple.

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

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

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, beaver activity, 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 bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

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

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, muskrat, mink, and beaver.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low-growing and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the soil type, plant species, and specific site conditions, such as average wind speed or snowfall amounts of the area. Field windbreaks protect cropland and crops from wind and help to keep snow on the fields. Windbreaks and plantings can provide energy savings to homeowners. Established plantings of trees and shrubs may provide shade for buildings in the summer and reduce heat loss due to wind in the winter. Windbreaks can also help reduce the blowing and drifting of snow on highways and roads.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Additional information on planting windbreaks and screens or planting of trees and shrubs can be obtained from local offices of the USDA–Natural Resources Conservation Service, the Otsego County Soil and Water Conservation District, or the Cooperative Extension Service.

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 15 and 16 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 cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, 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 cemented pan, hardness of bedrock or a cemented pan, 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 cemented pan, hardness of bedrock or a cemented pan, 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 cemented pan; 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 17 and 18 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. 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 cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan 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 cemented pan, 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 cemented pans 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 cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Table 19 gives information about the soils as potential sources of gravel and sand.

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 19, 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 *probable* or *improbable* as sources of sand and gravel. A rating of *probable* indicates the probability of finding the material in suitable quantity 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 to 0.004 indicates that the layer is an improbable source. These will show on the table as 0.00 since the table only shows values to the hundredth decimal place. A number between 0.005 and 1.00 indicates that the layer is a probable source. A number between 0.005 and 1.00 indicates the relative degree to which the layer is a likely source.

Water Management

Table 20 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 21 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

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

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

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

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

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

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

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

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

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

The estimates of 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.

Engineering Properties of Geologic Deposits

Prepared following the format previously used by the Senior Soil Engineer, New York State Department of Transportation, Soil Mechanics Bureau.

This section discusses the engineering characteristics of the various unconsolidated geologic deposits in Otsego County and their relations to soils. This discussion can help planners, designers, engineers, contractors, and others associated with construction projects involving earthy materials. It should be noted that terms used in soil engineering do not always mean the same as similar terms used in soil science.

The following geologic deposits occur in Otsego County: glacial till, glacial outwash, lacustrine deposits, alluvial deposits, and organic deposits. The engineering significance of each geologic deposit is influenced to a great extent by its mode of deposition, which in turn determines the texture of the material and the internal structure of the landform. Other influences are the position on the landscape and the depth to the water table. In Otsego County, the geologic deposits are divided into the following categories: deep till deposits, deposits that are shallow or moderately deep to bedrock, stratified coarse textured deposits, stratified fine textured deposits, and organic deposits. The categories are described in the following paragraphs.

Deep Till Deposits

Deep till deposits are unstratified, highly variable mixtures of all particle sizes ranging from rock fragments to clay. This material was scoured and transported from nearby sources by glacial ice and deposited as ground moraines or end moraines. Bedrock is typically more than 5 feet below the surface. In some small areas, however, the bedrock is closer to the surface and a few rock outcrops may occur, particularly along the sides of some hills. The individual rock and mineral fragments in the soil generally reflect the types of bedrock in the immediate area.

Examples of soils that formed in mixed, deep till deposits include Bath, Lewbath, Lackawanna, Honeoye, Lansing, and Lewbeach soils. These soils are the most dense and compact of the unconsolidated deposits in the county. Valois soils formed in moraines and are not dense and compact. Danley, Darien, Nunda, and Burdett soils have a veneer of silty textured material over deep till. Deep till soils are mostly gently sloping to moderately steep but range from nearly level to very steep. The characteristics of many landscapes are such that cut-and-fill earthwork is needed in most construction on these soils. The deep till soils typically provide stable, relatively incompressible foundations for engineering works. When properly compacted, fill material from these deposits generally provides stable embankments. Steep cut slopes often are subject to surface sloughing and erosion. If excavated, some nearly level areas of Alden, Norwich, Chippewa, and Norchip soils are subject to ponding.

Deposits That Are Shallow or Moderately Deep to Bedrock

Deposits that are shallow or moderately deep to bedrock consist of unstratified mixtures of glacially transported materials deposited as a thin veneer over bedrock. The soils that formed in these deposits are typically 0.5 to 4.0 feet thick. Rock outcrops are common in some areas. The landforms and topography are controlled by the underlying bedrock.

Soils that formed in glacial till over limestone or calcareous shale bedrock include Farmington and Wassaic soils. Lordstown, Mongaup, and Hawksnest soils formed in glacial till over sandstone, shale, or siltstone bedrock. Manlius and Vly soils formed in glacial till over mostly shale or siltstone bedrock that is typically very fractured or fissile in the upper part. The bedrock of the county is described in the section "Physiography and Geology."

The primary engineering concerns relate to the underlying bedrock and ground water conditions. Other engineering considerations are similar to those described for the overlying material. Fill material is limited in quantity because of the limited depth to bedrock.

Stratified Coarse Textured Deposits

Stratified coarse textured deposits include materials dominated by gravel and sand that have been sorted by glacial meltwaters into layered or stratified deposits. Included in this category are the coarser materials deposited by fluvial action. Stratified coarse textured deposits occupy such geologic landforms as outwash plains and terraces, alluvial fans, the coarser portion of deltas, and flood plains. The strata within these deposits may be well sorted or poorly sorted and range in size from cobbles to silt. The deposits are typically loose and porous and have moderately rapid to rapid permeability.

Chenango, Howard, Tunkhannock, Red Hook, and Castile soils formed in gravelly eskers, outwash plains, and terraces. Trestle and Deposits soils contain coarse textured deposits that formed by fluvial action. Riverhead soils formed in sandy materials on outwash plains and deltas. Herkimer and Chenango soils formed on some alluvial fans.

Coarse textured deposits generally have relatively high strength and low compressibility. Because of their loose and porous nature, most of these deposits are not highly erodible. They are subject to settlement when vibrated.

Coarse textured deposits of gravel and sand have many uses as construction material. Depending on gradation, soundness, and plasticity, they may be used for such purposes as fill material for highway embankments, cover for parking areas, and material to decrease the stress on underlying soils on construction sites. They may also be used as subbase for pavements; wearing surfaces for driveways, parking lots, and some roads; material for highway shoulders; and free-draining backfill for structures and pipes. Also, they may be used as outside shells of dams for impounding water, as slope-protection blankets to drain and help stabilize wet cut slopes, and as general sources of sand and gravel. Figure 14 shows an outwash terrace from which stratified deposits of gravel and sand have been removed from an area of Chenango soils.

Stratified Fine Textured Deposits

Stratified fine textured deposits consist of lacustrine, fine textured sediment transported by glacial meltwaters and deposited in quiet, proglacial lakes and ponds. Some are flood plain soils in areas of the more recent slack water deposits. Stratified fine textured deposits have distinct layers or laminations that are generally comprised of silt- and clay-sized particles. Although these deposits are mostly silt, they are generally clayey enough to be plastic and sticky.

Rhinebeck, Canandaigua, and Fonda soils formed in deep, lake-laid silt and clay deposits. Unadilla, Scio, and Raynham soils formed on deep silty terraces. Hamplain, Otego, Wakeville, and Wayland soils and Fluvaquents-Udifluvents are alluvial soils on flood plains.

Because of their finer textures and higher moisture content, these deposits have relatively low strength. They are generally highly compressible and in some areas continue to settle over long periods of time. The soils that have a high content of fine sand and silt have low compressibility but are highly erodible and are susceptible to frost action. Some soils on flood plains, such as Hamplain, Wakeville, and Wayland soils, are subject to occasional periods of brief flooding.

The fine textured deposits are difficult to use for engineering works, especially in areas that are flat, wet, or subject to ponding. In areas of soils that formed in fine textured sediments, sites for embankments, heavy structures, and buildings must be investigated for strength, settlement characteristics, and effects of ground water.

Organic Deposits

Organic deposits consist mainly of accumulations of plant materials. In places, the deposits include a minimal amount of mineral soil material. Organic deposits form in very poorly drained depressional areas and in bogs. They are commonly ponded for part or most of the year.

Palms soils formed in organic material that is generally 16 to 51 inches deep over loamy mineral material. Edwards soils formed in organic material that is generally 16 to 51 inches deep over marl. Carlisle and Carbondale soils formed in organic material that is generally more than 51 inches deep.

Soils that formed in organic deposits are wet, have low strength, and are highly compressible. They are therefore unsuited to foundations or embankments. Generally, removing the organic deposits to access suitable underlying materials and backfilling with suitable material are required. Placing fill material over organic deposits results in long-term settlement.

Physical Properties

Table 22 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.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 22, 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 (ovendry) 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 22, 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 22 as the K factor (Kw and Kf) 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 Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf 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.

Chemical Properties

Table 23 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.

Water Features

Table 24 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 24 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 24 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.

Soil Features

Table 25 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.

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.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1990). 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 26 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 Inceptisol.

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 Ochrept (*Ochr*, meaning pale, plus *ept*, from Inceptisol).

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 Fragiochrepts (*Fragi*, meaning fragipan, plus *ochrept*, the suborder of the Inceptisols that has an ochric epipedon).

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 Fragiochrepts.

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, 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, mesic Typic Fragiochrepts.

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 Lackawana series.

Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each taxonomic unit. A pedon, a small three-dimensional area of soil, that is typical of the taxonomic unit in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1951). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1975) and in "Keys to Soil Taxonomy—4th Edition" (Soil Survey Staff, 1990). 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 taxonomic unit.

Alden Series

The Alden series consists of very deep, very poorly drained soils that formed in glacial till, commonly with a thin alluvial mantle due to local deposition from adjacent higher landforms. Slopes range from 0 to 3 percent.

Alden soils are commonly adjacent to Chippewa, Canandaigua, and Palms soils on the same landform. Wayland soils and Fluvaquents-Udifluvents are on adjacent flood plains. Well drained Bath soils and moderately well drained Mardin soils are nearby on higher knobs and sides of valleys.

Typical pedon of Alden mucky silt loam; in the town of Laurens; 0.3 mile west of the intersection of Mary Brown Hill Road and Town Line Road and 35 feet north of Town Line Road, in an abandoned field (lat. 42°34'45" N.; long. 75°06'24" W.).

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) mucky silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; very friable; many fine and few medium roots; moderately acid; clear smooth boundary.

Eg—8 to 10 inches; gray (5Y 5/1) very fine sandy loam; common fine and medium prominent strong brown (7.5YR 5/6) mottles and root stains; weak medium platy structure; friable; common fine roots; common fine tubular pores; 2 percent rock fragments; moderately acid; clear wavy boundary.

Bg1—10 to 15 inches; gray (N 6/0) and gray (5Y 5/1) loam; many medium prominent dark yellowish brown (10YR 4/4) and common coarse prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine tubular pores; 2 percent rock fragments; moderately acid; gradual wavy boundary.

Bg2—15 to 25 inches; very fine sandy loam, gray (N 6/0) in 60 percent of the matrix; common medium distinct olive brown (2.5Y 4/4) and common medium prominent dark yellowish brown (10YR 4/6) mottles; firm; weak medium subangular blocky structure; few fine tubular pores with silt coats lining 50 percent of the pores; 5 percent rock fragments; moderately acid; gradual wavy boundary.

Cg—25 to 36 inches; gray (N 6/0) loam; common medium distinct olive brown (2.5Y 4/4) and common medium prominent dark yellowish brown (10YR 4/6) mottles; firm; massive; few very fine tubular pores; 5 percent rock fragments; moderately acid; clear smooth boundary.

2Cg—36 to 72 inches; dark grayish brown (2.5Y 4/2) silt loam with thin lenses and pockets of gravelly sandy loam; common coarse prominent dark yellowish brown (10YR 4/6) and many coarse prominent yellowish brown (10YR 5/4) mottles; firm; massive with weak thin platy structure in some spots; 10 percent rock fragments, except in the pockets and lenses of gravelly sandy loam, which have up to 25 percent; slightly acid.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the solum and from 5 to 35 percent in the C horizon. Some pedons have an O horizon that ranges from 2 to 6 inches in thickness.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. The texture of the fine-earth fraction ranges from mucky silt loam to fine sandy loam. Structure is weak or moderate, fine or medium granular or subangular blocky. Consistence is friable or very friable. Reaction ranges from strongly acid to neutral.

The Eg horizon has hue of 5YR to 5Y or 5GY, or it is neutral. It has value of 5 to 7 and chroma of 0 or 1. The texture of the fine-earth fraction ranges from silt loam or silty clay loam to very fine sandy loam. Structure is platy.

The Bg horizon has hue of 5YR to 5Y or 5GY, or it is neutral. It has value of 4 to 6 and chroma of 0 to 2. It has few to many distinct or prominent mottles. The texture of the fine-earth fraction ranges from silt loam, silty clay loam, or loam to very fine sandy loam. Structure is weak subangular blocky or platy, or it is moderate or strong, coarse or very coarse prismatic. Consistence is friable or firm. Reaction ranges from moderately acid to neutral.

The Cg and 2Cg horizons have hue of 5YR to 5Y, or they are neutral. They have value of 3 to 6 and chroma of 0 to 3. They have few to many faint to prominent mottles. The texture of the fine-earth fraction is silt loam, silty clay loam, loam, or fine sandy loam. Structure is weak platy, or the horizons are massive. Reaction ranges from moderately acid in the upper part to moderately alkaline at depths of more than 40 inches. Many pedons have carbonates below a depth of 40 inches.

Aquents

Aquents consist of very deep, very poorly drained soils that formed in deposits of lacustrine, outwash, or glacial till. These soils have little or no profile development. They are in concave and impounded areas on lacustrine, outwash plains and till plains in the uplands. Slopes are 0 to 1 percent.

Aquents are in an undifferentiated unit with Saprists. Saprists formed in organic material. The unit is commonly near Alden, Canandaigua, Chippewa, Norchip, Palms, and Carlisle soils, which formed in more uniform deposits.

Because soil deposits in the Aquents are highly variable, a typical pedon is not described.

Generally, the thickness of the solum in the Aquents ranges from 2 to 15 inches. Bedrock is typically at a depth of more than 60 inches.

The surface layer has hue of 10YR to 5Y, value of 2 to 4, and chroma of 1 to 3. Mottles may or may not be present. The texture of the fine-earth fraction ranges from loamy sand to silty clay, with or without the gravelly and very gravelly analogs of those textures. Structure is granular, or the layer is massive. The content of rock fragments ranges from 0 to 50 percent, by volume. Reaction ranges from strongly acid to mildly alkaline.

The substratum has hue of 10YR to 5BG, value of 3 to 6, and chroma of 2 or less. It may or may not be mottled. The texture of the fine-earth fraction ranges from loamy sand to silty clay or the gravelly and very gravelly analogs of those textures. The substratum is massive. The content of rock fragments ranges from 0 to 50 percent, by volume. Reaction ranges from strongly acid to mildly alkaline.

Arnot Series

The Arnot series consists of shallow, somewhat excessively drained soils on uplands. These soils formed in a thin mantle of glacial till overlying sandstone, siltstone, and shale bedrock. Slopes range from 1 to 45 percent.

Arnot soils are commonly adjacent to moderately deep, well drained Lordstown soils and to moderately deep Oquaga soils in areas where the depth to bedrock is greater. Very deep, well drained Bath and Lackawanna soils and moderately well drained Mardin and Wellsboro soils are nearby on glacial till uplands and have a firm or very firm fragipan subsoil. Long, narrow areas of rock outcrop are near the Arnot soils in some places.

Typical pedon of Arnot channery silt loam, in an area of Lordstown-Arnot complex, 1 to 8 percent slopes, rocky; in the town of Morris; 1,750 feet south of the intersection of Creighton Road and George Wells Road and 500 feet east of George Wells Road, in a brushy area (lat. 42°31’56” N.; long. 75°18’57” W.).

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) channery silt loam, brown (10YR 5/3) dry; moderate fine and very fine granular structure; very friable; many fine and very fine and common medium roots; 30 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw1—5 to 7 inches; dark brown (7.5YR 4/4) channery silt loam; weak fine and medium subangular blocky structure parting to moderate fine granular; friable; many fine and very fine and few medium roots; 15 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw2—7 to 17 inches; strong brown (7.5YR 4/6) very channery silt loam; moderate fine and weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; few fine vesicular pores; 40 percent rock fragments, including 5 percent larger than 3 inches in diameter; strongly acid; clear wavy boundary.

C—17 to 19 inches; dark brown (7.5YR 4/4) very flaggy silt loam; massive; friable; few fine and medium roots; 45 percent rock fragments, including 20 percent larger than 3 inches in diameter; strongly acid; clear irregular boundary.

2R—19 inches; greenish gray (5GY 5/1), massive, fine-grained sandstone bedrock.

The thickness of the solum ranges from 10 to 20 inches. The depth to bedrock ranges from 10 to 20 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer and from 35 to 70 percent, as a weighted average, in the particle-size control section. The texture of the fine-earth fraction is silt loam or loam throughout the soil. In areas that have not been limed, reaction ranges from extremely acid to moderately acid throughout the soil.

The A or Ap horizon has hue of 5YR to 2.5Y, value of 2 to 4, and chroma of 2 or 3. Structure is weak or moderate granular. Consistence is very friable or friable.

Some pedons have a friable or very friable E horizon that is 1 to 3 inches thick and grayish.

The B horizon has hue of 2.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Structure is very weak to moderate, fine or medium subangular blocky or granular, or it is weak thin or medium platy. Consistence is friable or firm. Some pedons have few or common mottles in the lower part.

The C or Cr horizon, where present, has a range in color and texture similar to that of the B horizon.

The 2R layer consists of massive sandstone or siltstone, or it is horizontally bedded shale. In some pedons, the upper part of the bedrock is fractured.

Atherton Series

The Atherton series consists of very deep, poorly drained soils. These soils formed in water-sorted materials in depressions and along small drainageways. Slopes range from 0 to 3 percent.

Atherton soils are commonly adjacent to somewhat poorly drained Red Hook soils. Moderately well drained Castile soils are nearby on slightly higher parts of the landscape. Very poorly drained Fluvaquents-Udifluvents are nearby on flood plains. Well drained Trestle soils and moderately well drained Deposit soils are on some adjacent higher areas of flood plains.

Typical pedon of Atherton silt loam; in the town of Laurens; 2,600 feet southwest of the intersection of New York Route 23 and Otsego County Route 10 and 700 feet north of Otsego County Route 10, in an abandoned area of weeds (lat. 42°31’45” N.; long. 75°11’00” W.).

A—0 to 3 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine and medium granular structure; very friable; common fine and few medium roots; strongly acid; clear wavy boundary.

AB—3 to 7 inches; dark brown (10YR 4/3) silt loam; common medium prominent strong brown (7.5YR 4/6) and few fine and medium prominent grayish brown (2.5Y 5/2) mottles; weak medium subangular blocky structure parting to moderate medium granular; very friable; common fine roots; moderately acid; clear smooth boundary.

Bg1—7 to 13 inches; grayish brown (2.5Y 5/2) silt loam; common fine prominent strong brown (7.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; moderately acid; clear smooth boundary.

Bg2—13 to 24 inches; gray (10YR 5/1) silt loam; few fine and medium prominent strong brown (7.5YR 5/6) mottles grading to common fine and medium in lower part; strong fine and medium subangular blocky structure; friable; few fine roots in upper part; 3 percent rock fragments; moderately acid; gradual wavy boundary.

2Cg1—24 to 33 inches; gray (10YR 5/1) very gravelly silt loam; few medium prominent dark yellowish brown (10YR 4/6) mottles; massive; very friable, slightly sticky and nonplastic; 35 percent rock fragments, including 2 percent larger than 3 inches in diameter; moderately acid; gradual wavy boundary.

2C—33 to 43 inches; light olive brown (2.5Y 5/4) very gravelly loam; few medium and coarse prominent yellowish brown (10YR 5/6) mottles; massive; very friable, nonsticky and nonplastic; 40 percent rock fragments, including 3 percent larger than 3 inches in diameter; moderately acid; gradual wavy boundary.

2Cg2—43 to 72 inches; light olive brown (2.5Y 5/2) very gravelly loam with common lenses of silty clay loam; massive; very friable, nonsticky and non-plastic, except for the lenses of silty clay loam, which are sticky and slightly plastic; 59 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 20 to 44 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the surface layer, and from 0 to 20 percent, including up to 5 percent larger than 3 inches in diameter, below the surface layer to a depth of 20 inches. Below a depth of 20 inches, the content of rock fragments ranges from 10 to 60 percent, by volume, including up to 15 percent larger than 3 inches in diameter. The content of rock fragments, by weighted average, is less than 35 percent between depths of 20 and 40 inches, including up to 5 percent larger than 3 inches in diameter.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. The texture of the fine-earth fraction is loam, silt loam, or silty clay loam. Structure is weak or moderate, granular or fine subangular blocky. Consistence is very friable or friable. Reaction ranges from strongly acid to neutral. In uncleared areas, the A horizon is 2 to 8 inches thick and has value of 2 or 3 moist and 4 or 5 dry. In some pedons, the A horizon is underlain by an E horizon that is 1 to 6 inches thick and has chroma of 0 or 1.

The Bw and Bg horizons, where present, have hue of 5YR to 5Y, value of 4 or 5, and chroma of 0 to 3. They have mottles. The texture of the fine-earth fraction is loam, silt loam, or silty clay loam. Some pedons have thin layers of pebbles, sand, or silty clay. Structure is prismatic, granular, or blocky. Consistence ranges from very friable to firm. In areas that have not been limed, reaction ranges from moderately acid to mildly alkaline.

The 2C and 2Cg horizons have ranges in color and texture similar to those of the Bw and Bg horizons and are generally crudely stratified. Some pedons have a massive C horizon. In areas that have not been limed, reaction ranges from moderately acid to mildly alkaline.

Bath Series

The Bath series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived from sandstone, siltstone, and shale. These soils have a dense fragipan subsoil starting at a depth of 26 to 40 inches. Slopes range from 3 to 45 percent.

Bath soils are commonly adjacent to moderately well drained Mardin soils and somewhat poorly drained Volusia soils. Valois soils, which do not have a firm fragipan subsoil, are nearby on lower landforms and along valley walls. Moderately deep Lordstown soils and shallow Arnot soils are nearby on slightly higher, bedrock-controlled landforms.

Typical pedon of Bath channery silt loam, 3 to 8 percent slopes; in the town of Pittsfield; 600 feet north of County Route 17 and 1,500 feet west of the intersection of County Routes 17 and 49, in a hayfield (lat. 42°38’52” N.; long. 75°13’34” W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) channery silt loam, pale brown (10YR 6/3) dry; strong fine and medium granular structure; very friable; many fine and common medium roots; 20 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw1—9 to 19 inches; dark yellowish brown (10YR 4/6) channery silt loam; moderate fine and medium subangular blocky structure; friable; common fine and few medium roots; 15 percent rock fragments; moderately acid; gradual wavy boundary.

Bw2—19 to 26 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine and medium subangular blocky structure; friable; few fine roots; 15 percent rock fragments; moderately acid; clear wavy boundary.

E—26 to 30 inches; olive (5Y 5/3) channery loam; common fine prominent light olive brown (2.5Y 5/6) mottles; weak medium subangular blocky structure; friable; common fine tubular pores; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bx—30 to 40 inches; olive brown (2.5Y 4/4) channery loam; very dark grayish brown (10YR 3/2) stains on faces of peds; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide and 13 inches apart and have gray (5Y 5/1) interiors and light olive brown (2.5Y 5/6) edges; very firm and brittle; common fine vesicular pores; 30 percent rock fragments; slightly acid; gradual wavy boundary.

Cd—40 to 72 inches; olive (5Y 5/3 and 4/3) very channery loam; massive; very firm; many fine and medium vesicular pores with common distinct clay films in pores; 40 percent rock fragments; slightly acid.

The thickness of the solum ranges from 40 to 80 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 26 to 40 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 2 to 40 percent in horizons below the surface layer to the top of the fragipan; and from 15 to 65 percent in the fragipan and substratum. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid above the fragipan, from very strongly acid to slightly acid in the fragipan, and from strongly acid to moderately alkaline in the substratum. Undisturbed areas have a thin A horizon and may have a thin E horizon.

The Ap horizon has hue of 10YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or loam with more than 60 percent silt plus very fine sand.

The E horizon, where present, has hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 or 3. In some pedons it has faint or distinct mottles.

The Bx horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 3 to 6. It has mottles in most pedons. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is platy, angular blocky, or subangular blocky within very coarse prisms. Some pedons have prism interiors that are massive.

The C or Cd horizon has a range in color and a range in texture of the fine-earth fraction similar to those of the Bx horizon.

Burdett Series

The Burdett series consists of very deep, somewhat poorly drained soils on uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. They have a silty mantle. Slopes range from 1 to 15 percent.

Burdett soils are commonly adjacent to moderately well drained Nunda soils. Somewhat poorly drained Darien soils and moderately well drained Danley soils, which do not have a silty mantle, are also on the same landforms as the Burdett soils. Well drained Honeoye and Lansing soils are nearby on upland till plains and drumlins. Shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are nearby on bedrock-controlled uplands.

Typical pedon of Burdett silt loam, in an area of Darien and Burdett soils, 8 to 15 percent slopes; in the town of Cherry Valley; 1,200 feet south of the intersection of Salt Springville Road and County Route 31 and 100 feet east of Salt Springville Road, in a young forest (lat. 42°51’19” N.; long. 74°45’06” W.).

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (2.5Y 6/2) dry; moderate medium granular structure; friable; many fine, common medium, and few coarse roots; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

BE—8 to 15 inches; yellowish brown (10YR 5/4) silt loam; common medium prominent yellowish red (5YR 5/8) mottles; moderate medium and coarse subangular blocky structure; friable; common fine and medium and few coarse roots; common fine vesicular pores; 5 percent rock fragments; slightly acid; abrupt wavy boundary.

2B/E—15 to 19 inches; dark grayish brown (10YR 4/2) silty clay loam; grayish brown (10YR 5/2) faces of peds more than 1 millimeter thick; common fine and medium prominent dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; firm, sticky and slightly plastic; few fine roots; few fine vesicular and tubular pores; 10 percent rock fragments; slightly acid; clear wavy boundary.

2Bt1—19 to 25 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine faint dark yellowish brown (10YR 4/6) mottles; moderate fine and medium subangular blocky structure; firm, sticky and slightly plastic; few fine and medium roots; few fine vesicular and tubular pores containing common distinct grayish brown (2.5Y 5/2) clay films; many prominent clay films on both horizontal and vertical faces of peds; grayish brown (2.5Y 5/2) ped interiors; 10 percent rock fragments; neutral; clear wavy boundary.

2Bt2—25 to 33 inches; dark grayish brown (10YR 4/2) silty clay loam; few fine distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate fine and medium subangular blocky structure; firm, slightly sticky and plastic; few medium roots; common fine vesicular and few medium tubular pores containing common distinct grayish brown (2.5Y 5/2) clay films; many prominent clay films on both horizontal and vertical faces of peds; grayish brown (2.5Y 5/2) ped interiors; 10 percent rock fragments; neutral; clear wavy boundary.

2BC—33 to 44 inches; dark brown (10YR 4/3) channery silty clay loam; few fine faint dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; firm, sticky and slightly plastic; few fine vesicular pores; 15 percent rock fragments; slightly effervescent; mildly alkaline; gradual wavy boundary.

2C—44 to 72 inches; dark brown (10YR 4/3) channery silty clay loam; few fine faint dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) mottles; massive; firm, sticky and slightly plastic; 15 percent rock fragments; strongly effervescent; moderately alkaline.

The thickness of the solum ranges from 30 to 50 inches. The depth to carbonates ranges from 30 to 72 inches. Depth to the lithologic discontinuity ranges from 13 to 25 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 30 percent in horizons below the surface layer and above the lithologic discontinuity; and from 10 to 35 percent in horizons below the lithologic discontinuity. The depth to bedrock is more than 60 inches. In areas that have not been limed, reaction ranges from strongly acid to neutral in the solum and from slightly acid to moderately alkaline in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate, medium or fine granular.

The BE horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It is mottled. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate, very fine to coarse subangular blocky.

The 2B/E or 2E/B horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 or 3 in the E portion of peds and has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4 in the B portion of peds. It has common or many, medium or coarse, faint or distinct mottles. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure ranges from moderate, thick platy to weak, coarse subangular blocky. Consistence ranges from very friable to firm. Some pedons have an E horizon.

The 2Bt horizon has hue of 5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Ped coats have chroma of 2 or less. The texture of the fine-earth fraction is silty clay loam, clay loam, or loam. The content of clay ranges from 28 to 35 percent. Structure is weak or moderate, coarse prismatic or subangular blocky in the upper part and weak or moderate platy, blocky, or prismatic in the lower part. Consistence is firm or very firm.

The 2C horizon has hue of 5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction is sandy clay loam, loam, clay loam, silt loam, or silty clay loam. Structure is weak or moderate, thin to thick platy, or the horizon is massive. Consistence is firm or very firm.

Canandaigua Series

The Canandaigua series consists of very deep, poorly drained or very poorly drained soils that formed in water-sorted sediments on glacial lake plains and sediment filled depressions in glaciated uplands. Slopes range from 0 to 3 percent.

Canandaigua soils are commonly adjacent to somewhat poorly drained Raynham soils and moderately well drained Scio soils in slightly higher areas. Poorly drained Wayland soils and variably drained Fluvaquents-Udifluvents are nearby on flood plains. On glaciated uplands, Canandaigua soils are commonly adjacent to very poorly drained Alden soils. Palms, Carlisle, and Edwards soils, which formed in organic deposits, are nearby in bogs.

Typical pedon of Canandaigua silt loam; in the town of Plainfield; 2,560 feet west of the intersection of County Routes 18 and 21 and 300 feet south of the old Skaneateles Turnpike, in an old stream channel (lat. 42°49'25" N.; long. 75°14'32" W.).

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; strong medium granular structure; very friable; many fine roots; moderately acid; clear wavy boundary.

Bg1—8 to 14 inches; dark grayish brown (10YR 4/2) silt loam; common fine prominent strong brown (7.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; many fine and common medium roots; few fine vesicular pores; neutral; clear wavy boundary.

Bg2—14 to 24 inches; grayish brown (2.5Y 5/2) silt loam; common (less than 40 percent) medium prominent yellowish brown (10YR 5/8), gray (5Y 6/1), and strong brown (7.5YR 4/6) mottles; weak medium subangular blocky structure; friable; few fine and coarse roots; common medium vesicular and tubular pores; neutral; gradual wavy boundary.

Bg3—24 to 32 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and common medium and coarse distinct gray (5Y 6/1) mottles; weak fine and medium subangular blocky structure; friable; few coarse roots; common medium vesicular and tubular pores; neutral; clear smooth boundary.

Cg1—32 to 41 inches; grayish brown (2.5Y 5/2) stratified silt loam and silty clay; common fine and medium prominent dark yellowish brown (10YR 4/6) and light olive brown (2.5Y 5/6) mottles; massive; friable; few coarse roots; common medium vesicular and tubular pores; neutral; abrupt smooth boundary.

Cg2—41 to 60 inches; dark grayish brown (2.5Y 4/2) silt loam; common fine and medium prominent dark yellowish brown (10YR 4/6) and light olive brown (2.5Y 5/6) mottles; massive; friable; 10 percent rock fragments; neutral; clear smooth boundary.

Cg3—60 to 75 inches; olive brown (2.5Y 4/4) silt loam; common fine and medium prominent dark yellowish brown (10YR 4/6) and light olive brown (2.5Y 5/6) mottles; massive; friable; slightly effervescent; mildly alkaline.

The thickness of the solum ranges from 20 to 40 inches. The depth to carbonates ranges from 18 to 60 inches. The soil commonly does not have rock fragments. However, the content of rock fragments ranges up to 10 percent, by volume, in subhorizons of some pedons. The depth to bedrock is more than 60 inches. Some pedons have an Oa horizon that is up to 6 inches thick over an A horizon. Some pedons have a BC horizon that is similar to the Bg horizon except for having carbonates and weaker structure.

The Ap or A horizon has hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2. The texture of the fine-earth fraction is silt loam, loam, very fine sandy loam, or fine sandy loam. Structure is weak to strong, very fine to coarse granular or subangular blocky. Reaction ranges from moderately acid to mildly alkaline.

The Bg horizon has hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 0 to 2. The texture of the fine-earth fraction is silty clay loam, silt loam, or very fine sandy loam. Some pedons have thin subhorizons with other textures. Structure is weak to strong, very thin to coarse blocky and can be within coarse or very coarse prisms. Consistence ranges from friable to very firm. Reaction ranges from moderately acid to mildly alkaline.

The C or Cg horizon has hue of 5YR to 5Y, value of 3 to 6, and chroma of 1 to 4. The fine-earth fraction contains thin strata ranging in texture from silty clay to fine sand to a depth of at least 40 inches. Below 40 inches, some pedons have loamy, non-stratified materials. Reaction ranges from neutral to moderately alkaline.

Carbondale Series

The Carbondale series consists of very deep, very poorly drained soils that formed in well decomposed organic materials that are more than 51 inches thick. These soils are in bogs, depressional areas, or basins that receive runoff water from surrounding areas. These soils are on glacial till plains at elevations over 1,750 feet. Slopes range from 0 to 2 percent.

Carbondale soils are commonly adjacent to very deep, poorly drained Norchip soils and somewhat poorly drained Ontusia soils on glacial till plains. Also commonly adjacent are moderately deep, well drained Mongaup soils on nearby bedrock-controlled landforms.

Typical pedon of Carbondale mucky peat; in the town of Maryland; 8,250 feet southwest of the intersection of Davenport Road and Iron Kettle Road and 4,000 feet west of Iron Kettle Road, in a bog with ferns, sphagnum moss, and black spruce (lat. 42°30’21” N.; long. 74°53’39” W.).

Oe1—0 to 6 inches; hemic material, dark brown (7.5YR 3/2) broken face and light brownish gray (10YR 6/2) rubbed; about 90 percent fibers undisturbed and about 75 percent fibers rubbed; sodium pyrophosphate color of 10YR 7/3; weak fine and medium granular structure; very friable; 3 percent woody fragments; very strongly acid (in 0.01M $CaCl_2$); abrupt smooth boundary.

Oe2—6 to 11 inches; hemic material, very dark brown (10YR 2/2) broken face and rubbed; about 62 percent fibers undisturbed and about 44 percent fibers rubbed; sodium pyrophosphate color of 10YR 7/3; weak fine granular structure; very friable; 15 percent woody fragments; very strongly acid (in 0.01M $CaCl_2$); abrupt smooth boundary.

Oe3—11 to 22 inches; hemic material, black (10YR 2/1) broken face and dark reddish brown (5YR 2/2) rubbed; about 40 percent fibers undisturbed and about 22 percent fibers rubbed; sodium pyrophosphate color of 10YR 7/3; massive; very friable; 1 percent woody fragments; strongly acid (in 0.01M $CaCl_2$); clear smooth boundary.

Oa1—22 to 38 inches; sapric material, very dark gray (5YR 3/1) broken face and very dark brown (10YR 2/2) rubbed; about 38 percent fibers undisturbed and about 4 percent fibers rubbed; massive; very friable; strongly acid (in 0.01M $CaCl_2$); clear smooth boundary.

Oe4—38 to 46 inches; hemic material, black (10YR 2/1) broken face and rubbed; about 52 percent fibers undisturbed and about 25 percent fibers rubbed; massive; very friable; 1 percent woody fragments; strongly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

Oe5—46 to 71 inches; hemic material, black (10YR 2/1) broken face and rubbed; about 40 percent fibers undisturbed and about 2 percent fibers rubbed; sodium pyrophosphate color of 10YR 7/2; massive; very friable; strongly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

Oa2—71 to 78 inches; sapric material, very dark grayish brown (10YR 3/2) broken face and dark gray (10YR 4/1) rubbed; about 16 percent fibers undisturbed and about 1 percent fibers rubbed; 15 percent mineral material; sodium pyrophosphate color of 10YR 7/3; massive; very friable; strongly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

Oe6—78 to 100 inches; hemic material, very dark grayish brown (10YR 3/2) broken face and dark grayish brown (2.5Y 4/2) rubbed; about 53 percent fibers undisturbed and about 4 percent fibers rubbed; 5 percent mineral material; massive; very friable; strongly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

2Cg—100 to 106 inches; limnic material, gray (5Y 5/1) broken face and dark gray (5Y 4/1) rubbed; about 7 percent fibers undisturbed and about 1 percent fibers rubbed; 25 percent mineral material; massive; very friable; strongly acid (in 0.01M $CaCl_2$); clear smooth boundary.

3Cg—106 to 115 inches; gray (N 5/0) silt loam; massive; friable; moderately acid (in 0.01M $CaCl_2$).

The organic layers are more than 51 inches thick. The organic material has hue of 5YR to 10YR, or it is neutral. It has value of 2 or 3 and chroma of 0 to 2. Wood fragments, ranging from 1 to several inches in diameter, are throughout some pedons.

Some pedons have a 1 to 3 inch thick layer of peat on the surface. The surface tier contains sapric material (muck), hemic material (mucky peat), or both. Structure is generally granular, but in some pedons it is weak or moderate, coarse blocky or prismatic. The organic material is commonly derived from herbaceous plants, but in some pedons a moderate amount of the material is woody.

Below a depth of 12 inches, woody materials typically comprise minor amounts of the recognizable fiber. More than one-half the volume of the middle tier is sapric material (muck). Where this layer contains sapric material (muck), hemic material (mucky peat), and fibric material (peat), the sapric material (muck) is the largest component. The subsurface tier mainly has pH of 6.5 to 7.5 in calcium chloride and 5.5 to 7.0 in water. The full range, however, is from 5.5 to less than 7.8 in calcium chloride. (See correlation note below.) Below a depth of 12 inches, the soil is commonly massive, but some of it breaks into thick to thin plates that appear to be related to the mode of deposition.

The bottom tier commonly is dominated by hemic material (mucky peat), and in some pedons the entire layer is hemic material (mucky peat). More than 10 inches of the subsurface and bottom tiers are hemic material (mucky peat).

Correlation note: The middle and bottom tiers have a pH that is marginal to 4.5 in calcium chloride. This pH is at the acid end of the range for the series.

Carlisle Series

The Carlisle series consists of very deep, very poorly drained soils that formed in well decomposed organic materials that are more than 51 inches thick. These soils are in bogs, depressional areas, or in basins that receive runoff water from surrounding areas. They are on lake plains, outwash plains, and glacial till plains. Slopes range from 0 to 2 percent.

Carlisle soils are commonly adjacent to Palms soils, where the organic deposits are less than 51 inches thick. Poorly drained or very poorly drained Canandaigua soils, which formed in silty mineral material, are nearby on lake plains. Also commonly adjacent are poorly drained Atherton soils and well drained Chenango soils on gravelly outwash and inwash deposits.

Typical pedon of Carlisle muck; in the town of Milford; 500 feet south of the intersection of Kelly Corners Road and Hotaling Road and 170 feet west of Hotaling Road, in a bog (lat. 42°34’34” N.; long. 75°00’38” W.).

Oi—0 to 2 inches; fibric material composed of hardwood leaf litter, black (N 2/0) broken face; about 90 percent fibers undisturbed and about 70 percent fibers rubbed; loose; many fine and common coarse roots; slightly acid (in H_2O); abrupt wavy boundary.

Oa1—2 to 7 inches; sapric material, dark reddish brown (5YR 2.5/2) broken face and rubbed; about 25 percent fibers undisturbed and about 5 percent fibers rubbed; 5 percent mineral material; weak medium and coarse subangular blocky structure; very friable; 5 percent woody fragments; common fine roots; slightly acid (in H_2O); gradual wavy boundary.

Oa2—7 to 14 inches; sapric material, black (5YR 2.5/1) broken face and black (N 2/0) rubbed; about 30 percent fibers undisturbed and about 10 percent fibers rubbed; 10 percent mineral material; weak thick platy structure; very friable; 5 percent woody fragments; few fine roots; moderately acid (in H_2O); clear wavy boundary.

Oa3—14 to 21 inches; sapric material, dark brown (7.5YR 3/4) broken face and dark reddish brown (5YR 3/3) rubbed; about 60 percent fibers undisturbed and about 15 percent fibers rubbed; 10 percent mineral material; moderate thin and medium platy structure; friable; 5 percent woody fragments; very few fine roots; moderately acid (in H_2O); gradual wavy boundary.

Oa4—21 to 39 inches; sapric material, dark brown (7.5YR 3/2) broken face and dark reddish brown (5YR 3/2) rubbed; about 40 percent fibers undisturbed and about 10 percent fibers rubbed; 20 percent mineral material; massive; very friable; 5 percent woody fragments; moderately acid (in H_2O); clear smooth boundary.

Oa5—39 to 72 inches; sapric material, black (10YR 2/1) broken face and rubbed; about 25 percent fibers undisturbed and about 4 percent fibers rubbed; 40 percent mineral material; massive; very friable; 10 percent woody fragments; slightly acid (in H_2O).

Reaction throughout the soil ranges from very strongly acid to mildly alkaline. (See correlation note below.) Woody fragments are throughout the soil in most pedons. The woody fragments consist of twigs, branches, logs, or stumps; constitute 15 to 30 percent of the volume in some pedons; and range from $^1/_4$ inch to more than a foot in diameter. The mean annual soil temperature ranges from 47 to about 54 degrees F.

The surface tier typically is black (10YR 2/1 or 5YR 2/1) and is dominantly sapric material. In some pedons, however, it contains hemic material or various proportions of both sapric and hemic materials. The structure of the surface tier is weak or medium, fine to coarse granular.

The subsurface tier has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 3. Chroma, value, or both may change by 0.5 to 2 units upon rubbing. Broken faces become darker upon brief exposure to air. The layer is dominated by sapric material. The content of fiber when rubbed is less than 16 percent of the organic volume. Structure in the upper portion typically is weak or moderate, fine to coarse granular or blocky. The lower portion commonly is massive. The aggregates in the subsurface tier are quite firm but break abruptly under pressure. The unrubbed, well decomposed organic material resembles woody plant tissue. Some pedons have thin layers of hemic material with a combined thickness of less than 10 inches.

The bottom tier has a range in color similar to that of the subsurface tier and has variable amounts of woody and herbaceous layers. The herbaceous fibers generally constitute the greater proportion. The bottom tier commonly is massive but in some pedons has weak, coarse blocky or thick platy structure. This tier is dominantly sapric material but in some pedons has thin layers of hemic material. The combined thickness of the hemic layers is less than 10 inches.

Correlation note: Some layers in the subsurface tier and bottom tier have a rubbed fiber content in the range of sapric materials but have sodium pyrophosphate extract colors in line with hemic or fibric materials. In some pedons, soil reaction is in the Dysic class (less than 4.5 in $CaCl_2$). This difference is noted as an inclusion in the description for map unit Ce, Carlisle muck.

Castile Series

The Castile series consists of very deep, moderately well drained soils on low terraces, in dead-ice sinks, and on some kames and eskers. These soils formed in water-sorted gravelly outwash and inwash deposits. Slopes range from 0 to 8 percent.

Castile soils are commonly adjacent to well drained Chenango soils in slightly higher positions on the same landform. Very deep, somewhat poorly drained Red Hook soils are commonly adjacent in lower-lying areas where the water table is closer to the surface. Very deep, well drained Valois soils are commonly adjacent on higher landforms and along valley walls. Well drained Hamplain soils and moderately well drained Otego soils are commonly adjacent on nearby flood plains. Well drained Unadilla soils and moderately well drained Scio soils are commonly on adjacent terraces that contain less gravel and more silt than the Castile soils.

Typical pedon of Castile channery silt loam, 0 to 3 percent slopes; in the town of Butternuts; 1,050 feet east of Mill Street and 400 feet south of County Route 8, in a hayfield (lat. 42°28'37" N.; long. 75°18'40" W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) channery silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate medium granular; very friable; common fine and medium roots; 20 percent rock fragments; neutral (limed); abrupt smooth boundary.

Bw1—9 to 13 inches; dark brown (10YR 4/3) very channery silt loam with thin bands of dark yellowish brown (10YR 4/6); moderate medium subangular blocky structure; friable; common fine and few medium roots; 55 percent rock fragments, including 3 percent larger than 3 inches in diameter; slightly acid (limed); clear broken boundary.

Bw2—13 to 17 inches; brown (10YR 5/3) very channery silt loam; many fine and medium prominent dark yellowish brown (10YR 4/6) and few medium distinct light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable; few fine and medium roots; common fine and medium vesicular pores; 35 percent rock fragments, including 2 percent larger than 3 inches in diameter; slightly acid (limed); clear wavy boundary.

Bw3—17 to 24 inches; dark yellowish brown (10YR 4/4) very gravelly loam; few fine and medium prominent strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable; few fine roots; common fine and medium vesicular pores; 45 percent rock fragments, including 3 percent larger than 3 inches in diameter; slightly acid (limed); clear wavy boundary.

C—24 to 36 inches; dark yellowish brown (10YR 4/4) very gravelly loam; massive; firm; 55 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid; gradual wavy boundary.

2C—36 to 72 inches; olive brown (2.5Y 4/4) extremely gravelly sandy loam; massive; loose; 65 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral.

The thickness of the solum ranges from 24 to 40 inches. The depth to bedrock is more than 60 inches. The content of rock fragments, including up to 10 percent larger than 3 inches in diameter, ranges from 15 to 30 percent, by volume, in the surface layer, from 20 to 60 percent in the subsoil, and from 35 to 70 percent in the substratum. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid in the solum (see correlation note below) and from strongly acid to neutral in the substratum. The depth to carbonates ranges from 5 to 10 feet.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate granular.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. It has mottles. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate subangular blocky or granular. Consistence ranges from very friable to firm.

The BC horizon, where present, has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The BC horizon has a range in texture, structure, and consistence similar to that of the B horizon.

The C and 2C horizons have hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from loam to loamy sand, or it is stratified sand and gravel.

Correlation note: The typical pedon is limed. In areas of map units CfA and CfB that have not been limed, however, the base status is within the range of Dystrochrepts.

Chadakoin Series

The Chadakoin series consists of deep, well drained soils on bedrock-controlled uplands and along sides of valleys. These soils formed in glacial till derived from sandstone, siltstone, and shale. Slopes range from 8 to 50 percent.

Chadakoin soils are commonly adjacent to well drained, moderately deep Lordstown soils, which are in areas where the glacial till is thinner over the bedrock. Very deep, well drained Bath soils and moderately well drained Mardin soils, which have a firm fragipan subsoil, are nearby. In some areas, very deep, well drained Valois soils are on adjacent toeslopes and sides of valleys.

Typical pedon of Chadakoin silt loam, in an area of Lordstown-Chadakoin complex, 15 to 25 percent slopes; in the town of Laurens; 2,000 feet west of the intersection of New York Route 23 and Fox Road and 1,000 feet south of Fox Road, in a field (lat. 42°29’46” N.; long. 75°08’10” W.).

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam, very pale brown (10YR 7/3) dry; strong medium and fine granular structure; friable; many fine and few medium roots; 10 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw1—9 to 19 inches; brownish yellow (10YR 6/6) and light olive brown (2.5Y 5/4) gravelly silt loam; moderate medium and fine subangular blocky structure; friable; common fine roots; common fine vesicular and common medium tubular pores; 20 percent rock fragments, including 3 percent larger than 3 inches in diameter; strongly acid; clear wavy boundary.

Bw2—19 to 40 inches; light olive brown (2.5Y 5/4) very gravelly silt loam; moderate medium and fine subangular blocky structure; friable; few fine roots; common fine vesicular and tubular pores containing common distinct brown (10YR 5/3) silt coats; 35 percent rock fragments, including 5 percent larger than 3 inches in diameter; strongly acid; clear wavy boundary.

BC—40 to 46 inches; light olive brown (2.5Y 5/4) very flaggy silt loam; common fine and medium prominent yellowish brown (10YR 5/6) mottles; weak medium and fine subangular blocky structure; firm; few fine vesicular and tubular pores; 50 percent rock fragments, including 30 percent larger than 3 inches in diameter; strongly acid; clear wavy boundary.

2Cr—46 to 57 inches; light olive brown (2.5Y 5/4) very flaggy silt loam; common fine and medium prominent yellowish brown (10YR 5/6) and few medium and fine faint light yellowish brown (2.5Y 6/4) mottles; inherited platy structure from weathered bedrock; massive; firm; few fine vesicular pores; 55 percent rock fragments, including 40 percent larger than 3 inches in diameter; strongly acid; abrupt wavy boundary.

2R—57 inches; dark gray (N 4/0), horizontally bedded shale bedrock; fractured in the upper part.

The thickness of the solum ranges from 30 to 50 inches. The depth to bedrock is more than 40 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 30 percent, including up to 25 percent larger than 3 inches in diameter, in the upper part of the solum; from 15 to 40 percent in the lower part of the solum; and from 20 to 40 percent in the substratum. Below a depth of 40 inches, the content of rock fragments ranges from 20 to 60 percent, by volume, including up to 50 percent larger than 3 inches in diameter.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. In some pedons, the lower part of the horizon has mottles. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam. Structure is subangular blocky or granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The BC horizon has a range in hue, value, and chroma similar to that of the B horizon. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak, fine or medium subangular blocky or platy. Consistence is friable or firm. Reaction is strongly acid or moderately acid.

The C or 2Cr horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Consistence is friable or firm. Reaction ranges from strongly acid to slightly acid.

The 2R layer is generally horizontally bedded shale bedrock. In some pedons, however, it is massive siltstone or sandstone bedrock.

Chenango Series

The Chenango series consists of very deep, well drained soils on glacial outwash plains, kames, eskers, terraces, and alluvial fans. These soils formed in water-sorted gravelly outwash and inwash deposits and, in some places, alluvial deposits. Slopes range from 0 to 50 percent.

Chenango soils are commonly adjacent to moderately well drained Castile soils and somewhat poorly drained Red Hook soils in lower positions of the same landform. Well drained Valois soils are commonly adjacent on slightly higher landforms and along valley walls. Well drained Unadilla soils and moderately well drained Scio soils are commonly on adjacent terraces that contain less gravel and more silt than the Chenango soils.

Typical pedon of Chenango gravelly silt loam, 3 to 8 percent slopes; in the town of Oneonta; 2,475 feet northeast of the intersection of New York Route 28 and County Route 48 and 100 feet north of the intersection of New York Route 28 and Township Road, in a field (lat. 42°26’29” N.; long. 75°04’07” W.).

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; many very fine and fine, common medium, and few coarse roots; 15 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw1—7 to 13 inches; dark yellowish brown (10YR 4/4) gravelly silt loam with a thin band of yellowish brown (10YR 5/6) in the upper part; weak fine and medium subangular blocky structure; friable; few fine and common medium and coarse roots; few fine vesicular pores; 20 percent rock fragments; moderately acid; abrupt wavy boundary.

Bw2—13 to 27 inches; yellowish brown (10YR 5/4) very gravelly loam with a thin layer of olive brown (2.5Y 4/4) very fine sandy loam and thin strata of silt and sand in the lower part; weak fine and medium subangular blocky structure; friable; few fine and medium roots; common fine vesicular and few fine tubular pores; 40 percent rock fragments; moderately acid; abrupt wavy boundary.

2C—27 to 39 inches; dark brown (10YR 3/3) stratified loamy sand and gravel; yellowish red (5YR 4/6) iron accumulations around rock fragments; massive; friable; 50 percent rock fragments; strongly acid; gradual wavy boundary.

3C—39 to 72 inches; dark brown (10YR 3/3) stratified loamy sand and gravel; single grain; loose; 65 percent rock fragments; moderately acid.

The thickness of the solum ranges from 24 to 50 inches. The depth to bedrock is more than 60 inches. Rock fragments are commonly pebbles or channers. The content of rock fragments ranges from 15 to 30 percent, by volume, in the upper part of the solum and from 15 to 60 percent in the lower part of the solum. In the substratum, the content of rock fragments ranges from 30 to 70 percent. Depth to pebbles that are coated by carbonates is more than 72 inches.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate granular. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Hue of 7.5YR is only in the upper part. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam and averages less than 50 percent fine sand and coarse sand. Structure is weak or very weak subangular blocky or granular, or the horizon is massive. Consistence ranges from very friable to firm. Reaction ranges from very strongly acid to moderately acid.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from loamy fine sand to coarse sand. Some pedons have a C horizon that is the very channery analogs of silt loam to sandy loam. The 2C or C horizon is massive or single grain and ranges from strongly acid to mildly alkaline.

Chippewa Series

The Chippewa series consists of very deep, poorly drained soils that formed in glacial till derived from gray or brownish sandstone, siltstone, and shale. These soils have a dense fragipan subsoil starting at a depth of 10 to 20 inches. Slopes range from 0 to 3 percent.

Chippewa soils are commonly adjacent to somewhat poorly drained Volusia soils on the same landform. Very poorly drained Alden and Canandaigua soils, which do not have a dense fragipan subsoil, are nearby on slightly lower landforms. Moderately well drained Mardin soils are nearby on higher hillsides and hilltops. Moderately deep, well drained Lordstown soils are nearby on bedrock-controlled uplands.

Typical pedon of Chippewa mucky silt loam, in an area of Chippewa and Norwich soils; in the town of Morris; about 3,800 feet north of the intersection of New York Route 23 and Hillsinger Road and 500 feet west of Hillsinger Road, in a pasture (lat. 42°33’57” N.; long. 75°16’38” W.).

Oe—0 to 1 inch; partially decomposed organic matter; many very fine and fine roots; abrupt smooth boundary.

Ap—1 to 8 inches; dark grayish brown (10YR 4/2) and dark gray (10YR 4/1) mucky silt loam; many medium and coarse prominent strong brown (7.5YR 4/6) mottles; weak coarse subangular blocky structure parting to weak fine and medium granular; friable; many fine and common medium roots; very strongly acid; clear wavy boundary.

Eg—8 to 12 inches; dark gray (N 4/0) flaggy silt loam; many medium and coarse prominent strong brown (7.5YR 4/6) mottles; weak medium platy structure; friable; common fine roots; common fine tubular pores; 30 percent flagstones; very strongly acid; abrupt irregular boundary.

BE—12 to 17 inches; grayish brown (2.5Y 5/2) channery silt loam; many medium and coarse prominent red (2.5YR 4/6), many coarse distinct light yellowish brown (2.5Y 6/4), and many coarse prominent light olive brown (2.5Y 5/6) mottles; weak fine and medium subangular blocky structure parting to moderate fine granular; friable; common fine and few medium roots; common fine tubular pores; 30 percent rock fragments, including 5 percent flagstones; moderately acid; abrupt wavy boundary.

Bx1—17 to 38 inches; gray (5Y 6/1) channery silt loam; many coarse prominent dark yellowish brown (10YR 4/6) and common coarse prominent yellowish brown (10YR 5/8) mottles; strong very coarse prismatic structure parting to weak medium subangular blocky; streaks separating the prisms are 1 inch wide, 18 inches apart, and have very dark gray (N 3/0) interiors and dark yellowish brown (10YR 4/6) edges; very firm and brittle; few fine roots along faces of prisms; many fine and medium vesicular pores and few medium tubular pores; 25 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid; clear smooth boundary.

Bx2—38 to 47 inches; olive brown (2.5Y 4/4) channery silt loam; many medium and coarse prominent gray (5Y 6/1) and common medium and coarse distinct light olive brown (2.5Y 5/6) mottles; strong very coarse prismatic structure; streaks separating the prisms are 1 inch wide, 18 to 36 inches apart, and have very dark gray (N 3/0) interiors and dark yellowish brown (10YR 4/6) edges; very firm and brittle; few fine and medium tubular pores; common very dark brown (10YR 2/2) iron-manganese coats; 23 percent rock fragments, including 3 percent larger than 3 inches in diameter; neutral; gradual wavy boundary.

Cd—47 to 72 inches; olive brown (2.5Y 4/4) channery silt loam; common fine and medium prominent dark yellowish brown (10YR 3/6) mottles; weak very thick platy structure; firm; 25 percent rock fragments; neutral.

The thickness of the solum ranges from 36 to 56 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 10 to 20 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the surface layer; from 0 to 30 percent below the surface layer to the top of the fragipan; and from 20 to 50 percent in the fragipan and substratum. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid above the fragipan, from strongly acid to neutral in the fragipan, and from moderately acid to moderately alkaline in the substratum.

Some pedons have a Cd, Cg, or 2Cg horizon that has a range in color and texture similar to that of the Bx horizon. The Cd, Cg, or 2Cg horizon is weak or moderate platy, or the horizon is massive.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or loam.

The Eg horizon has hue of 10YR to 5Y, or it is neutral. It has value of 4 to 6, chroma of 0 to 2, and mottles throughout. The texture of the fine-earth fraction is silty clay loam, silt loam, loam, or clay loam. Structure is very weak to moderate, fine or moderate subangular blocky or platy, or the horizon is massive. Consistence is friable or firm. Some pedons have a Bg or BE horizon that has a range in color and texture like that of the Eg horizon.

The Bx horizon dominantly has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2. In some pedons, however, it has chroma of 3 or 4 in subhorizons below a depth of 30 inches. The texture of the fine-earth fraction ranges from silty clay loam to fine sandy loam. Structure is moderate or strong, very coarse prismatic parting to very weak to moderate subangular blocky, or material within the prisms is massive. Consistence ranges from firm to extremely firm.

Conesus Series

The Conesus series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till derived from limestone and calcareous shale. Slopes range from 3 to 15 percent.

Conesus soils are commonly adjacent to well drained Lansing soils and somewhat poorly drained Manheim soils. Well drained Honeoye soils and moderately well drained Lima soils, which have carbonates higher up in the profile than the Conesus soils, are nearby on adjacent landforms. Shallow Farmington soils and moderately deep Wassaic and Manlius soils are nearby on bedrock-controlled uplands.

Typical pedon of Conesus silt loam, 3 to 8 percent slopes; in the town of Springfield; 3,700 feet east of the intersection of New York Route 80 and County Route 29A and 1,975 feet southeast of County Route 29A, in a hayfield (lat. 42°49’32” N.; long. 74°51’47” W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; common fine and few medium roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

BA—9 to 14 inches; dark brown (10YR 4/3) silt loam; moderate medium subangular blocky structure; friable; few fine roots; 10 percent rock fragments; neutral; clear broken boundary.

B/E—14 to 23 inches; olive brown (2.5Y 4/4) channery silt loam; pale brown (10YR 6/3) faces of peds more than 1 millimeter thick; weak medium subangular blocky structure; friable; few fine roots; common fine vesicular and tubular pores; common distinct continuous clay films in pores; 15 percent rock fragments; neutral; clear wavy boundary.

Bt1—23 to 29 inches; dark brown (10YR 3/3) channery silt loam; common fine faint dark yellowish brown (10YR 4/4) and few fine distinct grayish brown (2.5Y 4/2) mottles in lower part; moderate medium subangular blocky structure; friable; few fine roots; common fine vesicular and tubular pores; many distinct clay films in pores and on vertical surfaces of peds and common distinct clay films on horizontal surfaces of peds; 15 percent rock fragments; neutral; clear smooth boundary.

Bt2—29 to 37 inches; dark brown (10YR 4/3) gravelly silt loam; common medium distinct light olive brown (2.5Y 5/4) and few medium distinct grayish brown (2.5Y 5/2) mottles; moderate medium and coarse subangular blocky structure; friable; common fine vesicular and tubular pores; many distinct clay films in pores and on vertical and horizontal surfaces of peds; 20 percent rock fragments; slightly effervescent in lower part; neutral; clear wavy boundary.

Cd1—37 to 43 inches; dark brown (10YR 3/3) gravelly loam; common medium faint yellowish brown (10YR 5/4) and few fine distinct yellowish brown (10YR 5/6) mottles; very weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms have gray (5Y 5/1) interiors and light olive brown (2.5Y 5/4) edges; firm; 30 percent rock fragments, including 5 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline; clear wavy boundary.

Cd2—43 to 72 inches; dark grayish brown (2.5Y 4/2) very gravelly loam; many medium prominent yellowish brown (10YR 5/4) and common fine distinct olive gray (5Y 5/2) mottles; very weak very coarse prismatic structure, weak thin platy within the prisms; streaks separating the prisms have gray (5Y 5/1) interiors and light olive brown (2.5Y 5/4) edges; firm; 35 percent rock fragments, including 8 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 30 to 50 inches. The depth to bedrock is more than 60 inches. The depth to carbonates ranges from 30 to 60 inches. The content of rock fragments in the solum ranges from 5 to 30 percent, by volume, including up to 5 percent cobbles and flagstones. The content of rock fragments in the substratum ranges from 10 to 50 percent, including 5 to 10 percent cobbles and flagstones. In areas that have not been limed, reaction ranges from strongly acid to neutral in the surface layer, subsurface layer, and subsoil and from neutral to moderately alkaline in the substratum.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, fine to coarse granular or subangular blocky. Consistence is very friable or friable. Some pedons have a BA horizon below the A horizon.

The E/B and B/E horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3 in the E portion and have a range in color similar to that of the Bt horizon in the B portion. The texture of the fine-earth fraction is loam or silt loam. Structure is weak or moderate, medium or fine subangular blocky. Consistence is friable or firm. In some pedons, the horizons have few to many faint mottles. Some pedons have an E horizon with a range similar to the E portion of the E/B horizon.

The Bt horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 3 or 4. It has common or many, fine to coarse, faint or distinct mottles. The texture of the fine-earth fraction is silt loam or loam. It is less than 35 percent sand and has individual subhorizons ranging to clay loam or silty clay loam but averaging less than 28 percent clay. Structure is weak to strong, fine to coarse subangular blocky. Some pedons have a BC horizon that is friable or firm.

The C or Cd horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 2 or 3. It has mottles with colors similar to the mottles in the Bt horizon. The texture of the fine-earth fraction is silt loam or loam. The horizons are massive, or they have platy or prismatic structure. (See correlation note below.) Consistence is firm or very firm, but the horizons can include lenses of friable, water-sorted material.

Correlation note: Small areas in the eastern part of the county have weak fragipan-like layers and colder soil temperatures than are typical for the series. These differences do not significantly alter interpretations for use and management.

Danley Series

The Danley series consists of very deep, moderately well drained soils on uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. Slopes range from 3 to 25 percent.

Danley soils are commonly adjacent to somewhat poorly drained Darien soils. Moderately well drained Nunda soils and somewhat poorly drained Burdett soils, both of which have a silty mantle, are also on the same landforms as the Danley soils. Well drained Honeoye and Lansing soils are nearby on upland till plains and drumlins. Shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are nearby on bedrock-controlled uplands.

Typical pedon of Danley silt loam, in an area of Danley and Nunda soils, 8 to 15 percent slopes; in the town of Cherry Valley; 1,000 feet south of the intersection of Mill Road and County Route 32A and 700 feet south of Mill Road, in a hayfield (lat. 42°50’26” N.; long. 74°41’24” W.).

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common fine and few medium roots; 5 percent rock fragments; neutral (limed); abrupt smooth boundary.

B/E—8 to 15 inches; dark yellowish brown (10YR 4/4) silty clay loam subsoil material; light olive brown (2.5Y 5/3) ped faces more than 2 millimeters thick, brownish gray (2.5Y 6/2) dry; common medium distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm, slightly plastic and sticky; common fine and few medium roots; common fine vesicular and few fine tubular pores; 10 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid; clear wavy boundary.

Bt—15 to 30 inches; dark brown (10YR 4/3) channery silty clay loam; common medium distinct yellowish brown (10YR 5/6) and few fine distinct gray (10YR 6/1) mottles; moderate fine and medium subangular blocky structure; firm, slightly plastic and sticky; few fine roots; few fine tubular pores; many distinct dark gray (10YR 4/1) clay films in pores and on horizontal and vertical faces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

BC—30 to 37 inches; dark brown (10YR 4/3) channery silty clay loam; weak fine and medium subangular blocky structure; firm, slightly plastic and sticky; few fine roots; few fine tubular pores containing common faint dark gray (10YR 4/1) clay films; common distinct dark gray (10YR 4/1) clay films on horizontal and vertical faces of peds; 20 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—37 to 72 inches; dark brown (10YR 4/3) channery silty clay loam; massive; firm, slightly plastic and sticky; 20 percent rock fragments; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 30 to 50 inches. The depth to carbonates ranges from 30 to 60 inches. The content of rock fragments ranges from 2 to 15 percent, by volume, in the Ap horizon and from 2 to 35 percent, by volume, in the remainder of the solum, including up to 5 percent larger than 3 inches in diameter. In the substratum, the content of rock fragments ranges from 10 to 60 percent, including 5 to 10 percent larger than 3 inches in diameter. The depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is silty clay loam, silt loam, or loam. Structure is weak or moderate, fine or medium granular or subangular blocky. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The E horizon, where present, has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or 3. In some pedons, it has few or common, faint or distinct, high-chroma mottles. The texture of the fine-earth fraction is silty clay loam, silt loam, or loam. Structure is weak or moderate, fine or medium subangular blocky, or it is platy. Consistence is friable or firm. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The B/E horizon has a range in color similar to that of the Bt horizon in the B portion and to that of the E horizon in the E portion. It has high-chroma mottles, low-chroma mottles, or both. The texture of the fine-earth fraction is silty clay loam or clay loam. Structure is weak or moderate, fine or medium subangular blocky. Consistence is friable or firm. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The Bt horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It has both high- and low-chroma mottles. Typically, chroma decreases with depth. The texture of the fine-earth fraction is silty clay loam or clay loam. In some pedons, however, the fine-earth fraction contains coarser or finer textured subhorizons with an overall average clay content of 27 to 35 percent. Structure is weak or moderate, fine to coarse subangular blocky. In areas that have not been limed, reaction ranges from moderately acid to neutral.

Some pedons have a BC horizon that contains free carbonates.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silty clay loam, clay loam, or loam. The horizon is massive or has platy structure. Reaction is mildly alkaline or moderately alkaline.

Darien Series

The Darien series consists of very deep, somewhat poorly drained soils on uplands. These soils formed in glacial till derived from limestone and calcareous shale in the northeastern part of the county. Slopes range from 1 to 15 percent.

Darien soils are commonly adjacent to moderately well drained Danley soils. Somewhat poorly drained Burdett soils and moderately well drained Nunda soils, which have silty mantles, are also on the same landforms as the Darien soils. Well drained Honeoye and Lansing soils are nearby on adjacent landforms. Shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are nearby on bedrock-controlled uplands.

Typical pedon of Darien channery silt loam, in an area of Darien and Burdett soils, 8 to 15 percent slopes; in the town of Cherry Valley; 1,100 feet southwest of the intersection of Van Derwerker Road and County Route 32A and 1,600 feet west of Van Derwerker Road, in a cornfield (lat. 42°50’27” N.; long. 74°46’16” W.).

Ap—0 to 6 inches; dark brown (10YR 4/3) channery silt loam, light brownish gray (2.5Y 6/2) dry; moderate fine granular structure; friable; few fine roots; 20 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral (limed); abrupt smooth boundary.

BE—6 to 12 inches; brown (10YR 5/3) channery silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; few fine vesicular and common medium tubular pores; 15 percent rock fragments; neutral; clear wavy boundary.

Btg1—12 to 27 inches; grayish brown (2.5Y 5/2) channery silty clay loam; many medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; very firm; common fine vesicular and few medium tubular pores; common distinct light olive gray (5Y 6/2) clay films on both horizontal and vertical faces of peds; 15 percent rock fragments; slightly acid; gradual wavy boundary.

Btg2—27 to 42 inches; very dark grayish brown (2.5Y 3/2) channery silty clay loam; many fine prominent dark yellowish brown (10YR 4/4) mottles; weak very coarse prismatic structure parting to weak fine subangular blocky; interiors of prism streaks are gray (N 6/0); firm; common fine vesicular and few medium tubular pores containing common distinct light olive gray (5Y 6/2) clay films; many distinct light olive gray (5Y 6/2) clay films on horizontal and vertical faces of peds; 20 percent rock fragments; neutral; abrupt wavy boundary.

Cg—42 to 72 inches; very dark grayish brown (2.5Y 3/2) very channery silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; massive; firm; 35 percent rock fragments, including 10 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 30 to 45 inches. The depth to carbonates ranges from 25 to 48 inches. The depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. The texture of the fine-earth fraction is loam, silt loam, or silty clay loam. Structure is weak or moderate granular, or it is weak subangular blocky. Consistence is very friable or friable. The content of rock fragments ranges from 15 to 35 percent, by volume, including up to 5 percent larger than 3 inches in diameter. In areas that have not been limed, reaction ranges from moderately acid to neutral. Some pedons have an A horizon that is 1 to 4 inches thick and has value of 2 or 3 and chroma of 1 to 3.

The Eg horizon and BE horizon, where present, have hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2. They have mottles. They have a range in texture similar to that of the Ap horizon. Structure is subangular blocky or platy. Consistence is friable or firm. In areas that have not been limed, reaction ranges from moderately acid to neutral. The content of rock fragments ranges from 2 to 35 percent, by volume, including up to 5 percent larger than 3 inches in diameter. Some pedons have an E horizon with chroma of 3 or 4.

The Btg or Bt horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It has mottles. The texture of the fine-earth fraction is clay loam or silty clay loam with subhorizons of silt loam. The content of clay averages 28 to 35 percent in the upper 20 inches of the Bt horizon. Structure is subangular blocky or angular blocky and within prisms in many pedons. Consistence is friable, firm, or very firm. In areas that have not been limed, reaction is slightly acid or neutral. The content of rock fragments ranges from 2 to 35 percent, by volume, including up to 5 percent larger than 3 inches in diameter.

The BC horizon, where present, is similar to the Bt horizon, except that the gross structure is inherited from the parent material and carbonates are present in most pedons. Reaction is mildly alkaline or moderately alkaline. The content of rock fragments ranges from 2 to 35 percent, by volume, including up to 5 percent larger than 3 inches in diameter.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 4. It has mottles. The texture of the fine-earth fraction is clay loam, silt loam, or silty clay loam. The horizon is massive, or it has platy structure. Consistence is firm or very firm. Reaction is mildly alkaline or moderately alkaline. Some pedons do not have free carbonates in the upper part of the horizon. The content of rock fragments ranges from 10 to 60 percent, by volume, including 5 to 10 percent larger than 3 inches in diameter. In some pedons, the horizon does not have rock fragments below a depth of 40 inches.

Deposit Series

The Deposit series consists of very deep, moderately well drained soils in the higher positions on flood plains and on low terraces. These soils formed in glacial outwash and alluvium along high-gradient streams in narrow valleys. Slopes range from 1 to 4 percent.

Deposit soils are commonly adjacent to well drained Trestle and Chenango soils and to moderately well drained Castile soils. Moderately well drained Scio soils are nearby on slightly higher landforms. Moderately well drained Otego soils and Fluvaquents and Udifluvents are nearby on flood plains that are more frequently flooded than the Deposit soils.

Typical pedon of Deposit gravelly loam, in an area of Trestle-Deposit complex, 1 to 4 percent slopes; in the town of Westford; 300 feet east of the intersection of County Route 34 and Greenbush Road and 450 feet south of Greenbush Road, in a cornfield (lat. 42°38’09” N.; long. 74°47’28” W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) gravelly loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; 20 percent rock fragments; neutral (limed); abrupt smooth boundary.

Bw—9 to 19 inches; olive brown (2.5Y 4/4) very gravelly sandy loam with a few thin lenses of dark grayish brown (2.5Y 4/2); few coarse prominent strong brown

(7.5YR 4/6) mottles; weak fine and medium subangular blocky structure; friable; common fine and few medium roots; few fine and medium vesicular pores; 45 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral (limed); abrupt smooth boundary.

2C1—19 to 42 inches; very dark grayish brown (10YR 3/2) crudely stratified very gravelly loam; common coarse prominent strong brown (7.5YR 5/6) and light brownish gray (2.5Y 6/2) mottles; upper part has thin bands of gravel and flagstones with black (10YR 2/1) manganese coatings on horizontal surfaces; massive; 55 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid; gradual smooth boundary.

2C2—42 to 72 inches; dark brown (10YR 3/3) crudely stratified extremely gravelly sandy loam; single grained; loose; 65 percent rock fragments, including 3 percent larger than 3 inches in diameter; slightly acid.

The thickness of the solum ranges from 16 to 42 inches. The depth to bedrock is more than 60 inches.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam. Structure is weak, moderate, or strong granular, or it is weak subangular blocky. Consistence is friable or very friable. The content of rock fragments ranges from 10 to 30 percent, by volume. In areas that have not been limed, reaction is strongly acid or moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 or 4 and is mottled. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable. The content of rock fragments ranges from 15 to 60 percent, by volume. In areas that have not been limed, reaction is strongly acid or moderately acid.

The 2C horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 1 to 4. The texture of the fine-earth fraction ranges from loam to loamy sand. Consistence is very friable or loose. The content of rock fragments ranges from 35 to 70 percent, by volume. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

Edwards Series

The Edwards series consists of very deep, very poorly drained soils that formed in well decomposed organic material overlying marl deposits. The marl is at a depth of 16 to 50 inches. Edwards soils are in depressional areas or basins that were previously lakes or ponds on glacial lake plains, outwash plains, and till plains. They receive runoff water from surrounding areas. Slopes range from 0 to 2 percent.

Edwards soils are commonly adjacent to very poorly drained Fonda soils and poorly drained or very poorly drained Canandaigua soils, which formed in water-sorted mineral material. Poorly drained Lyons soils are commonly adjacent on nearby glacial till deposits.

Typical pedon of Edwards muck; in the town of Richfield; 2,050 feet northwest of the intersection of Bargly Road and U.S. Route 20 and 700 feet southwest of Bargly Road, in a bog with white cedar, pine, and hemlock (lat. 42°53’11” N.; long. 75°05’09” W.).

Oa1—0 to 18 inches; muck (sapric material), black (N 2/0) broken face and very dark brown (10YR 2/2) rubbed; about 45 percent fibers undisturbed and about 15 percent fibers rubbed; 5 percent mineral material; weak fine granular structure; very friable, nonsticky and nonplastic; 5 percent woody fragments; common fine roots; slightly acid (in 0.01M $CaCl_2$); clear smooth boundary.

Oa2—18 to 24 inches; muck (sapric material), black (N 2/0) broken face and black (10YR 2/1) rubbed; about 40 percent fibers undisturbed and about 10 percent fibers rubbed; 3 percent mineral material; massive; very friable, nonsticky and nonplastic; 3 percent woody fragments; few fine roots; slightly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

Oa3—24 to 34 inches; muck (sapric material), black (N 2/0) broken face and rubbed; about 20 percent fibers undisturbed and about 2 percent fibers rubbed; 1 percent mineral material; massive; very friable, slightly sticky and nonplastic; few fine roots; neutral (in 0.01M $CaCl_2$); gradual smooth boundary.

Oa4—34 to 50 inches; muck (sapric material), black (N 2/0) broken face and black (10YR 2/1) rubbed; about 15 percent fibers undisturbed and about 2 percent fibers rubbed; 1 percent mineral material; massive; very friable, slightly sticky and slightly plastic; 1 percent woody fragments; few fine roots; neutral (in 0.01M $CaCl_2$); abrupt smooth boundary.

2Cg1—50 to 53 inches; light olive gray (5Y 6/2) marl; massive; friable; violently effervescent; moderately alkaline (in H_2O); clear smooth boundary.

2Cg2—53 to 72 inches; white (5Y 8/1) marl; massive; friable; violently effervescent; moderately alkaline (in H_2O).

The depth to the 2Cg horizon ranges from 16 to 50 inches. The organic fibers are derived primarily from herbaceous plants, but some layers contain as much as 20 percent woody material. The reaction of the organic material ranges from very strongly acid to mildly alkaline. Free carbonates are in the organic layers in some pedons.

The surface tier has hue of 10YR, or it is neutral. It has value of 2 or 3 and chroma of 0 to 2. It is dominantly sapric material (muck). Some pedons, however, have hemic material (mucky peat).

The subsurface and bottom tiers have hue of 5YR to 10YR or are neutral. They have value of 2 to 4 and chroma of 0 to 3. In some pedons, they have thin layers, less than 10 inches thick, of hemic material (mucky peat).

The 2Cg horizon has hue of 10YR to 5Y, value of 5 to 8, and chroma of 1 or 2. Reaction ranges from neutral to moderately alkaline. In some pedons, a layer, less than 2 inches thick, of coprogenous earth is present above the marl. In some pedons, the marl has a layer of sandy or loamy material less than 12 inches thick within a depth of 51 inches.

Farmington Series

The Farmington series consists of shallow, somewhat excessively drained soils that formed in a thin mantle of glacial till over limestone bedrock. Slopes range from 0 to 60 percent but are mainly less than 15 percent.

Farmington soils are commonly adjacent to moderately deep, well drained Wassaic soils. Very deep, well drained Honeoye and Lansing soils are nearby on glacial till uplands. Sink holes are common in some areas of the Farmington soils.

Typical pedon of Farmington silt loam, 0 to 8 percent slopes; in the town of Springfield; 0.6 mile north of the intersection of U.S. Route 20 and Van Alstyne Road and 1,000 feet northwest of Van Alstyne Road, in a hayfield (lat. 42°50’34” N.; long. 74°49’56” W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common fine and few medium roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw—9 to 18 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; moderate medium subangular blocky structure; friable; few fine and few medium roots; common very fine and fine vesicular and few fine tubular pores; 20 percent rock fragments; slightly acid; abrupt irregular boundary.

2R—18 inches; gray (10YR 5/1) limestone bedrock; the upper 2 inches are fractured.

The thickness of the solum and the depth to bedrock range from 10 to 20 inches. Free carbonates are in the fine-earth fraction above the bedrock in some pedons. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer and from 5 to 35 percent throughout the remainder of the soil.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. The texture of the fine-earth fraction is fine sandy loam, loam, or silt loam. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. The texture of the fine-earth fraction is fine sandy loam, loam, or silt loam. Structure is weak or moderate, fine or medium subangular blocky, or it is weak, fine granular. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from moderately acid to mildly alkaline. In some pedons, the horizon has high-chroma mottles in the lower part of the Bw horizon.

The 2R layer consists of limestone bedrock, except for some areas that have a shale or sandstone layer over the limestone.

Fluvaquents

Fluvaquents consist of very deep alluvial soils that formed in material recently deposited by streams and rivers. These soils are typically poorly drained or very poorly drained but range to somewhat poorly drained. They are subject to frequent flooding. Slopes range from 0 to 3 percent.

Fluvaquents are in complex with the better drained Udifluvents and are commonly near Wayland, Wakeville, Otego, and Hamplain soils on the same landform. The better drained Chenango, Unadilla, Scio, and Trestle soils are on higher adjacent landforms.

Fluvaquents are highly variable, and thus a typical pedon is not described. These soils have little or no profile development. The depth to bedrock is generally more than 60 inches, except for a few small areas where the stream has incised itself down to the bedrock valley floor and removed most of the alluvial deposits.

Fluvaquents have a surface layer that has hue of 5YR to 10YR, value of 2 to 5, and chroma of 0 to 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam, with or without gravelly analogs. Structure is granular, or the layer is massive. The content of rock fragments ranges from 0 to 50 percent, by volume. Reaction ranges from strongly acid to mildly alkaline. The thickness of the surface layer is variable but typically ranges from 2 to 13 inches.

The substratum has hue of 5YR to 5Y, value of 3 to 5, and chroma of 0 to 4. It has few to many mottles. The texture of the fine-earth fraction ranges from silt loam to sandy loam with some pedons having subhorizons having textures as coarse as sand and typically with gravelly or cobbly analogs. Structure is weak, or the horizon is massive. The content of rock fragments ranges from 0 to 70 percent, by volume. Reaction ranges from strongly acid to moderately alkaline.

Fonda Series

The Fonda series consists of very deep, very poorly drained soils that formed in fine-textured, water deposited sediments on glacial lake plains and sediment filled depressions of glacial till uplands. Slopes are 0 to 1 percent.

Fonda soils are commonly adjacent to somewhat poorly drained Rhinebeck soils or poorly drained or very poorly drained Canandaigua soils. Very poorly drained Palms, Carlisle, and Edwards soils, which formed in organic deposits, are nearby in bogs.

Typical pedon of Fonda mucky silt loam; in the town of Otsego; 100 feet north of the intersection of County Route 22 and Keating Road and 700 feet west of County Route 22, in a wooded area (lat. 42°47’03” N.; long. 75°00’47” W.).

Oe—0 to 2 inches; black (N 2/0) partially decomposed leaf litter.
A—2 to 10 inches; black (10YR 2/1) mucky silt loam; strong fine granular structure; very friable; common fine and medium and few coarse roots; slightly acid; clear wavy boundary.
Bg1—10 to 18 inches; dark gray (N 4/0) silty clay loam; moderate medium subangular blocky structure parting to moderate fine granular; sticky and plastic; common fine and few medium roots; common fine vesicular and common medium tubular pores; slightly acid; gradual smooth boundary.
Bg2—18 to 28 inches; dark gray (5Y 4/1) silty clay; common coarse distinct olive brown (2.5Y 4/4) mottles; weak coarse prismatic structure; sticky and plastic; few fine roots in pores; few coarse and common medium tubular pores and common fine vesicular pores; neutral; diffuse smooth boundary.
Cg1—28 to 44 inches; gray (5Y 5/1) silty clay varved with thin silt bands; common coarse prominent olive brown (2.5Y 4/4) mottles; massive with inherited weak medium platy structure; very sticky and plastic; few fine roots in pores; few coarse and common medium tubular pores containing few faint clay films; strongly effervescent; moderately alkaline; diffuse smooth boundary.
Cg2—44 to 74 inches; dark gray (N 4/0) varved clay and silty clay; few coarse distinct olive brown (2.5Y 4/4) mottles; massive with inherited weak medium platy structure; very sticky and very plastic; few medium tubular pores containing few faint clay films; slightly effervescent; mildly alkaline.

The thickness of the solum ranges from 24 to 44 inches. The depth to carbonates ranges from 24 to 44 inches. The soil commonly does not have rock fragments in the upper 40 inches, but some pedons have a few stones or pebbles. The depth to bedrock is more than 60 inches. In some undisturbed areas, the uppermost 2 to 4 inches have a black O horizon that overlies a dark gray (10YR 4/1) or black (10YR 2/1) A horizon.

The A horizon has hue of 10YR, value of 2, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or silty clay loam and contains between 10 and 20 percent organic matter. Structure is granular or very fine blocky. Consistence is very friable. Reaction is slightly acid or neutral.

The Bg horizon has hue of 5YR to 5Y, or it is neutral. It has value of 4 to 6 and chroma of 0 to 2. The upper part of the subsoil has few or no mottles, and the lower part has few to many high-chroma mottles. The texture of the fine-earth fraction is silty clay loam, silty clay, or clay. Structure is weak to strong prismatic, blocky, or subangular blocky. Some patchy clay films are on vertical faces of peds in some pedons. Consistence is sticky or very sticky and plastic or very plastic. Reaction ranges from slightly acid to moderately alkaline.

The Cg horizon has hue of 2.5YR to 5Y, or it is neutral. It has value of 4 to 6 and chroma of 0 to 2. Typically, it is calcareous, varved silty clay or clay.

Franklinville Series

The Franklinville series consists of deep, well drained soils on bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in glacial till derived from sandstone, siltstone, and shale. Slopes range from 8 to 25 percent.

Franklinville soils are commonly adjacent to moderately deep Mongaup soils and shallow, somewhat excessively drained Hawksnest soils, which are in areas where the glacial till is thinner over the bedrock. Very deep, well drained Lewbath soils and moderately well drained Willdin soils, which have firm fragipan subsoils, are on nearby landforms.

Typical pedon of Franklinville silt loam, in an area of Mongaup-Franklinville complex, 15 to 25 percent slopes; in the town of Hartwick; 75 feet northwest of the intersection of Arnold Lake Road and the east side access road and 12 feet west of Arnold Lake Road, in a wooded area (lat. 42°36’53” N.; long. 75°00’12” W.).

Oe—0 to 2 inches; partially decomposed hardwood leaf litter.

A—2 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; very friable; many fine and common medium roots; 10 percent rock fragments; very strongly acid; clear wavy boundary.

Bw1—7 to 22 inches; yellowish brown (10YR 5/6) channery silt loam; moderate fine granular structure; friable; many fine and common medium roots; common fine vesicular and common medium tubular pores; 25 percent rock fragments, including 3 percent larger than 3 inches in diameter; very strongly acid; gradual wavy boundary.

Bw2—22 to 34 inches; yellowish brown (10YR 5/4) channery silt loam; weak fine and medium subangular blocky structure; friable; common fine and medium and few coarse roots; common fine vesicular and tubular pores; 30 percent rock fragments, including 3 percent larger than 3 inches in diameter; strongly acid; gradual wavy boundary.

Bw3—34 to 40 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine and medium subangular blocky structure; friable; few fine and medium roots; common fine vesicular and tubular pores; 34 percent rock fragments, including 5 percent larger than 3 inches in diameter; strongly acid; gradual wavy boundary.

C—40 to 54 inches; dark grayish brown (10YR 4/2) very channery silt loam; weak thin platy structure; firm; few fine roots; few fine vesicular pores; 50 percent rock fragments, including 10 percent larger than 3 inches in diameter; strongly acid; clear wavy boundary.

2Cr—54 to 58 inches; grayish brown (2.5Y 5/2) very channery fine sandy loam; weak thin and medium platy structure inherited from the underlying bedrock; firm; few fine vesicular pores; 55 percent rock fragments, including 30 percent larger than 3 inches in diameter; strongly acid; abrupt wavy boundary.

2R—58 inches; dark gray (N 4/0), massive siltstone bedrock.

The thickness of the solum ranges from 30 to 50 inches. The depth to bedrock is more than 40 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 30 percent in the upper part of the solum; from 15 to 35 percent in the lower part of the solum; and from 20 to 60 percent in the substratum.

Some pedons have a thin surface layer of organic material.

The A or Ap horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam or loam. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate, fine to coarse subangular blocky or granular. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The BC horizon, where present, has a range in hue, value, and chroma similar to that of the Bw horizon. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak, fine or medium subangular blocky or platy. Consistence is friable or firm. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The C and 2Cr horizons have hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Consistence is friable or firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

Greene Series

The Greene series consists of moderately deep, somewhat poorly drained soils on uplands. These soils formed in a thin mantle of glacial till overlying sandstone, siltstone, and shale bedrock. Slopes range from 1 to 8 percent.

Greene soils are commonly adjacent to shallow, poorly drained Tuller soils in areas where the bedrock is closer to the surface. Well drained, moderately deep Lordstown soils and shallow, somewhat excessively drained Arnot soils are on nearby landforms.

Typical pedon of Greene silt loam, in an area of Greene-Tuller complex, 1 to 8 percent slopes; in the town of Exeter; 600 feet west of County Route 24 and 1 mile southwest of the intersection of County Route 24 and Furman Road, in a pine plantation (lat. 42°50’01” N.; long. 75°05’57” W.).

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; very friable; many medium and coarse roots; 5 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw—8 to 18 inches; dark brown (10YR 4/3) silt loam; many medium prominent strong brown (7.5YR 4/6) and common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; common fine and medium roots; few fine vesicular pores; 5 percent rock fragments; strongly acid; clear wavy boundary.

Bg—18 to 27 inches; dark grayish brown (2.5Y 4/2) silt loam; common fine and medium prominent dark yellowish brown (10YR 4/4 and 4/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine vesicular pores; 10 percent rock fragments; moderately acid; clear wavy boundary.

Cg—27 to 39 inches; dark grayish brown (2.5Y 4/2) gravelly loam; few fine and medium prominent dark yellowish brown (10YR 4/6) mottles; massive; friable; many fine vesicular pores; 25 percent rock fragments; moderately acid; abrupt smooth boundary.

2R—39 inches; black (N 2/0), fractured shale bedrock.

The thickness of the solum ranges from 16 to 40 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer and from 5 to 35 percent throughout the remainder of the soil.

The A horizon has hue of 7.5YR or 10YR, value of 2 or 3, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam, silty clay loam, or loam. Structure is weak or moderate, fine or medium granular. In areas that have not been limed, reaction is very strongly acid or strongly acid.

The Bw and Bg horizons have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4. They have few to many mottles. In some pedons, they have manganese stains and ped faces with chroma of 3 or less. The texture of the fine-earth fraction ranges from silty clay loam to loam. Structure is weak or moderate, medium or coarse subangular blocky; coarse or very coarse prismatic parting to platy; or thin or medium platy parting to subangular blocky. Consistence is friable or firm. In areas that have not been limed, reaction ranges from strongly acid to moderately acid.

The C or Cg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from silty clay loam to loam. Structure is weak platy inherited from the weathering bedrock, or the horizon is massive. The horizon has few to many mottles. In areas that have not been limed, reaction ranges from strongly acid to moderately acid.

The 2R layer consists of grayish, brownish, or black sandstone, siltstone, or shale. The upper part of the bedrock is fractured in some pedons.

Correlation note: The typical pedon is borderline to the nonacid reaction class as measured in water (pH greater than 5.5). The Greene series is in the acid family reaction class. Pedons in the nonacid reaction class, which are mostly in the northern part of the survey area, are inclusions in map unit GrB, Green-Tuller complex, 1 to 8 percent slope.

Gretor Series

The Gretor series consists of moderately deep, somewhat poorly drained soils on uplands at elevations over 1,750 feet. These soils formed in a thin mantle of glacial till overlying sandstone, siltstone, and shale. Slopes range from 1 to 6 percent.

Gretor soils are commonly adjacent to shallow, poorly drained Torull soils. Moderately deep, well drained Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are nearby on glacial till uplands. Narrow areas of rock outcrop are also near Gretor soils in some places.

Typical pedon of Gretor silt loam, in an area of Torull-Gretor complex, 1 to 6 percent slopes; in the town of Decatur; 3,000 feet east of the intersection of Fish and Game Road and Reservoir Road and 300 feet south of Reservoir Road, in an abandoned field (lat. 42°40'28" N.; long. 74°39'14" W.).

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; very friable; many fine and medium roots; 10 percent rock fragments; moderately acid; clear smooth boundary.

Bg1—9 to 17 inches; dark grayish brown (10YR 4/2) channery silt loam; common medium prominent light yellowish brown (2.5Y 6/4) and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and few medium roots; common fine vesicular pores; 20 percent rock fragments; moderately acid; gradual smooth boundary.

Bg2—17 to 22 inches; grayish brown (2.5Y 5/2) channery silt loam; many (50 percent) fine and medium prominent dark yellowish brown (10YR 4/4) and common medium prominent dark brown (7.5YR 4/4) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; common very fine and fine vesicular pores; 15 percent rock fragments; moderately acid; gradual smooth boundary.

C—22 to 29 inches; brown (10YR 5/3) channery loam; many fine and medium distinct dark yellowish brown (10YR 4/6) and common medium prominent gray (5Y 6/1) mottles; massive with some inherited weak medium platy structure just above the bedrock; firm; few fine vesicular pores; 20 percent rock fragments; strongly acid; abrupt smooth boundary.

2R—29 inches; dark gray (N 4/0), hard, fine-grained sandstone bedrock; the upper 6 inches are very fractured.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer and from 5 to 35 percent throughout the remainder of the soil. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid in the surface layer and subsoil and from strongly acid to slightly acid in the substratum. The pH in $CaCl_2$, however, is less than 5.0.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam, silty clay loam, or loam. Structure is weak or moderate, fine or medium granular or subangular blocky. Consistence is very friable or friable.

Some pedons have a thin E horizon.

The B or Bg horizon is neutral or has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 0 to 3. The texture of the fine-earth fraction is silt loam, silty clay loam, clay loam, or loam. Structure is weak or moderate, fine to coarse subangular or angular blocky. Consistence is friable. In most pedons, the B or Bg horizon has common or many high-chroma mottles below a depth of 9 inches.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It has few to many mottles. The texture of the fine-earth fraction is loam, clay loam, or silt loam. Structure is weak platy inherited from the weathering bedrock, or the horizon is massive. Consistence generally is firm but is friable in some pedons.

The 2R layer consists of hard, gray or brownish sandstone, siltstone, or shale. The upper part of the bedrock is fractured in some pedons.

Correlation note: The range in reaction includes moderately acid as measured in water, although pH in $CaCl_2$ is less than 5.0 throughout the control section in most pedons. Thus, the family reaction class is acid.

Hamplain Series

The Hamplain series consists of very deep, well drained soils on flood plains. These soils formed in silty alluvial material. Slopes range from 0 to 3 percent.

Hamplain soils are commonly adjacent to moderately well drained Otego soils, somewhat poorly drained Wakeville soils, and poorly drained Wayland soils. Unadilla soils and moderately well drained Scio soils are on adjacent higher, lacustrine or old alluvial terraces and plains. Trestle soils and moderately well drained Deposit soils are on adjacent gravelly flood plains. Chenango and Tunkhannock soils are nearby on glacial outwash terraces.

Typical pedon of Hamplain silt loam; in the town of Oneonta; 1,500 feet east of the intersection of Pony Farm Road and New York Route 7 and 3,000 feet south of Pony Farm Road, in a cornfield (lat. 42°25’38” N.; long. 75°07’04” W.).

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; weak fine and very fine subangular blocky structure; very friable; few fine and medium roots; neutral (limed); abrupt smooth boundary.

Bw—9 to 24 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; very friable; few very fine roots in upper part; slightly acid; clear smooth boundary.

BC—24 to 38 inches; brown (10YR 4/3) very fine sandy loam; weak very fine subangular blocky structure; friable; slightly acid; gradual wavy boundary.

2C—38 to 78 inches; brown (10YR 4/3) and dark yellowish brown (10YR 4/4) loamy very fine sand; massive; loose; moderately acid.

The thickness of the solum ranges from 24 to 48 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 5 percent in the surface layer and subsoil and from 0 to 15 percent in the substratum. Some pedons have stratified layers below a depth of 40 inches with subhorizons having up to 50 percent pebbles and cobbles. In areas that have not been limed, reaction ranges from strongly acid to slightly acid throughout the soil.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 2 to 4. Dry value is 6 or 7. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable.

The thin E horizon, where present, has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or fine sandy loam. Structure is granular, platy, or subangular blocky. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable.

The BC horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak subangular blocky, or the horizon is single grain. Consistence is friable or loose.

The C or 2C horizon is massive and has a range in color similar to that of the B horizons. The texture of the fine-earth fraction ranges from silt loam to loamy very fine sand and is stratified in some pedons. Consistence is loose or friable.

Correlation note: Based on characterization data from several pedons, the reaction class ranges to slightly acid (in water) even though base saturation is less than 60 percent.

Hawksnest Series

The Hawksnest series consist of shallow, somewhat excessively drained soils that formed in a thin mantle of glacial till on bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in glacial till underlain by sandstone, siltstone, and shale bedrock. Slopes range from 1 to 50 percent.

Hawksnest soils are commonly adjacent to moderately deep, well drained Mongaup soils, which are in areas where the glacial till is slightly thicker over the bedrock. Shallow, poorly drained Torull soils and moderately deep, somewhat poorly drained Gretor soils are nearby in shallow depressions and on the flatter parts of the bedrock benches. Also commonly adjacent are very deep, well drained Lewbath soils and moderately well drained Willdin soils in areas that have a firm or very firm (fragipan) subsoil.

Typical pedon of Hawksnest silt loam, in an area of Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky; in the town of Middlefield; 600 feet southeast of the intersection of Roscoe Jones Road and Putman Road and 600 feet east of Roscoe Jones Road, in a wooded area (lat. 42°43’18” N.; long. 74°48’25” W.).

Oe—0 to 1 inch; partially decomposed hardwood leaf litter and pine needles.

Ap—1 to 7 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; moderate fine and medium granular structure; very friable; many fine and medium roots; 10 percent rock fragments; very strongly acid; clear smooth boundary.

Bw1—7 to 11 inches; yellowish brown (10YR 5/4) channery silt loam; weak fine and medium subangular blocky structure; friable; many fine and medium roots; 25 percent rock fragments; very strongly acid; gradual wavy boundary.

Bw2—11 to 19 inches; strong brown (7.5YR 5/6) channery silt loam; weak medium subangular blocky structure; friable; many fine and few medium roots; 30 percent rock fragments; strongly acid; abrupt wavy boundary.

2R—19 inches; very dark gray (N 3/0), massive siltstone bedrock.

The thickness of the solum ranges from 10 to 20 inches. The depth to bedrock ranges from 10 to 20 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer and from 5 to 35 percent throughout the remainder of the soil. In areas that have not been limed, reaction ranges from extremely acid to strongly acid throughout the soil.

The Ap or A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3. The texture of the fine-earth fraction is silt loam to fine sandy loam. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable.

The E horizon, where present, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is loam or sandy loam. Structure is weak or moderate, fine platy or fine or medium subangular blocky.

The Bw horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam or loam. Consistence is friable or very friable.

The 2R layer is typically shale or massive siltstone bedrock, but in some areas it is massive sandstone bedrock.

Herkimer Series

The Herkimer series consists of very deep, well drained soils on alluvial fans in the northern part of the county. These soils formed in water-sorted gravelly alluvial deposits and inwash deposits. Slopes range from 2 to 8 percent.

Herkimer soils are commonly adjacent to well drained Howard soils on slightly higher glacial outwash and inwash deposits. Moderately well drained Scio soils are nearby on terraces and old alluvial fans that contain fewer rock fragments and more silt. Well drained Lansing soils and moderately well drained Conesus soils are commonly adjacent on glacial till plains and drumlins on higher landforms.

Typical pedon of Herkimer gravelly silt loam, fan, 2 to 6 percent slopes; in the town of Cherry Valley; 4,050 feet southwest of the intersection of County Route 32A and Van Derwerker Road, and 300 feet southeast of Van Derwerker Road in a hayfield (lat. 42°50’18” N.; long. 74°43’31” W.).

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, grayish brown (2.5Y 5/2) dry; moderate fine and medium granular structure; friable; common medium and coarse roots; 20 percent rock fragments; neutral; clear wavy boundary.

Bw1—9 to 19 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine and medium subangular blocky structure; friable; common medium and few fine and coarse roots; 30 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral; gradual wavy boundary.

Bw2—19 to 33 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine and medium subangular blocky structure; friable; common fine and few medium roots; few fine and medium vesicular pores; 20 percent rock fragments; neutral; clear wavy boundary.

C1—33 to 70 inches; dark yellowish brown (10YR 4/4) gravelly loam; few fine prominent yellowish red (5YR 4/6) mottles; massive; friable; few fine roots; few fine and medium vesicular pores; 15 percent rock fragments; neutral; gradual wavy boundary.

C2—70 to 72 inches; dark yellowish brown (10YR 4/4) gravelly loam; few fine prominent yellowish red (5YR 4/6) mottles; massive; friable; few fine roots; few fine and medium vesicular pores; 15 percent rock fragments; slightly effervescent; mildly alkaline.

The thickness of the solum ranges from 20 to 52 inches. The depth to bedrock is more than 60 inches. The content of rock fragments, consisting of pebbles, cobbles, and channers, ranges from 15 to 35 percent, by volume, in the surface layer. The content of rock fragments, consisting of pebbles and cobbles, ranges from 0 to 35 percent throughout the remainder of the soil. Dark shale fragments make up 2 to 35 percent, by volume, of the upper part of the solum and 15 to 60 percent of the lower part of the subsoil and the substratum. By weighted average, the total content of rock fragments in the particle-size control section is less than 35 percent. The depth to carbonates ranges from 40 to 75 inches.

The Ap horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, medium or fine granular. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from strongly acid to neutral.

The Bw horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate, very fine to medium subangular blocky. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from strongly acid to neutral and at a depth of 30 inches is more than pH 6.0.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. The C horizon is massive, or it has weak or moderate, medium or thick platy structure. Consistence ranges from friable to loose. In areas that have not been limed, reaction ranges from neutral to moderately alkaline. In some pedons, the C horizon has a few mottles.

Honeoye Series

The Honeoye series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived from limestone and calcareous shale. Slopes range from 3 to 50 percent.

Honeoye soils are commonly adjacent to moderately well drained Lima soils and somewhat poorly drained Manheim soils. Well drained Lansing soils and moderately well drained Conesus soils, which have carbonates deeper in the profile than the Honeoye soils, are on adjacent landforms. Shallow Farmington soils and moderately deep Wassaic and Manlius soils are nearby on bedrock-controlled uplands.

Typical pedon of Honeoye silt loam, 8 to 15 percent slopes; in the town of Springfield; 225 feet northeast of Texas Road and 0.3 miles west of the intersection of Hinds Road and Texas Road (lat. 42°51’18” N.; long. 74°50’54” W.).

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; very friable; many fine and few medium roots; 12 percent rock fragments; neutral; clear smooth boundary.

B/E—8 to 17 inches; brown (7.5YR 4/4) gravelly silt loam with grayish brown (10YR 5/2) faces of peds more than 1 millimeter thick; weak medium and fine subangular blocky structure; friable; common fine roots; many fine vesicular and few fine and medium tubular pores containing clay films; 20 percent rock fragments; neutral; gradual irregular boundary.

Bt—17 to 29 inches; dark brown (10YR 3/3) gravelly silt loam; few fine distinct yellowish brown (10YR 5/4) mottles in the lowest part; moderate medium and fine subangular blocky structure; firm; few fine roots; common fine tubular and common fine and few medium vesicular pores; many distinct dark brown (10YR 4/3) clay films on vertical and horizontal surfaces of peds; common dark brown (10YR 4/3) clay films in pores; 20 percent rock fragments; slightly effervescent in lower part; mildly alkaline; gradual wavy boundary.

Cd—29 to 72 inches; dark brown (10YR 4/3) gravelly loam; few fine faint yellowish brown (10YR 5/4) mottles in the upper part; massive; firm; 30 percent rock fragments; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 20 to 36 inches. The depth to bedrock is more than 60 inches. The depth to carbonates ranges from 16 to 32 inches. The content of rock fragments ranges from 5 to 35 percent, by volume, in the solum and includes up to 8 percent larger than 3 inches in diameter. In the substratum, the content of rock fragments ranges from 15 to 65 percent, by volume, and includes up to 8 percent larger than 3 inches in diameter. Rock fragments larger than 10 inches in diameter cover 0 to 20 percent of the surface. In areas that have not been limed, reaction is moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and mildly alkaline or moderately alkaline in the substratum.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is fine sandy loam, loam, or silt loam. Structure is weak or moderate, medium or fine granular or subangular blocky. Consistence is very friable or friable.

Some pedons have an E horizon that has a range in structure and texture similar to that of the A horizon.

The B/E horizon has properties similar to those of the Bt horizon in the interiors of the peds. The E part of the horizon consists of silty exteriors of peds that have hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 or 3.

The Bt horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is loam, silt loam, or clay loam with the content of clay ranging from 18 to 28 percent. Structure is weak or moderate, fine to coarse subangular blocky. Consistence is friable or firm. In some pedons, the horizon has high-chroma mottles directly above the C horizon.

The Cd horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is fine sandy loam, loam, or silt loam. Structure is weak or moderate, medium or thick platy or weak prismatic, or the horizon is massive. Consistence is firm or very firm. Some pedons have a friable C horizon up to 10 inches thick above the Cd horizon. In some pedons, the C horizon has mottles.

Howard Series

The Howard series consists of very deep, well drained soils on glacial outwash plains, kames, and terraces. These soils formed in water-sorted gravelly outwash and inwash deposits. Slopes range from 2 to 50 percent.

Howard soils are commonly adjacent to well drained Lansing soils and moderately well drained Conesus soils on glacial till plains. Also commonly adjacent are areas of well drained Herkimer soils on alluvial fans.

Typical pedon of Howard gravelly silt loam, 8 to 15 percent slopes; in the town of Otsego; 5,800 feet south of the intersection of Red House Hill Road and New York Route 80 and 300 feet east of New York Route 80, in a wooded area (lat. 42°45’50” N.; long. 74°54’05” W.).

A—0 to 5 inches; dark brown (10YR 4/3) gravelly silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; very friable; many very fine and fine and common medium roots; 15 percent rock fragments; moderately acid; clear smooth boundary.

EB—5 to 9 inches; 60 percent pale brown (10YR 6/3) and brown (10YR 5/3) and 40 percent dark brown (10YR 4/3) silt loam; moderate fine subangular blocky structure parting to moderate fine granular; friable; common fine, many medium, and few coarse roots; few fine vesicular pores; 10 percent rock fragments, including 2 percent larger than 3 inches in diameter; moderately acid; clear broken boundary.

B/E—9 to 25 inches; dark brown (10YR 4/3) gravelly loam with pale brown (10YR 6/3) faces of peds more than 1 millimeter thick; moderate medium subangular blocky structure; friable; few fine and medium roots; common fine and few medium vesicular and tubular pores containing few faint dark brown (7.5YR 4/2) clay films; 30 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid; clear wavy boundary.

Bt1—25 to 36 inches; dark brown (7.5YR 4/4) very gravelly clay loam; moderate medium and coarse subangular blocky structure; friable, sticky and plastic; few fine and medium roots; common fine and medium vesicular and few fine and medium tubular pores; common distinct dark gray (10YR 4/1) and dark brown (7.5YR 4/2) clay films in pores and on vertical and horizontal surfaces of peds;

40 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral; abrupt wavy boundary.

Bt2—36 to 40 inches; dark brown (10YR 4/3) very gravelly clay loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine and medium roots; few fine and medium vesicular and tubular pores; common distinct strong brown (7.5YR 5/6) clay films on vertical and horizontal surfaces of peds; few faint dark gray (10YR 4/1) and dark brown (7.5YR 4/2) clay films in pores; 45 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral; abrupt wavy boundary.

2C—40 to 85 inches; grayish brown (10YR 5/2) sand and gravel; massive; loose; 65 percent rock fragments, including 30 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 24 to 60 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 35 percent, by volume, in the surface layer; from 15 to 55 percent in the upper part of the subsoil; from 35 to 60 percent in the lower part of the subsoil; and from 45 to 70 percent in the substratum. The depth to carbonates ranges from 24 to 60 inches. In areas that have not been limed, reaction ranges from strongly acid to neutral in the solum and from neutral to moderately alkaline in the substratum.

The Ap or A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate, fine or medium granular. Consistence is very friable or friable.

The E horizon, where present, has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is very weak or weak, fine or medium blocky, or the horizon is massive. Consistence is friable or firm.

Some pedons have a BE horizon instead of an E horizon. The BE horizon has chroma of 4 to 6.

Some pedons have an EB horizon. It has granular structure.

The E/B and B/E horizons have very weak to moderate, fine or medium granular, subangular blocky, or platy structure. Consistence is very friable or friable. The texture of the fine-earth fraction and color are transitional between an E horizon and the Bt horizon.

The Bt horizon has hue of 5YR to 10YR, value of 2 to 5, and chroma of 3 or 4. The texture of the fine-earth fraction is silt loam, loam, clay loam, sandy clay loam, fine sandy loam, or sandy loam. Structure is weak or moderate, angular or subangular blocky. Consistence ranges from very friable to firm.

The 2C horizon has hue of 2.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. Some pedons have a C or BC horizon that is up to 12 inches thick and does not have carbonates. The fine-earth fraction in the 2C, C, or BC horizon is loamy fine sand, loamy sand, sand, or coarse sand and is commonly stratified.

Lackawanna Series

The Lackawanna series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived from reddish sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 25 to 36 inches. Slopes range from 3 to 35 percent.

Lackawanna soils are commonly adjacent to moderately well drained Wellsboro soils and somewhat poorly drained Morris soils in shallow depressions and on slightly lower landforms. Moderately deep, well drained Oquaga soils and shallow, somewhat excessively drained Arnot soils are nearby on slightly higher landforms that are bedrock-controlled.

Typical pedon of Lackawanna channery silt loam, 8 to 15 percent slopes; in the town of Butternuts; 1,600 feet south of the intersection of Copes Corners Road and Oppermann Road and 25 feet west of Oppermann Road, in an abandoned field (lat. 42°30’14” N.; long. 75°21’23” W.).

Ap—0 to 6 inches; dark reddish brown (5YR 3/3) channery silt loam, light reddish brown (5YR 6/3) dry; weak fine granular structure; friable; common fine and few medium roots; 20 percent rock fragments; moderately acid (limed); abrupt smooth boundary.

Bw1—6 to 16 inches; reddish brown (5YR 4/3) channery silt loam; weak fine subangular blocky structure; friable; common fine roots; 20 percent rock fragments; strongly acid; clear wavy boundary.

Bw2—16 to 24 inches; reddish brown (5YR 4/4) channery silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine vesicular and tubular pores; 30 percent rock fragments; strongly acid; clear wavy boundary.

E—24 to 26 inches; reddish gray (5Y 5/2) channery silt loam; common medium prominent dark yellowish brown (10YR 4/6) mottles; weak thin platy structure; friable; few fine roots; common fine vesicular and tubular pores; 15 percent rock fragments; moderately acid; abrupt wavy boundary.

Bx—26 to 70 inches; dark reddish brown (2.5YR 3/4) very channery silt loam; strong very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 18 to 24 inches apart, and have bluish gray (5G 6/1) interiors and yellowish brown (10YR 5/8) edges; firm and brittle; many fine vesicular and common fine tubular pores; 35 percent rock fragments; moderately acid.

The thickness of the solum ranges from 40 to more than 75 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 25 to 36 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 10 to 40 percent below the surface layer to the top of the fragipan; and from 15 to 65 percent in the fragipan and substratum. The particle-size control section averages more than 60 percent silt plus very fine sand. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid throughout the soil.

The Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 4. Some undisturbed pedons have a thin A horizon with value of 2 to 4 and chroma of 2 or 3. The fine-earth fraction in the Ap or A horizon is silt loam, loam, or fine sandy loam.

The E horizon, where present, has hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam.

The Bw horizon has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam.

The Bx horizon has hue of 10R to 5YR, value of 3 to 5, and chroma of 2 to 4. In some pedons it is mottled and the faces of prisms have hue of 10R to 7.5YR, value of 5 to 7, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, or sandy loam. Structure is platy, or it is blocky within very coarse prisms. Some pedons have prism interiors that are massive.

The C or Cd horizon, where present, has a range in color and a range in fine-earth texture similar to those of the Bx horizon.

Lansing Series

The Lansing series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived from limestone and calcareous shale. Slopes range from 3 to 50 percent.

Lansing soils are commonly adjacent to moderately well drained Conesus soils and somewhat poorly drained Manheim soils. Well drained Honeoye soils and moderately well drained Lima soils, which have carbonates within a depth of 32 inches, are on adjacent landforms. Shallow, somewhat excessively drained Farmington soils; moderately deep, well drained Wassaic soils; and moderately deep, well drained Manlius soils are nearby on bedrock-controlled uplands.

Typical pedon of Lansing silt loam, 3 to 8 percent slopes; in the town of Springfield; 1,400 feet north of the intersection of U.S. Route 20 and Van Alstyne Road and 100 feet northwest of Van Alstyne Road, in a hayfield (lat. 42°50'15" N.; long. 74°50'02" W.).

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine and medium roots; 10 percent rock fragments; moderately acid; abrupt smooth boundary.

BE—9 to 17 inches; dark yellowish brown (10YR 4/6) gravelly loam; moderate medium subangular blocky structure; friable; few fine and medium roots; common fine vesicular pores containing common distinct dark grayish brown (10YR 4/2) silt coats; 20 percent rock fragments; moderately acid; abrupt smooth boundary.

E—17 to 26 inches; pale brown (10YR 6/3) gravelly loam with some dark brown (10YR 4/3) material in the lower part; moderate thin and medium platy structure parting to moderate medium subangular blocky; friable; few medium roots; many fine vesicular pores; 25 percent rock fragments; slightly acid; clear irregular boundary.

B/E—26 to 37 inches; dark brown (10YR 4/3) gravelly silt loam with pale brown (10YR 6/3) faces of peds more than 1 millimeter thick; few fine distinct dark brown (7.5YR 4/4) stains; moderate fine and medium subangular blocky structure; friable; few medium roots; common fine and few medium tubular pores and many fine vesicular pores; common distinct clay films on vertical surfaces of peds and in pores; 15 percent rock fragments; moderately acid; clear irregular boundary.

Bt—37 to 49 inches; dark brown (10YR 4/3) gravelly silt loam; moderate medium and coarse subangular blocky structure with areas of weak very coarse prismatic structure parting to subangular blocky within the prisms; streaks separating the prisms are 1 inch wide, are 48 inches apart, and have light brownish gray (10YR 6/2) interiors and strong brown (7.5YR 5/8) edges; friable; few medium roots; common fine and few medium tubular pores and many fine vesicular pores; many distinct continuous grayish brown (10YR 5/2) clay films in pores and on vertical surfaces of peds; few distinct grayish brown (10YR 5/2) clay films on horizontal surfaces of peds; 30 percent rock fragments; neutral; clear wavy boundary.

C—49 to 72 inches; brown (10YR 5/3) cobbly loam; massive; firm; 30 percent rock fragments, including 10 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 32 to 60 inches. The depth to bedrock is more than 60 inches. The depth to carbonates ranges from 30 to 60 inches. The content of rock fragments ranges from 2 to 45 percent, by volume, in individual horizons in the solum and from 20 to 50 percent in the substratum. In areas that have not been limed, reaction ranges from strongly acid to neutral in the surface layer, subsurface layer, and subsoil and from neutral to moderately alkaline in the substratum.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is very fine sandy loam, loam, or silt loam.

The E and BE horizons have hue of 10YR, value of 4 to 6, and chroma of 2 to 6. The texture of the fine-earth fraction is very fine sandy loam, loam, or silt loam. Structure is weak platy or subangular blocky.

The E/B horizon, which ranges from 0 to 6 inches in thickness, and the B/E horizon have properties similar to those of the Bt horizon in the interiors of peds and similar to the E horizon on the exterior of peds.

The Bt horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is loam, silt loam, or silty clay loam with a content of clay, by weighted average, ranging from 18 to 28 percent. Structure is weak to strong, medium or coarse subangular blocky or prismatic. Consistence is friable or firm. In some pedons, the lower part of the horizon has few or common mottles.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3. The texture of the fine-earth fraction is loam or silt loam. Structure is weak or moderate, medium or thick platy, or the horizon is massive. Consistence is firm or very firm.

Correlation Note: Small areas in the eastern part of the county have weak, fragipan-like layers and colder soil temperatures than are typical for the series. These differences do not significantly alter interpretations for use and management.

Lewbath Series

The Lewbath series consists of very deep, well drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from brownish or gray sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 20 to 38 inches. Slopes range from 3 to 35 percent.

Lewbath soils are commonly adjacent to moderately well drained Willdin soils and somewhat poorly drained Ontusia soils. Moderately deep, well drained Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are nearby on higher landforms that are bedrock-controlled.

Typical pedon of Lewbath channery silt loam, 3 to 8 percent slopes; in the town of Worcester; 1,400 feet south of the intersection of Hollenbeck Road and Smith Road and 250 feet east of Hollenbeck Road, in a field (lat. 42°34’41” N.; long. 74°41’58” W.).

Ap—0 to 8 inches; brown (10YR 4/3) channery silt loam; moderate fine and medium granular structure; friable; many very fine and fine and common medium and coarse roots; 20 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw—8 to 16 inches; yellowish brown (10YR 5/6) silt loam; weak fine and medium subangular blocky structure; very friable; many fine and common medium and coarse roots; many fine vesicular and common fine tubular pores; 10 percent rock fragments; strongly acid; clear wavy boundary.

BE—16 to 21 inches; light olive brown (2.5Y 5/4) channery silt loam; moderate thin platy structure parting to moderate very fine subangular blocky; firm; common fine and few medium roots; 30 percent rock fragments; strongly acid; clear smooth boundary.

Bx1—21 to 33 inches; dark grayish brown (2.5Y 4/2) channery silt loam; strong very coarse prismatic structure parting to weak coarse subangular blocky; streaks separating the prisms are 1/4 to 3/4 inch wide, are 12 to 24 inches apart, and have gray (5Y 6/1) interiors and strong brown (7.5YR 5/6) edges; very firm and brittle; few fine roots along faces of prisms; few fine and medium vesicular and few fine tubular pores; thick clay films are in 50 percent of the pores; 30 percent rock fragments, including 5 percent larger than 3 inches in diameter; strongly acid; gradual wavy boundary.

Bx2—33 to 52 inches; dark grayish brown (2.5Y 4/2) very channery loam; common fine distinct light olive brown (2.5Y 5/4) and few fine faint light brownish gray (2.5Y 6/2) mottles; strong very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1/4 to 3/4 inch wide, are 12 to 24 inches apart, and have gray (5Y 6/1) interiors and strong brown (7.5YR 5/6) edges; very firm and brittle; few fine and medium vesicular and few fine tubular pores; few fine roots along faces of prisms; 45 percent rock fragments, including 10 percent larger than 3 inches in diameter; strongly acid; gradual irregular boundary.

Cd—52 to 72 inches; olive brown (2.5Y 4/4) very flaggy loam; massive; firm; few fine and medium vesicular pores; 55 percent rock fragments, including 25 percent larger than 3 inches in diameter; strongly acid.

The thickness of the solum ranges from 40 to 75 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 20 to 38 inches. The content of rock fragments, dominantly channers and flagstones, ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer to the top of the fragipan; from 15 to 50 percent in the fragipan; and from 15 to 60 percent in the substratum. The fine-earth fraction of the Bx and C horizons has over 50 percent silt plus very fine sand.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction is strongly acid or moderately acid.

The E horizon, where present, has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is granular, platy, or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction is strongly acid or moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction is strongly acid or moderately acid.

The BE horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. In some pedons, it has mottles below a depth of 28 inches. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate platy or subangular blocky. Consistence is firm or friable. In areas that have not been limed, reaction is strongly acid or moderately acid.

An E or E´ horizon is present above the Bx horizon in some pedons. The E or E´ horizon has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 or 3. In some pedons, it has mottles below a depth of 28 inches. The texture of the fine-earth fraction is loam, fine sandy loam, or silt loam. In areas that have not been limed, reaction is strongly acid or moderately acid.

The Bx horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. Structure is coarse or very coarse prismatic with platy, blocky, or massive interiors. Consistence is firm or very firm. In areas that have not been limed, reaction is strongly acid or moderately acid.

The Cd horizon, where present, has a range in color and texture similar to that of the Bx horizon. The Cd horizon is massive or has platy structure. Reaction ranges from very strongly acid to slightly acid.

Lewbeach Series

The Lewbeach series consists of very deep, well drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from reddish sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 25 to 36 inches. Slopes range from 8 to 15 percent.

Lewbeach soils are commonly adjacent to moderately well drained Willowemoc soils and somewhat poorly drained Onteora soils. Moderately deep, well drained Vly soils and shallow, somewhat excessively drained Arnot soils are nearby on hilltops and higher landforms that are bedrock-controlled.

Typical pedon of Lewbeach channery silt loam, 8 to 15 percent slopes; in the town of Butternuts; 1,000 feet north of the intersection of Field Miller Road and County Route 5 and 400 feet east of Field Miller Road, in a cornfield (lat. 42°27’15” N.; long. 75°14’59” W.).

Ap—0 to 9 inches; dark reddish brown (5YR 3/3) channery silt loam, light reddish brown (5YR 6/3) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine and medium roots; 20 percent rock fragments, including 5 percent larger than 3 inches in diameter; neutral (limed); abrupt smooth boundary.

Bw1—9 to 15 inches; reddish brown (5YR 4/4) channery silt loam; strong medium subangular blocky structure; friable; few very fine and fine roots; common fine and medium vesicular pores; 20 percent rock fragments; moderately acid; clear smooth boundary.

Bw2—15 to 19 inches; reddish brown (5YR 4/3) channery silt loam; moderate fine subangular blocky structure; friable; few very fine roots; common fine and medium vesicular and tubular pores; 25 percent rock fragments, including 3 percent larger than 3 inches in diameter; moderately acid; clear wavy boundary.

E1—19 to 24 inches; reddish brown (5YR 5/3) gravelly loam with a few dark reddish gray (5YR 4/2) streaks; weak medium and coarse subangular blocky structure; friable; few very fine roots; few fine vesicular and tubular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

E2—24 to 27 inches; reddish gray (5YR 5/2) gravelly fine sandy loam; few fine prominent strong brown (7.5YR 4/6) mottles; weak medium and coarse subangular blocky structure parting to weak thin platy; friable; few fine vesicular and tubular pores; 33 percent rock fragments, including 10 percent larger than 3 inches in diameter; moderately acid; clear wavy boundary.

Bx1—27 to 35 inches; reddish brown (5YR 4/3) channery loam; dark reddish brown (2.5YR 3/4) streaks around many rock fragments; moderate very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 2 inch wide, are 24 inches apart, and have light reddish brown (5YR 6/3) interiors and yellowish red (5YR 5/6) edges; very firm and brittle; many fine vesicular and common fine tubular pores; 25 percent rock fragments, including 3 percent larger than 3 inches in diameter; moderately acid; clear wavy boundary.

Bx2—35 to 72 inches; reddish brown (5YR 4/3) channery loam; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 2 inch wide, are 24 inches apart, and have light reddish brown (5YR 6/3) interiors and yellowish red (5YR 5/6) edges; very firm and brittle; common fine vesicular and tubular pores containing few distinct clay films; 25 percent rock fragments, including 3 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 40 to 75 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 25 to 36 inches. The content of rock fragments, dominantly channers and flagstones, ranges from 5 to 35 percent, by volume, in the surface layer and in the subsoil above the fragipan and from 15 to 50 percent in the fragipan and the substratum. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The Ap or A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable.

In some pedons, an E horizon is present directly below the Ap or A horizon. This E horizon has hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is granular, platy, or subangular blocky. Consistence is friable or very friable.

The Bw horizon has hue of 2.5YR to 7.5Y, value of 4 or 5, and chroma of 3 to 6.

The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak to strong, medium or fine subangular blocky.

The E or E´ horizon directly above the Bx horizon has hue of 5YR or 7.5YR, value of 3 to 6, and chroma 2 or 3. In some pedons, it has mottles. The texture of the fine-earth fraction is loam, fine sandy loam, or sandy loam. Structure is granular, platy, or subangular blocky. Consistence is friable or very friable.

The Bx horizon has hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 2 to 4. In some pedons, it has gray or brown mottles. The texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is very coarse prismatic with platy, blocky, or massive interiors.

The Cd horizon, where present, has a range in color and texture similar to that of the Bx horizon.

Lima Series

The Lima series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till derived from limestone and calcareous shale. Slopes range from 3 to 15 percent.

Lima soils are commonly adjacent to well drained Honeoye soils and somewhat poorly drained Manheim soils. Well drained Lansing soils and moderately well drained Conesus soils, which have carbonates deeper in the profile than the Lima soils, are also on the same landforms as the Lima soils. Shallow, somewhat excessively drained Farmington soils; moderately deep, well drained Wassaic soils; and moderately deep, well drained Manlius soils are nearby on bedrock-controlled uplands.

Typical pedon of Lima gravelly silt loam, 3 to 8 percent slopes; in the town of Springfield; 600 feet south of the intersection of Hinds Road and Domion Road and 600 feet west of Hinds Road, in a pasture (lat. 42°51’05” N.; long. 74°50’43” W.).

Ap—0 to 7 inches; dark brown (10YR 3/3) gravelly silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; common fine and medium roots; 15 percent rock fragments; neutral; abrupt smooth boundary.

E—7 to 12 inches; brown (10YR 5/3) loam, very pale brown (10YR 7/3) dry; weak thin platy structure; friable; common fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

B/E—12 to 17 inches; dark brown (10YR 3/3) gravelly silt loam subsoil material; brown (10YR 5/3) gravelly fine sandy loam faces of peds more than 1 millimeter thick, very pale brown (10YR 7/3) dry; weak fine subangular blocky structure; friable; few fine and medium roots; common fine and medium and few coarse tubular pores; common distinct very dark grayish brown (10YR 3/2) clay films in pores and on vertical surfaces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Bt—17 to 28 inches; dark brown (10YR 3/3) gravelly silt loam; few medium prominent olive yellow (2.5Y 6/8) mottles; moderate fine subangular blocky structure; friable; few fine roots; many fine and few medium vesicular pores; many prominent very dark grayish brown (10YR 3/2) clay films in pores and on vertical and horizontal surfaces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Cd1—28 to 47 inches; dark brown (10YR 4/3) and dark grayish brown (10YR 4/2) gravelly silt loam; massive; firm; common fine and few medium tubular pores; 25 percent rock fragments, including 3 percent larger than 3 inches in diameter; slightly effervescent; mildly alkaline; gradual wavy boundary.

Cd2—47 to 72 inches; dark brown (10YR 4/3) and dark grayish brown (10YR 4/2) very channery silt loam; massive; firm; few fine vesicular pores; 45 percent rock fragments, including 8 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 18 to 30 inches. The depth to carbonates ranges from 15 to 32 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 30 percent, by volume, in the solum; from 20 to 50 percent in the substratum; and includes 3 to 10 percent fragments larger than 3 inches in diameter. In areas that have not been limed, reaction ranges from moderately acid to mildly alkaline in the solum and is mildly alkaline or moderately alkaline in the substratum. Higher reaction in the solum is more common in the lower part of the B horizon, which may also be calcareous in some pedons.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from fine sandy loam to silt loam. Structure is weak or moderate, medium or fine granular. Consistence is very friable or friable.

The B/E horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 or 4 in the B portion and has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 2 or 3 in the E portion. In some pedons, the horizon has high-chroma mottles.

Some pedons have a thin E or BE horizon.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 or 4. It has distinct or prominent high-chroma mottles. The texture of the fine-earth fraction is loam, silt loam, or clay loam. The average content of clay is 18 to 28 percent. Structure is weak or moderate, fine to coarse angular or subangular blocky, or it is very coarse prismatic. Consistence is friable or firm.

Some pedons have a BC horizon.

The Cd horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from fine sandy loam to silt loam. Structure is weak or moderate, medium or thick platy, or the horizon is massive. Consistence is firm or very firm.

Some pedons have a friable C horizon above the Cd horizon. Other pedons have 2C and 3C horizons.

Lordstown Series

The Lordstown series consist of moderately deep, well drained soils that formed in glacial till on bedrock-controlled uplands. Slopes range from 1 to 50 percent.

Lordstown soils are commonly adjacent to Manlius soils, which average more than 35 percent rock fragments in the control section. Well drained, deep Chadakoin soils are nearby on toeslopes and in areas where the glacial till or colluvium is thicker over the bedrock. Shallow, somewhat excessively drained Arnot soils are nearby in areas where the glacial till is thinner over the bedrock. Very deep, well drained Lansing and Bath soils and moderately well drained Conesus and Mardin soils are nearby on hillsides and hilltops that are not bedrock-controlled or where the glacial till is thicker over the bedrock.

Typical pedon of Lordstown channery silt loam, in an area of Lordstown-Chadakoin complex, 8 to 15 percent slopes; in the town of Pittsfield; 1,800 feet south of the intersection of Miller Road and Otsego County Route 17 and 1,800 feet west of Miller Road, in an abandoned field (lat. 42°38'20" N.; long. 75°13'21" W.).

Ap—0 to 8 inches; dark brown (10YR 4/3) channery silt loam, light yellowish brown (10YR 6/4) dry; moderate fine and medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw1—8 to 16 inches; yellowish brown (10YR 5/6) channery silt loam; moderate fine and medium subangular blocky structure; friable; few fine and very fine roots; few fine and very fine tubular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—16 to 26 inches; olive brown (2.5Y 4/4) channery loam; weak medium subangular blocky structure; friable; few fine and very fine roots; few fine vesicular pores; 30 percent rock fragments; moderately acid; clear wavy boundary.

C—26 to 28 inches; olive brown (2.5Y 4/4) channery loam; few fine distinct light brownish gray (2.5Y 6/2) and few coarse prominent dark yellowish brown (10YR 4/6) mottles; weak thin platy structure; friable; few fine and very fine roots; 30 percent rock fragments; moderately acid; abrupt wavy boundary.

2R—28 inches; very dark grayish brown (2.5Y 3/2), fine-grained sandstone bedrock.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the Ap horizon and from 20 to 60 percent in the Bw and C horizons. In areas that have not been limed, reaction ranges from very strongly acid to neutral in the Ap horizon, ranges from very strongly acid to moderately acid in the subsoil, and is strongly acid or moderately acid in the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, fine granular or subangular blocky. Consistence is friable or very friable.

In undisturbed areas, some pedons have a thin black A horizon and a reddish Bhs horizon.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, fine or medium subangular blocky or granular. Consistence is friable or very friable.

The C horizon, where present, has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. In some pedons, it has high-chroma mottles. The texture of the fine-earth fraction ranges from fine sandy loam to silt loam. The horizon is massive or has weak platy structure. Consistence is friable or firm.

The 2R layer consists of massive, thick to thin beds of siltstone or sandstone interbedded with shale. The bedrock is commonly fractured along joint planes within the upper 3 to 6 feet.

Lyons Series

The Lyons series consists of very deep, poorly drained soils. These soils formed in glacial till in depressions and along small drainageways in the northern part of the county. Slopes range from 0 to 3 percent.

Lyons soils are commonly adjacent to Canandaigua soils and somewhat poorly drained Manheim soils. Moderately well drained Conesus and Lima soils are nearby on slightly higher parts of the landscape. Very poorly drained Edwards and Palms soils are nearby in organic bogs. Well drained Lansing and Honeoye soils are nearby on hillsides.

Typical pedon of Lyons silt loam; in the town of Richfield; 800 feet west of the intersection of Jordan Road and Richfield Hill Road and 200 feet south of Richfield Hill Road, in a brushy area (lat. 42°53’46” N.; long. 75°04’56” W.).

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; many fine and few medium and coarse roots; 10 percent rock fragments; neutral; clear smooth boundary.

Bg1—9 to 15 inches; dark grayish brown (10YR 4/2) gravelly silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak medium and coarse subangular blocky structure; friable; few fine and medium roots; common fine vesicular and few medium tubular pores containing common faint brown (10YR 5/3) clay films; 30 percent rock fragments, including 10 percent larger than 3 inches in diameter; neutral; clear smooth boundary.

Bg2—15 to 24 inches; dark grayish brown (10YR 4/2) gravelly silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak medium and coarse subangular blocky structure; friable; few fine and medium roots; common fine vesicular and few medium tubular pores containing common faint brown (10YR 5/3) clay films; 30 percent rock fragments, including 10 percent larger than 3 inches in diameter; slightly effervescent; mildly alkaline; clear smooth boundary.

BCg—24 to 35 inches; dark grayish brown (10YR 4/2) channery silt loam; many medium prominent yellowish brown (10YR 5/8) mottles; weak medium and coarse subangular blocky structure; friable; few fine roots; many fine vesicular and few medium tubular pores containing common faint brown (10YR 5/3) clay films; 30 percent rock fragments, including 15 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline; clear wavy boundary.

C—35 to 72 inches; dark grayish brown (10YR 4/2) very channery silt loam; massive; friable; few fine vesicular and tubular pores; 40 percent rock fragments, including 15 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 20 to 40 inches. The depth to carbonates ranges from 12 to 40 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 30 percent between depths of 10 and 40 inches; and from 10 to 60 percent, by volume, below a depth of 40 inches. The depth to bedrock is more than 60 inches.

The Ap or A horizon has hue of 10YR, value of 2 or 3, and chroma of 0 to 2. The texture of the fine-earth fraction ranges from fine sandy loam to silty clay loam. Consistence is very friable or friable. In areas that have not been limed, reaction ranges from moderately acid to neutral.

The Bg horizons have hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Few to many higher-chroma mottles are directly below the A or Ap horizon. Common or many mottles are at greater depths. The texture of the fine-earth fraction ranges from fine sandy loam to silty clay loam, and the content of clay is 18 to 28 percent, by weighted average. Structure is weak or moderate subangular blocky, or it is coarse prismatic. Consistence is friable or firm. In areas that have not been limed, reaction ranges from slightly acid to mildly alkaline.

The C or 2C horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 or 2. In some pedons, it has higher-chroma mottles. The texture of the fine-earth fraction is fine sandy loam, loam, or silt loam. Structure is platy, or the horizon is massive. Reaction ranges from neutral to moderately alkaline.

Manheim Series

The Manheim series consists of very deep, somewhat poorly drained soils. These soils formed in glacial till derived from limestone and black or dark gray calcareous shale in depressional areas of footslopes and toeslopes between many drumlins in the northern part of the county. Slopes range from 0 to 15 percent.

Manheim soils are commonly adjacent to poorly drained Lyons soils. Moderately well drained Conesus and Lima soils are nearby on slightly higher parts of the landscape. Very poorly drained Edwards and Palms soils are nearby in organic bogs. Well drained Lansing and Honeoye soils are nearby on hillsides. Shallow, somewhat excessively drained Farmington soils are nearby on bedrock-controlled uplands.

Typical pedon of Manheim silt loam, 3 to 8 percent slopes; in the town of Richfield;

1,000 feet east of the intersection of Dugan Road and Cross Road and 325 feet south of Dugan Road, in a pasture (lat. 42°52’32” N.; long. 75°02’07” W.).

Ap1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; many fine roots; 5 percent rock fragments; neutral; clear smooth boundary.

Ap2—4 to 9 inches; silt loam; very dark grayish brown (10YR 3/2) moist, dark brown (10YR 3/3) moist, crushed, and rubbed, and grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; very friable; many fine roots; 10 percent rock fragments; neutral; clear smooth boundary.

B/E—9 to 19 inches; dark brown (10YR 4/3) channery silt loam with brown (10YR 5/3) faces of peds; few fine distinct yellowish brown (10YR 5/6) and few fine faint grayish brown (10YR 5/2) mottles; moderate fine and medium subangular blocky structure; friable; common fine roots; few fine tubular pores containing continuous faint clay films; very dark grayish brown (10YR 3/2) surface material in the macropores; 15 percent rock fragments; neutral; gradual wavy boundary.

Bt—19 to 29 inches; channery silt loam with thin lenses of very fine sandy loam; dark brown (10YR 4/3) ped interiors and dark grayish brown (10YR 4/2) faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/6) and few fine faint grayish brown (10YR 5/2) mottles; moderate medium and coarse subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; common fine tubular pores containing continuous faint clay films; continuous distinct clay films on horizontal and vertical faces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Cg—29 to 41 inches; dark grayish brown (10YR 4/2) channery silt loam with thin lenses of silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak thin platy structure; friable, slightly sticky and slightly plastic; few faint clay films on vertical faces of peds; 20 percent rock fragments; strongly effervescent; mildly alkaline; gradual wavy boundary.

2Cg—41 to 72 inches; dark grayish brown (10YR 4/2) gravelly silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; massive; firm; 30 percent rock fragments; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 24 to 45 inches. The depth to carbonates ranges from 24 to 45 inches. The content of rock fragments, commonly firm shale, ranges from 5 to 35 percent, by volume, in the solum and from 5 to 55 percent in the substratum. Moist color values in the matrix are 4 or less throughout, except for the E portion of the B/E horizon, where present. The depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It has value of 5 or less when dry. The texture of the fine-earth fraction ranges from loam to silty clay loam. Consistence is friable or very friable. In areas that have not been limed, reaction is moderately acid to neutral.

Some pedons have a BA or B/E subhorizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. It has common or many low- and high-chroma mottles. In pedons that do not have a BA horizon, the upper part of the Bt horizon has chroma of more than 2. Faces of peds in the Bt horizon are dominated by chroma of 2, but 40 percent or more of the matrix in the upper part of the horizon has chroma of 3 or more when the soil is broken or cut through the peds. The texture of the fine-earth fraction ranges from loam to silty clay loam. In areas that have not been limed, reaction ranges from moderately acid to neutral.

The C or 2C horizon dominantly has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. In some pedons, however, the 2C horizon is lighter in color. The texture of the fine-earth fraction ranges from loam to silty clay loam. The horizon is massive or has plate-like divisions. Consistence is dominantly firm or very firm. In some pedons, however, the upper 15 inches of the horizon is friable. Reaction ranges from neutral to moderately alkaline.

Manlius Series

The Manlius series consist of moderately deep, well drained soils that formed in glacial till on bedrock-controlled uplands. Slopes range from 3 to 50 percent.

Manlius soils are commonly adjacent to well drained Lordstown soils, which have less than 35 percent rock fragments in the control section. Deep, well drained Chadakoin soils are nearby on toeslopes and in adjacent areas where the glacial till is thicker over the bedrock. Shallow Arnot soils are nearby in areas where the glacial till is thinner over the bedrock. Moderately deep, moderately well drained Towerville soils and poorly drained Patchin soils are on adjacent landforms that are in depressions or receive more runoff than the Manlius soils. Very deep, well drained Lansing and Honeoye soils are nearby on hillsides and hilltops that are not bedrock-controlled or are in areas where the glacial till is thicker to the bedrock.

Typical pedon of Manlius channery silt loam, in an area of Lordstown, Chadakoin, and Manlius soils, 25 to 50 percent slopes, very rocky; in the town of Cherry Valley; 3,900 feet east of the intersection of Hoyer Road and County Route 54 and 875 feet south of County Route 54, in an abandoned pasture (lat. 42°49’30” N.; long. 74°46’53” W.).

A1—0 to 3 inches; dark brown (7.5YR 3/2) channery silt loam, pinkish gray (7.5YR 6/2) dry; weak fine and medium granular structure; very friable; many fine, common medium, and few coarse roots; 15 percent rock fragments; very strongly acid; clear irregular boundary.

A2—3 to 6 inches; channery silt loam, dark brown (10YR 3/3) moist, pale brown (10YR 6/3) dry; weak medium granular structure; very friable; many fine and common medium roots; 25 percent rock fragments; very strongly acid; abrupt wavy boundary.

Bw1—6 to 11 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; many fine and common medium roots; 30 percent rock fragments; strongly acid; clear wavy boundary.

Bw2—11 to 17 inches; yellowish brown (10YR 5/4) very channery silt loam; weak medium and fine subangular blocky structure; friable; common fine and few medium roots; common fine vesicular pores; 35 percent rock fragments; strongly acid; clear wavy boundary.

2C—17 to 28 inches; dark brown (10YR 4/3) extremely channery silt loam; massive with some weak inherited horizontal platy bedrock structure; friable; few fine and medium roots; 60 percent rock fragments; strongly acid; gradual wavy boundary.

2R—28 inches; dark gray (10YR 4/1), horizontally bedded, fractured siltstone and shale bedrock.

The thickness of the solum ranges from 15 to 30 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the A horizon; from 25 to 60 percent in the B horizon; and from 30 to 70 percent in the C horizon. In areas that have not been limed, reaction ranges from extremely acid to moderately acid in the solum and from very strongly acid to slightly acid in the substratum.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam. Structure is weak, medium or fine granular, or it is fine subangular blocky that parts to granular. Consistence is friable or very friable.

The Bw horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 to 6. In some pedons, it has a few faint mottles below a depth of 20 inches. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or very weak, very fine to medium granular or subangular blocky. Consistence is friable or firm.

The C or 2C horizon, where present, has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction is loam or silt loam. Consistence ranges from loose to firm.

Mardin Series

The Mardin series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till. They have a dense fragipan subsoil starting at a depth of 16 to 26 inches. Slopes range from 3 to 25 percent.

Mardin soils are commonly adjacent to well drained Bath soils and somewhat poorly drained Volusia soils. Moderately deep, well drained Lordstown soils and shallow, somewhat excessively drained Arnot soils are nearby on slightly higher landforms that are bedrock controlled.

Typical pedon of Mardin channery silt loam, 3 to 8 percent slopes; in the town of Pittsfield; 2,000 feet west of the intersection of Smith Road and Mumbalo Road and 300 feet north of Mumbalo Road, in a hayfield (lat. 42°39’29” N.; long. 75°13’28” W.).

Ap—0 to 12 inches; dark brown (10YR 3/3) channery silt loam, pale brown (10YR 6/3) dry; moderate medium subangular blocky structure parting to strong fine and medium granular; friable; common fine roots; 20 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid; abrupt smooth boundary.

Bw1—12 to 15 inches; light yellowish brown (2.5Y 6/4) channery silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common fine vesicular pores; 20 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid; clear wavy boundary.

Bw2—15 to 21 inches; olive brown (2.5Y 4/4) channery silt loam; common medium and coarse prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine and medium vesicular pores; 20 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid; clear broken boundary.

Bx1—21 to 31 inches; dark grayish brown (2.5Y 4/2) channery silt loam; common fine and medium faint light brownish gray (2.5Y 6/2) and few medium prominent dark yellowish brown (10YR 4/4) mottles; strong very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 14 inches apart, and have gray (5Y 6/1) interiors and yellowish brown (10YR 5/6) edges; very firm and slightly brittle; few fine roots along faces of prisms; common very fine and fine vesicular pores; 25 percent rock fragments, including 5 percent larger than 3 inches in diameter; strongly acid; gradual smooth boundary.

Bx2—31 to 38 inches; olive brown (2.5Y 4/4) channery silt loam; common medium and coarse prominent olive gray (5Y 5/2) and few medium distinct dark yellowish brown (10YR 4/4) mottles; weak very coarse prismatic structure, massive within the prisms; very firm and brittle; few fine vesicular and tubular pores; 30 percent rock fragments, including 3 percent larger than 3 inches in diameter; strongly acid; gradual wavy boundary.

Cd—38 to 72 inches; olive brown (2.5Y 4/4) very channery silt loam; massive; firm; 35 percent rock fragments; slightly acid.

The thickness of the solum ranges from 38 to 70 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 16 to 26 inches. The fine-earth fraction above the fragipan has 60 percent or more silt plus very fine sand. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer to the top of the fragipan; and from 15 to more than 60 percent in the fragipan and substratum to a depth of 40 inches.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam or loam. Structure is very fine to medium subangular blocky or granular. Consistence ranges from very friable to firm. In areas that have not been limed, reaction ranges from extremely acid to slightly acid.

The E horizon, where present, has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4. It has mottles above a depth of 20 inches. The texture of the fine-earth fraction is silt loam or loam. Structure is subangular blocky or platy. Consistence is friable or firm. In areas that have not been limed, reaction ranges from extremely acid to slightly acid.

The Bx horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It has faint to prominent mottles. The texture of the fine-earth fraction is silt loam or loam. Structure is weak to strong, very coarse prismatic. Consistence is firm or very firm. In areas that have not been limed, reaction ranges from very strongly acid to neutral.

The Cd horizon, where present, is massive or has weak platy or prismatic structure. It has a range in color similar to that of the Bx horizon. Below a depth of 40 inches in some pedons, it has silty layers that lack rock fragments. Reaction dominantly ranges from strongly acid to neutral. In some pedons, however, it is mildly alkaline below a depth of 60 inches.

Mongaup Series

The Mongaup series consist of moderately deep, well drained soils on bedrock-controlled uplands at elevations over 1,750 feet. These soils formed in glacial till underlain by sandstone, siltstone, and shale bedrock. Slopes range from 1 to 50 percent.

Mongaup soils are commonly adjacent to shallow, somewhat excessively drained Hawksnest soils in areas where the glacial till is thinner over the bedrock. Deep, well drained Franklinville soils are nearby on toeslopes and in adjacent areas where the glacial till is thicker over the bedrock. Also commonly adjacent are very deep, well drained Lewbath soils and moderately well drained Willdin soils in areas where there is a firm or very firm subsoil (fragipan).

Typical pedon of Mongaup channery silt loam, in an area of Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky; in the town of Worcester; 1,580 feet east of the intersection of Hollenbeck Cross Road and Hollenbeck Road and 15 feet south of Hollenbeck Cross Road, in an abandoned field (lat. 42°35’30” N.; long. 74°41’43” W.).

Ap—0 to 4 inches; dark brown (10YR 4/3) channery silt loam, pale brown (10YR 6/3) dry; weak very fine granular structure; very friable; many fine roots; 15 percent rock fragments; very strongly acid; abrupt smooth boundary.

BA—4 to 8 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak very fine granular structure; very friable; many fine and medium roots; 15 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—8 to 16 inches; reddish brown (5YR 4/4) channery silt loam; weak fine subangular blocky structure; very friable; common fine and few medium roots; few fine vesicular pores; 20 percent rock fragments; strongly acid; clear smooth boundary.

Bw2—16 to 29 inches; yellowish brown (10YR 5/4) channery silt loam; weak fine subangular blocky structure; friable; few fine and medium roots; few fine vesicular pores; 30 percent rock fragments; strongly acid; gradual wavy boundary.

C—29 to 34 inches; light olive brown (2.5Y 5/4) channery silt loam; massive; friable; few fine roots; 34 percent rock fragments; strongly acid; abrupt smooth boundary.

2R—34 inches; dark gray (N 4/0), massive shale bedrock; the upper 10 inches are fractured.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer and from 5 to 35 percent throughout the remainder of the soil. In areas that have not been limed, reaction ranges from extremely acid to strongly acid in the surface layer and from extremely acid to moderately acid in the subsoil and substratum.

The Ap or A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 0 to 3. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate granular. Consistence is friable or very friable.

Some pedons have an O or E horizon.

The BA horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 3 or 4. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable.

The Bw horizon and the BC horizon, where present, have hue of 2.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 6. In some pedons, they have mottles. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate subangular blocky.

The C horizon has a range in color and texture similar to that of the B horizon. Structure is platy, or the horizon is massive. Consistence is friable.

The 2R layer is commonly hard, massive, horizontally-bedded shale or sandstone. In some pedons, however, it has thinner beds of siltstone.

Morris Series

The Morris series consists of very deep, somewhat poorly drained soils on uplands. These soils formed in glacial till derived from reddish sandstone, siltstone, or shale. They have a dense fragipan subsoil starting at a depth of 10 to 22 inches. Slopes range from 2 to 15 percent.

Morris soils are commonly adjacent to moderately well drained Wellsboro soils and poorly drained Norwich soils. Well drained Lackawanna soils and moderately deep Oquaga soils are nearby on higher landforms.

Typical pedon of Morris channery silt loam, 2 to 8 percent slopes; in the town of Butternuts; 500 feet east of the intersection of Copes Corners Road and Gun Club Road and 200 feet north of Copes Corners Road, in a brushy abandoned field (lat. 42°30’28” N.; long. 75°21’55” W.).

Ap—0 to 5 inches; dark reddish gray (5YR 4/2) channery silt loam; moderate medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments; moderately acid; clear smooth boundary.

Bw—5 to 9 inches; reddish brown (5YR 4/3) channery silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common fine vesicular pores; 15 percent rock fragments; moderately acid; abrupt wavy boundary.

Eg—9 to 18 inches; pinkish gray (5YR 6/2) channery silt loam with weak red (10R 4/2) interiors of peds; common medium prominent yellowish red (5YR 5/8) and few fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; many fine vesicular pores; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bx1—18 to 26 inches; reddish brown (5YR 4/4) gravelly silt loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 36 to 72 inches apart, and have light gray (10YR 6/1) interiors and yellowish brown (10YR 5/8) edges; firm and brittle; few fine vesicular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

Bx2—26 to 50 inches; reddish brown (5YR 4/3) channery silt loam; moderate very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 36 to 72 inches apart, and have light gray (10YR 7/1) interiors and yellowish red (5YR 4/6) edges; very firm and brittle; many fine and medium vesicular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

Cd—50 to 72 inches; dark yellowish brown (10YR 4/4) very channery loam; massive; firm; 35 percent rock fragments; slightly acid.

The solum is more than 40 inches thick. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 10 to 22 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 10 to 40 percent below the surface layer to the top of the fragipan; and from 15 to 50 percent in the fragipan subsoil and in the substratum. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid above the fragipan and from strongly acid to slightly acid in the fragipan and substratum.

The Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam or loam.

The Eg, Bw, and Bg horizons, which are within a depth of 20 inches where present, have hue of 5YR to 10YR, value of 3 to 7, and chroma of 1 to 6. The texture of the fine-earth fraction is silt loam or loam. The B horizon has mottles with chroma of 2 or less, or it has chroma of 1 or less if no mottles are within a depth of 20 inches. Some pedons have a subhorizon at a depth of about 6 to 30 inches in which 50 percent or more of the matrix has chroma of 3 or more or which has no mottles and chroma of 2.

The Bx horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 2 to 6. Faces of prisms have hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 1 to 3. The texture of the fine-earth fraction is silty clay loam, silt loam, or loam.

The Cd horizon has a range in color similar to that of the Bx horizon. The texture of the fine-earth fraction is silt loam or loam.

Norchip Series

The Norchip series consists of very deep, poorly drained soils in upland depressional areas at elevations over 1,750 feet. These soils formed in glacial till derived from brownish or gray sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 10 to 20 inches. Slopes range from 0 to 3 percent.

Norchip soils are commonly adjacent to somewhat poorly drained Ontusia soils and moderately well drained Willdin soils in the slightly higher positions on the landform. Also commonly adjacent are very deep, very poorly drained Carbondale soils in nearby organic bogs.

Typical pedon of Norchip channery silt loam; in the town of Worcester; 600 feet north of Hollenbeck Cross Road and 100 feet east of Charlotteville Road, in an abandoned field (lat. 42°35'52" N.; long. 74°40'57" W.).

Ap—0 to 5 inches; dark brown (7.5YR 4/2) channery silt loam, pinkish gray (7.5YR 6/2) dry; moderate fine and medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Eg1—5 to 10 inches; light brownish gray (10YR 6/2) channery silt loam; many (45 percent) medium prominent strong brown (7.5YR 5/8) mottles; moderate fine granular structure; friable; common fine roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Eg2—10 to 13 inches; gray (10YR 6/1) channery silt loam; common medium prominent reddish yellow (7.5YR 6/8) and common medium prominent yellowish brown (10YR 5/6) mottles; weak medium granular structure; friable; few fine roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Bx1—13 to 24 inches; grayish brown (2.5Y 5/2) gravelly silt loam; many coarse distinct gray (5Y 6/1) and common fine prominent dark yellowish brown (10YR 4/6) mottles; weak very coarse prismatic structure, weak thin platy within the prisms; streaks separating the prisms are 1/4 to 1 inch wide, are 15 to 24 inches apart, and have light brownish gray (2.5Y 6/2) interiors and light olive brown (2.5Y 5/6) edges; very firm and brittle; 20 percent rock fragments; slightly acid; clear smooth boundary.

Bx2—24 to 32 inches; grayish brown (10YR 5/2) gravelly silt loam; common medium distinct dark yellowish brown (10YR 3/4) and few fine distinct gray (10YR 6/1) mottles; weak very coarse prismatic structure, weak coarse subangular blocky within the prisms; streaks separating the prisms are 1/4 to 1 inch wide, are 15 to 35 inches apart, and have light brownish gray (2.5Y 6/2) interiors and yellowish brown (10YR 5/6) edges; firm and brittle; few fine and medium vesicular pores containing gray (5Y 6/1) silt coats; 25 percent rock fragments; neutral; gradual wavy boundary.

Cd—32 to 72 inches; dark brown (10YR 4/3) gravelly silt loam; common fine prominent reddish brown (5YR 4/3) and strong brown (7.5YR 5/8) and few fine distinct gray (10YR 6/1) mottles; massive; firm; few fine vesicular pores; 30 percent rock fragments; neutral.

The thickness of the solum ranges from 32 to 72 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 10 to 20 inches. The content of rock fragments ranges from 15 to 20 percent, by volume, in the surface layer; from 0 to 20 percent below the surface layer to the top of the fragipan; and from 15 to 50 percent in the fragipan and substratum.

The A or Ap horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or loam. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The E horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 or 2. The texture of the fine-earth fraction is loam or silt loam. Structure is weak or moderate angular blocky, subangular blocky, or granular. Consistence is friable or firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Bx or 2Bx horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 1 to 4. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam. Structure is prismatic, blocky, or platy. Consistence is firm or very firm. Reaction ranges from moderately acid to neutral.

The Cd or 2Cd horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 1 to 4. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam.

Structure is platy, or the horizon is massive. Consistence is firm or very firm. In areas that have not been limed, reaction is slightly acid or neutral.

Correlation note: The typical pedon classifies in an Aeric subgroup because of the high-chroma mottles (45 to 50 percent) in the Eg1 horizon; otherwise, this soil is borderline to the Typic subgroup.

Norwich Series

The Norwich series consists of very deep, poorly drained soils that formed in glacial till derived from reddish sandstone, siltstone, and shale in uplands. These soils have a dense fragipan subsoil starting at a depth of 10 to 24 inches. Slopes range from 0 to 3 percent.

Norwich soils are commonly adjacent to somewhat poorly drained Morris soils on the same landform. Moderately well drained Wellsboro soils are nearby on higher hillsides and hilltops. Moderately deep, well drained Oquaga soils are nearby on bedrock-controlled uplands.

Typical pedon of Norwich silt loam, in an area of Chippewa and Norwich soils; in the town of Morris; 1,200 feet west of the intersection of George Wells Road and Pittsley Road and 500 feet south of Pittsley Road, in a pasture (lat. 42°31’33” N.; long. 75°19’02” W.).

Ap1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; common fine prominent yellowish red (5YR 4/6) mottles; moderate fine granular structure; friable; many fine roots; 10 percent rock fragments; moderately acid; gradual smooth boundary.

Ap2—4 to 8 inches; dark brown (7.5YR 4/2) silt loam, pinkish gray (7.5YR 6/2) dry; common fine prominent yellowish red (5YR 5/8) mottles; weak fine granular structure; friable; common fine roots; many medium tubular pores; 10 percent rock fragments; moderately acid; clear smooth boundary.

Eg—8 to 12 inches; light olive gray (5Y 6/2) and weak red (2.5YR 5/2) silt loam; common medium and coarse prominent reddish yellow (5YR 6/8) and common medium and coarse prominent strong brown (7.5YR 5/6) mottles; weak medium and coarse subangular blocky structure; friable; common fine roots; common medium tubular pores; 10 percent rock fragments; moderately acid; clear wavy boundary.

Bg—12 to 23 inches; weak red (2.5YR 5/2) and grayish brown (2.5Y 5/2) silt loam; many (less than 40 percent) medium and coarse prominent yellowish red (5YR 5/8) and common medium prominent brownish yellow (10YR 6/8) mottles; weak medium and coarse subangular blocky structure; firm; few fine roots; few medium and coarse vesicular pores; 5 percent rock fragments; moderately acid; gradual wavy boundary.

Bxg1—23 to 34 inches; weak red (2.5YR 5/2) and gray (10YR 5/1) channery silt loam; common medium and coarse prominent yellowish brown (10YR 5/8) mottles; moderate very coarse prismatic structure, moderate medium subangular blocky within the prisms; streaks separating the prisms are 1 inch wide, are 24 inches apart, and have gray (10YR 5/1) interiors and yellowish brown (10YR 5/6) edges; very firm and brittle; many medium vesicular pores with clay films in some pores; 15 percent rock fragments; moderately acid; gradual wavy boundary.

Bxg2—34 to 46 inches; weak red (2.5YR 5/2) channery silt loam; common medium prominent yellowish brown (10YR 5/8) and few fine prominent gray (10YR 6/1) mottles; moderate very coarse prismatic structure, moderate medium subangular blocky within the prisms; streaks separating the prisms are 1 inch wide, are 30 inches apart, and have gray (10YR 5/1) interiors and yellowish brown (10YR 5/6) edges; firm and brittle; few fine and medium vesicular pores with faint clay films; 15 percent rock fragments; moderately acid; gradual wavy boundary.

Cd—46 to 72 inches; weak red (2.5YR 5/2) channery silt loam; massive; firm; 25 percent rock fragments; moderately acid.

The thickness of the solum ranges from 36 to 55 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 10 to 24 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the Ap horizon; from 0 to 35 percent below the Ap horizon to the top of the fragipan; and from 15 to 45 percent in the fragipan and substratum. Some pedons have contrasting layers of locally derived material as much as 20 inches thick above the fragipan.

The Ap horizons have hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate granular. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The Eg and Bg horizons have hue of 2.5YR to 5Y. They have common or many mottles with chroma higher than 2. The texture of the fine-earth fraction is silt loam or loam. Structure is weak subangular blocky. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The Bx horizon dominantly has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 1 or 2. In some pedons, however, it has subhorizons with hue of 10YR and with chroma of 3 below a depth of 30 inches. The texture of the fine-earth fraction is silt loam, loam, or sandy loam. Structure is dominantly very coarse prismatic but may be massive within the prisms. In areas that have not been limed, reaction ranges from strongly acid to slightly acid. In some pedons, thin clay films are in pores and on some faces of peds.

Some pedons have a 2Bx horizon.

The C or 2C horizon has a range in color and texture similar to that of the Bx horizon. Consistence is less brittle than the Bx horizon. Structure is platy in the C or 2C horizon, or the horizon is massive. Reaction ranges from strongly acid to neutral. The boundary between the Bx horizon and the C horizon is gradual or diffuse.

Nunda Series

The Nunda series consists of very deep, moderately well drained soils on uplands in the northeastern part of the county. These soils formed in glacial till derived from limestone and calcareous shale. They have a silty mantle. Slopes range from 3 to 25 percent.

Nunda soils are commonly adjacent to somewhat poorly drained Burdett soils. Moderately well drained Danley soils and somewhat poorly drained Darien soils, which do not have a silty mantle, are also on the same landforms as the Nunda soils. Well drained Honeoye and Lansing soils are nearby on upland till plains and drumlins. Shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are nearby on bedrock-controlled uplands.

Typical pedon of Nunda silt loam, in an area of Danley and Nunda soils, 15 to 25 percent slopes; in the town of Cherry Valley; 1,400 feet south of the intersection of Salt Springville Road and County Route 31 and 10 feet east of Salt Springville Road, in a road cut at the edge of a pasture (lat. 42°51’21” N.; long. 74°45’05” W.).

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, brown (10YR 5/3) dry; moderate fine and medium granular structure; friable; common fine and coarse roots; 3 percent rock fragments; neutral; abrupt smooth boundary.

E/Bt—6 to 13 inches; 65 percent light brownish gray (10YR 6/2) silt loam (E portion), 35 percent dark brown (10YR 4/3) (B portion); moderate medium subangular blocky structure; friable; common fine and few medium roots; 5 percent rock fragments; moderately acid; clear wavy boundary.

2Bt/E—13 to 17 inches; dark brown (10YR 4/3) silty clay loam with pale brown (10YR 6/3) faces of peds more than 1 millimeter thick; moderate medium subangular blocky structure; friable; few fine roots; common fine vesicular and few medium tubular pores; 5 percent rock fragments; neutral; clear wavy boundary.

2Bt—17 to 48 inches; grayish brown (2.5Y 5/2) channery silty clay loam; common medium prominent yellowish brown (10YR 5/6) and common coarse distinct olive brown (2.5Y 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; common very fine and fine vesicular and few medium tubular pores; many prominent dark gray (10YR 4/1) clay films in pores and on horizontal and vertical faces of peds; 20 percent rock fragments; neutral; gradual wavy boundary.

2C1—48 to 55 inches; dark brown (10YR 4/3) channery silty clay loam; few fine faint yellowish brown (10YR 5/4) mottles; massive; firm; common fine and medium vesicular and tubular pores containing common distinct dark gray (10YR 4/1) clay films; 30 percent rock fragments, including 10 percent larger than 3 inches in diameter; neutral; gradual wavy boundary.

2C2—55 to 72 inches; dark grayish brown (10YR 4/2) channery silty clay loam; common medium prominent olive brown (2.5Y 4/4) mottles; massive; firm; common fine and medium vesicular and few fine tubular pores containing common distinct dark gray (10YR 4/1) clay films; 30 percent rock fragments, including 10 percent larger than 3 inches in diameter; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 30 to 50 inches. The depth to carbonates ranges from 30 to 72 inches. Thickness of the silty mantle ranges from 13 to 30 inches. The depth to bedrock is more than 60 inches.

The Ap or A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is very fine sandy loam or silt loam. Structure is very weak to moderate, fine or medium granular. In areas that have not been limed, reaction ranges from strongly acid to neutral. The content of rock fragments ranges from 0 to 15 percent, by volume, including up to 10 percent larger than 3 inches in diameter.

The E horizon, where present, has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 2 or 3. It is mottled. The texture of the fine-earth fraction is silt loam, loam, or very fine sandy loam. Structure is weak or moderate, thin or medium platy. In areas that have not been limed, reaction ranges from strongly acid to neutral. The content of rock fragments ranges from 0 to 25 percent, by volume, including up to 5 percent larger than 3 inches in diameter.

The Bw horizon, where present, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. The texture of the fine-earth fraction is very fine sandy loam or silt loam. Structure is weak or moderate granular or subangular blocky. In areas that have not been limed, reaction ranges from strongly acid to neutral. The content of rock fragments ranges from 0 to 25 percent, by volume, including up to 5 percent larger than 3 inches in diameter.

The E/Bt and 2Bt/E horizons have ranges in colors and mottle patterns similar to those of the E and 2Bt horizons respectively. The texture of the fine-earth fraction in the E/Bt horizon is silt loam, loam, or very fine sandy loam. The texture of the fine-earth fraction in the 2Bt/E horizon is silty clay loam or clay loam. Structure is weak or moderate, fine or medium subangular blocky. In areas that have not been limed, reaction ranges from strongly acid to neutral. The content of rock fragments ranges from 0 to 25 percent, by volume, including up to 5 percent larger than 3 inches in diameter.

The 2Bt horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 or 3. It has high-chroma mottles, low-chroma mottles, or both. The texture of the fine-earth fraction is dominantly silty clay loam or clay loam but includes thin subhorizons that are loam or silt loam with a clay content of 20 to 27 percent. In areas that have not been limed, reaction ranges from moderately acid to neutral. The content of rock fragments ranges from 5 to 30 percent, by volume, including 5 to 10 percent larger than 3 inches in diameter.

The 2C horizon has a range in color like that of the 2Bt horizon. The texture of the fine-earth fraction ranges from loam to silty clay loam. Reaction ranges from slightly acid to moderately alkaline. The content of rock fragments ranges from 5 to 30 percent, by volume, including 5 to 10 percent larger than 3 inches in diameter.

Onteora Series

The Onteora series consists of very deep, somewhat poorly drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from reddish sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 10 to 25 inches. Slopes range from 3 to 15 percent.

Onteora soils are commonly adjacent to moderately well drained Willowemoc soils and poorly drained Norchip soils. Moderately deep, well drained Vly soils are nearby on higher bedrock-controlled landforms where the glacial till is thinner.

Typical pedon of Onteora channery silt loam, 8 to 15 percent slopes; in the town of Butternuts; 2,000 feet northeast of the intersection of Flax Island Road and County Route 5 and 15 feet north of Flax Island Road, in an abandoned field (lat. 42°27’34” N.; long. 75°14’26” W.).

Ap—0 to 8 inches; dark brown (7.5YR 3/2) channery silt loam, pinkish gray (7.5YR 6/2) dry; strong fine and medium granular structure; very friable; many very fine and fine and few medium roots; 15 percent rock fragments; moderately acid; abrupt wavy boundary.

Eg—8 to 11 inches; light brownish gray (10YR 6/2) channery loam; common fine and medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure parting to weak thin platy; friable; many very fine and fine and few medium roots; 15 percent rock fragments; moderately acid; clear broken boundary.

Bw—11 to 14 inches; reddish brown (5YR 4/3) channery silt loam; many medium prominent strong brown (7.5YR 5/6) and common coarse prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine and few medium vesicular pores; 25 percent rock fragments; moderately acid; clear smooth boundary.

Bx1—14 to 28 inches; dark reddish brown (5YR 3/3) channery silt loam; common fine prominent dark gray (N 4/0) manganese coats; strong very coarse prismatic structure parting to weak medium platy; streaks separating the prisms are 1½ inches wide, are 27 inches apart, and have light gray (10YR 7/2) and pinkish gray (5YR 6/2) interiors and yellowish brown (10YR 5/8) edges; firm and brittle; few fine roots along faces of prisms; many very fine and fine vesicular pores and few fine tubular pores; few distinct reddish brown (5YR 5/3) clay films on vertical surfaces of peds and in some pores; 20 percent rock fragments, including 2 percent larger than 3 inches in diameter; moderately acid; gradual smooth boundary.

Bx2—28 to 60 inches; dark reddish brown (2.5YR 3/4) channery silt loam; strong very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1½ inches wide, are 27 inches apart, and have light gray (10YR 7/2) and pinkish gray (5YR 6/2) interiors and yellowish brown (10YR 5/8) edges; very firm and brittle; many fine and medium vesicular pores and few fine and medium tubular pores; few distinct reddish brown (5YR 5/3) clay films on vertical surfaces of peds and in some pores; 25 percent rock fragments, including 4 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 25 to 65 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 10 to 25 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent in the subsurface layer and the subsoil to the top of the fragipan; and from 15 to 50 percent in the fragipan and substratum. In areas that have not been limed, reaction ranges from extremely acid to moderately acid in the surface layer and subsurface layer and from very strongly acid to moderately acid in the subsoil and substratum.

The Ap or A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam.

The E horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 or 3. The texture of the fine-earth fraction is loam, fine sandy loam, or sandy loam.

The Bw horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. It has distinct or prominent mottles. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam.

The Bx horizon has hue of 2.5YR to 7.5YR, value of 3 to 6, and chroma of 2 to 4. In some pedons, it has mottles. The texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is prismatic with platy, blocky, or massive interiors. Consistence is firm or very firm.

The C horizon, where present, has a range in color and texture similar to that of the Bx horizon. The C horizon does not have prismatic structure and is not brittle.

Ontusia Series

The Ontusia series consists of very deep, somewhat poorly drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from brownish or gray sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 10 to 25 inches. Slopes range from 2 to 15 percent.

Ontusia soils are commonly adjacent to moderately well drained Willdin soils and poorly drained Norchip soils. Moderately deep, well drained Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are nearby on higher bedrock-controlled landforms where the glacial till is thinner.

Typical pedon of Ontusia channery silt loam, 2 to 8 percent slopes; in the town of Worcester; 900 feet north of the intersection of Smith Road and Hollenbeck Road and 200 feet west of Hollenbeck Road, in an abandoned field (lat. 42°34’56” N.; long. 74°42’03” W.).

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) channery silt loam; weak fine and medium granular structure; very friable; many fine and common medium and coarse roots; 15 percent rock fragments; very strongly acid; abrupt smooth boundary.

E—5 to 8 inches; light brownish gray (10YR 6/2) channery silt loam with dark grayish brown (10YR 4/2) organic stains; moderate medium and coarse subangular blocky structure; friable; many fine roots; few fine vesicular pores; 15 percent rock fragments; strongly acid; abrupt wavy boundary.

Bw—8 to 12 inches; dark brown (10YR 4/3) silt loam; common fine and medium distinct strong brown (7.5YR 5/6) and few fine faint grayish brown (10YR 5/2) mottles; weak medium and coarse subangular blocky structure; friable; common fine and few medium pores; 10 percent rock fragments; strongly acid; clear wavy boundary.

E´g—12 to 14 inches; light brownish gray (2.5Y 6/2) channery silt loam; common medium distinct light olive brown (2.5Y 5/4) and few fine distinct strong brown (7.5YR 5/6) mottles; weak medium and thick platy structure; firm; few fine roots; common fine vesicular pores; 15 percent rock fragments; strongly acid; clear wavy boundary.

Bx1—14 to 20 inches; grayish brown (10YR 5/2) channery silt loam; common fine distinct strong brown (7.5YR 5/6) and few fine faint brown (10YR 5/3) mottles; moderate very coarse prismatic structure parting to weak coarse subangular blocky; prisms are 8 to 15 inches across; light brownish gray (2.5Y 6/2) faces of prisms that are 1/4 to 1 inch thick; firm and brittle; few fine roots along faces of prisms; 20 percent rock fragments; strongly acid; gradual wavy boundary.

Bx2—20 to 42 inches; dark grayish brown (10YR 4/2) and dark yellowish brown (10YR 4/4) channery silt loam; common fine faint yellowish brown (10YR 5/4) mottles; moderate very coarse prismatic structure; prisms are 8 to 15 inches across; faces of prisms are light brownish gray (2.5Y 6/2) and 1/4 to 1 inch thick; very firm and brittle; few fine and medium vesicular pores; common faint clay films in 35 percent of pores; 25 percent rock fragments, including 2 percent larger than 3 inches in diameter; slightly acid; gradual wavy boundary.

CB—42 to 51 inches; olive (5Y 5/3) very channery loam; weak very coarse prismatic structure; gray (5YR 6/1) faces of prisms; firm; common thin clay films in pores; 35 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid; gradual wavy boundary.

Cd—51 to 72 inches; olive (5Y 5/3) very channery fine sandy loam; massive; firm; 40 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly acid.

The thickness of the solum ranges from 38 to 70 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 10 to 25 inches. The content of rock fragments ranges from 5 to 35 percent, by volume, above the fragipan; from 15 to 50 percent in the fragipan; and from 15 to 60 percent in the substratum. The fine-earth fraction of the Bx and C horizons has over 50 percent silt plus very fine sand. Mottles are present beginning at a depth of 8 to 14 inches.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, silty clay loam, or loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The E horizon has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is loam or silt loam. Consistence is friable or firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam, silty clay loam, or loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The E´g horizon, where present, has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 1 to 3. The texture of the fine-earth fraction is loam, silt loam, or silty clay loam.

The Bx horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It has common or many mottles. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is coarse or very coarse prismatic with platy, blocky, or massive interiors. Consistence is firm or very firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid. Prism streaks have low-chroma interiors and high-chroma edges.

The CB and Cd horizons are massive, or they have platy or prismatic structure. They have ranges in color and texture similar to those of the Bx horizon. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

Oquaga Series

The Oquaga series consists of moderately deep, well drained soils that formed in a thin mantle of reddish glacial till over sandstone, siltstone, and shale in bedrock-controlled uplands. Slopes range from 1 to 45 percent.

Oquaga soils are commonly adjacent to shallow Arnot soils in areas where the depth to bedrock is less 20 inches. Very deep, well drained Lackawanna soils and moderately well drained Wellsboro soils are commonly adjacent in areas where the glacial till is thicker and there is a dense fragipan subsoil.

Typical pedon of Oquaga channery silt loam, in an area of Oquaga-Arnot complex, 8 to 15 percent slopes, rocky; in the town of Morris; 100 feet north of Pittsley Road and 150 feet west of George Wells Road, in a wooded area along the edge of an abandoned quarry (lat. 42°31’45” N.; long. 75°18’54” W.).

Oe—0 to 1 inch; very dark brown (10YR 2/2) partially decomposed leaf litter.

A—1 to 5 inches; dark reddish brown (5YR 3/4) channery silt loam, reddish brown (5YR 5/4) dry; weak fine granular structure; friable; common fine, many medium, and few coarse roots; 15 percent rock fragments; very strongly acid; clear smooth boundary.

Bw—5 to 13 inches; yellowish red (5YR 4/6) channery silt loam; weak medium subangular blocky structure; friable; common fine, many medium, and few coarse roots; 25 percent rock fragments; very strongly acid; clear smooth boundary.

C—13 to 19 inches; dark reddish brown (2.5YR 3/4) very channery silt loam; weak thin platy structure; friable; few fine roots; 40 percent rock fragments; very strongly acid; clear wavy boundary.

2C—19 to 28 inches; reddish brown (2.5YR 4/4) extremely channery silt loam; massive; firm; few fine roots; 65 percent rock fragments; very strongly acid; abrupt wavy boundary.

2R—28 inches; dusky red (2.5YR 3/2) shale bedrock.

The thickness of the solum ranges from 12 to 34 inches. The depth to bedrock ranges from 20 to 40 inches. In areas that have not been limed, reaction ranges from extremely acid to moderately acid throughout the soil.

Some pedons in undisturbed areas have a thin Oe or Oa horizon.

The A or Ap horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, or sandy loam. Structure is granular or subangular blocky. Consistence is very friable or friable. The content of rock fragments ranges from 15 to 35 percent, by volume. The A horizon, which is present in many pedons, is 1 to 4 inches thick.

Some pedons have an E horizon at a depth of less than 5 inches.

The Bw horizon has hue of 2.5YR to 7.5YR, value of 3 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or very weak granular or subangular blocky. Consistence ranges from very friable to firm. The content of rock fragments ranges from 25 to 65 percent, by volume.

The C horizon has hue of 10R to 7.5YR, value of 3 to 5, and chroma of 2 to 4. In some pedons, it has few or common, faint or distinct mottles at the contact with the bedrock. The texture of the fine-earth fraction is silt loam, loam, or sandy loam. Structure is weak platy, or the horizon is massive. The content of rock fragments ranges from 25 to 85 percent, by volume.

The 2C horizon, where present, has a range in properties similar to that of the C horizon.

The 2R layer is reddish shale or siltstone bedrock that is commonly quite fractured in the upper part.

Otego Series

The Otego series consists of very deep, moderately well drained soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 3 percent.

Otego soils are commonly adjacent to well drained Hamplain soils, somewhat poorly drained Wakeville soils, and poorly drained Wayland soils. Well drained Unadilla soils and moderately well drained Scio soils are on adjacent higher, lacustrine or old alluvial terraces and plains. Well drained Trestle soils and moderately well drained Deposit soils are on adjacent gravelly, higher flood plains along high-gradient streams. Chenango and Tunkhannock soils are nearby on glacial outwash terraces.

Typical pedon of Otego silt loam; in the town of Oneonta; 1,000 feet east of the intersection of Pony Farm Road and New York Route 7 and 1,500 feet south of Pony Farm Road, in a cornfield (lat. 42°25’54” N.; long. 75°07’10” W.).

Ap—0 to 13 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine and medium roots; neutral (limed); abrupt smooth boundary.

Bw1—13 to 25 inches; olive brown (2.5Y 4/4) silt loam; many fine prominent grayish brown (10YR 5/2) and few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; very friable; common fine and medium and few coarse roots; many medium and coarse tubular and many fine and medium vesicular pores; slightly acid; clear smooth boundary.

Bw2—25 to 35 inches; grayish brown (10YR 5/2) and brown (10YR 5/3) silt loam; common medium distinct gray (10YR 6/1) and common fine distinct yellowish brown (10YR 5/6) mottles; weak very coarse prismatic structure parting to moderate medium and fine subangular blocky structure; very friable; few fine roots; many fine and medium vesicular and common medium and coarse tubular pores; slightly acid; gradual smooth boundary.

C1—35 to 60 inches; gray (5Y 6/1) silt loam; common medium prominent strong brown (7.5YR 5/6) and many coarse prominent dark brown (7.5YR 4/4) mottles; massive; friable; many fine and medium vesicular and few medium and coarse tubular pores; moderately acid; clear smooth boundary.

C2—60 to 72 inches; gray (5Y 6/1) loam with thin lenses of silts; many coarse prominent strong brown (7.5YR 5/6) and many coarse prominent reddish brown (5YR 4/4) mottles; massive; friable; 5 percent rock fragments; slightly acid; clear smooth boundary.

C3—72 to 80 inches; multicolored very gravelly sandy loam; massive; nonsticky and nonplastic; 45 percent rock fragments; neutral.

The thickness of the solum ranges from 24 to 48 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 5 percent in the surface layer and subsoil and from 0 to 15 percent in the substratum. Some pedons have stratified layers below a depth of 40 inches with subhorizons having up to 50 percent pebbles and cobbles. In areas that have not been limed, reaction ranges from strongly acid to slightly acid in the surface layer, subsoil, and the upper part of the substratum and from strongly acid to neutral in the lower part of the substratum. The depth to carbonates is more than 80 inches.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. Dry value is 6 or 7. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable.

The E horizon, where present, is thin and has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or fine sandy loam. Structure is granular, platy, or subangular blocky. Consistence is friable or very friable.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. It has many mottles with chroma of 2 or less between depths of 12 and 24 inches. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate subangular blocky; or it is weak, very coarse prismatic. Consistence is friable or very friable.

The BC horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak subangular blocky, or the horizon is single grain. Consistence is friable or loose.

The C horizon, where present, is massive and has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Consistence is loose or friable.

The 2C or 3C horizon, where present, is massive and either has a range in color similar to that of the C horizon or is multicolored. The texture of the fine-earth fraction ranges from loam to very gravelly loamy sand. In some pedons, the fine-earth fraction is stratified. Consistence is loose or friable and nonsticky and nonplastic.

Palms Series

The Palms series consists of very deep, very poorly drained soils that formed in well decomposed organic material overlying mineral deposits. Loamy material is at a depth of 16 to 51 inches. These soils are in bogs, depressional areas, or in basins that receive runoff water from surrounding areas. Slopes range from 0 to 2 percent.

Palms soils are on landscapes similar to those of Carbondale, Carlisle, and Edwards soils and Saprists and Aquents. Carbondale soils are at elevations above 1,750 feet. Carlisle soils have organic material extending to a depth of more than 51 inches. Edwards soils are underlain by marl at a depth of 16 to 50 inches. Saprists and Aquents have water standing on the surface most of the year. Palms soils are commonly adjacent to very deep, poorly drained or very poorly drained Canandaigua soils on nearby silty lacustrine deposits. Very deep, well drained Chenango soils are commonly on nearby gravelly outwash deposits. Very deep, poorly drained Chippewa and Norwich soils are commonly adjacent on glacial till deposits.

Typical pedon of Palms muck; in the town of Middlefield; 1,400 feet northeast of the intersection of New York Route 166 and Norton Cross Road and 700 feet east of New York Route 166, in a bog with hemlocks and sphagnum moss (lat. 42°39’21” N.; long. 74°53’05” W.).

Oa1—0 to 8 inches; muck (sapric material), black (10YR 2/1) broken face and rubbed; about 37 percent fibers undisturbed and about 13 percent fibers rubbed; weak medium granular structure; very friable; many fine and medium and common coarse roots; strongly acid (in 0.01M $CaCl_2$); clear smooth boundary.

Oa2—8 to 21 inches; muck (sapric material), black (5YR 2.5/1) broken face and black (N 2/0) rubbed; about 22 percent fibers undisturbed and about 5 percent fibers rubbed; weak coarse subangular blocky structure; very friable; 5 percent woody fragments; common fine and medium and few coarse roots; strongly acid (in 0.01M $CaCl_2$); gradual smooth boundary.

Oa3—21 to 27 inches; muck (sapric material), black (10YR 2/1) broken face and rubbed; about 32 percent fibers undisturbed and about 5 percent fibers rubbed; massive; very friable; few fine and medium roots; strongly acid (in 0.01M $CaCl_2$); abrupt smooth boundary.

Oe—27 to 34 inches; mucky peat (hemic material), black (10YR 2/1) broken face and very dark brown (10YR 2/2) rubbed; about 67 percent fibers undisturbed and about 40 percent fibers rubbed; massive; very friable; 15 percent woody fragments; strongly acid (in 0.01M $CaCl_2$); clear smooth boundary.

Oa4—34 to 46 inches; muck (sapric material), dark reddish brown (5YR 3/2) broken face and very dark brown (10YR 2/2) rubbed; about 23 percent fibers undisturbed and about 7 percent fibers rubbed; massive; very friable; strongly acid (in 0.01M $CaCl_2$); abrupt smooth boundary.

2Cg—46 to 72 inches; gray (N 5/0) silty clay loam; massive; sticky and plastic; slightly acid (in 0.01M $CaCl_2$).

The depth to the contrasting loamy mineral material ranges from 16 to 50 inches. The organic material is derived mainly from herbaceous plants, but some layers contain as much as 15 percent woody material. Reaction in the organic layers ranges from strongly acid to mildly alkaline. Some organic layers contain free carbonates. Reaction in the mineral-soil substratum ranges from slightly acid to moderately alkaline.

The surface tier of organic material has hue of 5YR to 10YR, value of 2 or 3, and chroma of 0 to 2. It is dominantly muck (sapric material). In some pedons, however, it has mucky peat (hemic material).

The subsurface and bottom tiers have hue of 5YR to 10YR, value of 2 to 4, and chroma of 0 to 3. In some pedons, they have thin layers, less than 10 inches thick, of mucky peat (hemic material). In a few pedons, they have a thin layer, less than 5 inches thick, of peat (fibric material).

The mineral 2C horizon has hue of 10YR, 2.5Y, 5Y, or 5GY, or it is neutral. It has value of 3 to 7 and chroma of 0 to 4. The texture of the fine-earth fraction ranges from loamy very fine sand to silty clay loam. The fine-earth fraction averages less than 35 percent clay in the upper 12 inches of the horizon. The content of rock fragments ranges from 0 to 25 percent. In some pedons, the horizon contains free carbonates.

Patchin Series

The Patchin series consists of moderately deep, poorly drained soils in dissected glacial uplands. These soils formed in 20 to 40 inches of glacial till derived from shale and siltstone. Slopes range from 1 to 4 percent.

Patchin soils are commonly adjacent to moderately well drained Towerville soils, which are in slightly higher areas of the same landforms where the water table is deeper. Shallow, somewhat excessively drained Farmington soils and moderately deep, well drained Wassaic soils are commonly adjacent on nearby limestone-bedrock-controlled landforms. Also commonly adjacent are very deep, well drained Honeoye soils in areas where the water table is deeper and the glacial till is thicker over the bedrock.

Typical pedon of Patchin silt loam, 1 to 4 percent slopes; in the town of Cherry Valley; 500 feet south of the intersection of Neilsen Road and U.S. Route 20 and 30 feet east of Neilsen Road, in a brushy area (lat. 42°49’50” N.; long. 74°45’12” W.).

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; few fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium granular structure; very friable; many medium and coarse roots; very strongly acid; abrupt smooth boundary.

Eg—7 to 12 inches; grayish brown (2.5Y 5/2) silt loam; common fine prominent dark yellowish brown (10YR 4/6) mottles; weak thin platy structure; friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bg—12 to 22 inches; gray (5Y 5/1) silt loam; many (45 percent) medium and coarse prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; few medium tubular and common fine and very fine vesicular pores containing common distinct light olive gray (5Y 6/2) clay films; strongly acid; gradual smooth boundary.

BCg—22 to 26 inches; gray (5Y 6/1) silty clay loam; many medium prominent yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; sticky and plastic; few fine tubular and vesicular pores; strongly acid; gradual smooth boundary.

Cg—26 to 32 inches; olive gray (5Y 5/2) silty clay loam; many medium and coarse prominent yellowish brown (10YR 5/8) mottles; massive; sticky and plastic; few fine tubular and vesicular pores; 10 percent rock fragments; strongly acid; clear smooth boundary.

2R—32 inches; black (10YR 2/1), soft shale bedrock.

The thickness of the solum ranges from 20 to 36 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments, dominantly shale, ranges from 0 to 10 percent, by volume, in the solum and C horizon and includes up to 5 percent larger than 3 inches in diameter in the lower part. Thin subhorizons may contain up to 25 percent shale fragments just above the bedrock. In areas that have not been limed, reaction is very strongly acid or strongly acid throughout the soil.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is weak or moderate, fine or medium granular or subangular. Consistence is very friable or friable.

The Eg horizon has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 2 or less. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is weak or moderate, thick to thin platy.

The Bg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or less. Above a depth of 30 inches, 40 to 60 percent of the matrix has mottles with chroma of more than 2. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is weak or moderate, fine to coarse subangular blocky or prismatic parting to blocky. In the lower part, the horizon may have platy structure inherited from the weathered bedrock.

The C or Cr horizon, where present, is up to 6 inches thick. It has the same range in color as that of the B horizon. The texture of the fine-earth fraction is silt loam or silty clay loam. The horizon is massive or has platy structure inherited from the weathered bedrock.

Raynham Series

The Raynham series consists of very deep, somewhat poorly drained soils that formed in silty glaciolacustrine deposits on glacial lake plains and terraces. Slopes range from 0 to 3 percent.

Raynham soils are commonly adjacent to moderately well drained Scio soils in slightly higher positions on the same landforms and to poorly drained or very poorly drained Canandaigua soils in slightly lower landform positions. Also commonly adjacent are somewhat poorly drained Wakeville soils and poorly drained Wayland soils on nearby flood plains.

Typical pedon of Raynham silt loam; in the town of Springfield; 2,640 feet northwest of the intersection of Mill Road and County Route 31 and 250 feet southwest of Mill Road, in a field (lat. 42°47’35” N.; long. 74°51’41” W.).

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; many fine roots; strongly acid; abrupt smooth boundary.

Bg1—9 to 14 inches; grayish brown (2.5Y 5/2) silt loam; many (45 percent) medium and coarse prominent yellowish brown (10YR 5/6) mottles; moderate medium and coarse subangular blocky structure; friable; common fine roots; many fine and common coarse tubular pores; moderately acid; clear smooth boundary.

Bg2—14 to 21 inches; dark grayish brown (10YR 4/2) and olive gray (5Y 5/2) loam; few fine prominent yellowish brown (10YR 5/6) and few fine distinct gray (10YR 5/1) mottles; moderate medium and coarse subangular blocky structure; friable; common fine roots; neutral; clear wavy boundary.

Bg3—21 to 24 inches; yellowish brown (10YR 5/4) and grayish brown (10YR 5/2) silt loam; few medium prominent brownish yellow (10YR 6/8) mottles; weak medium and coarse subangular blocky structure; friable; common fine roots; neutral; clear wavy boundary.

C1—24 to 34 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) silt loam; many coarse prominent gray (N 6/0) and few coarse prominent yellowish brown (10YR 5/8) mottles; massive with vertical desiccation cracks; friable; common fine roots; neutral; gradual smooth boundary.

C2—34 to 47 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) silt loam; many coarse prominent gray (N 6/0) and few coarse prominent yellowish brown (10YR 5/8) mottles; massive with coarse desiccation cracks; firm; few fine roots on faces of prisms; neutral; abrupt smooth boundary.

Cg—47 to 72 inches; gray (5Y 5/1) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; weak varving within coarse desiccation cracks; firm; few fine roots along faces of prisms; violently effervescent; moderately alkaline.

The thickness of the solum ranges from 16 to 40 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 2 percent. Reaction ranges from strongly acid to neutral in the solum and from moderately acid to moderately alkaline in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. It is silt loam, silt, very fine sandy loam, or loam. Some pedons have a thin A horizon.

The B horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. At least one subhorizon within 20 inches of the surface has a dominant chroma of 2. The B horizon is silt loam, silt, very fine sandy loam, or loamy very fine sand. In some pedons, it has thin layers, 1 to 3 inches thick, of sand, gravelly sand, and silty clay loam.

The C horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. It is silt loam, silt, or very fine sandy loam and is commonly stratified or varved. In some pedons, it has thin layers of fine sand, sand, gravelly sand, or silty clay loam.

Correlation note: In a few places this soil is subject to rare flooding. In most places, it is not. The description of map unit Ra, Raynham silt loam, notes the flood-prone areas as inclusions.

Red Hook Series

The Red Hook series consists of very deep, somewhat poorly drained soils on the lower parts of outwash terraces, old stream terraces, and moraines. These soils formed in glacial outwash and water-sorted materials. Slopes range from 0 to 3 percent.

Red Hook soils are commonly adjacent to poorly drained Atherton soils, moderately well drained Castile soils, and well drained Chenango soils.

Typical pedon of Red Hook silt loam; in the town of Hartwick; 1,900 feet south of the intersection of New York Route 28 and Seminary Road and 250 feet east of New York Route 28, in a field (lat. 42°38’20” N.; long. 74°57’55” W.).

Ap—0 to 12 inches; very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure parting to moderate medium and fine granular; friable; many fine and few medium roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bg—12 to 17 inches; grayish brown (2.5Y 5/2) silt loam; many medium and coarse prominent strong brown (7.5YR 4/6) and common fine and medium prominent dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine and few medium vesicular pores; 10 percent rock fragments; neutral; clear wavy boundary.

Bw—17 to 31 inches; very dark grayish brown (2.5Y 3/2) and dark yellowish brown (10YR 4/4) gravelly sandy loam; few coarse prominent yellowish brown (10YR 5/4) mottles; weak fine and medium subangular blocky structure; friable; common fine roots; many fine and very fine vesicular pores; 20 percent rock fragments; neutral; abrupt broken boundary.

Cg1—31 to 35 inches; grayish brown (2.5Y 5/2) gravelly loam; common fine prominent dark yellowish brown (10YR 4/6) and few fine distinct olive brown (2.5Y 4/4) mottles; massive; friable; few fine roots; few very fine and fine vesicular pores; 15 percent rock fragments; neutral; abrupt broken boundary.

Cg2—35 to 40 inches; dark grayish brown (2.5Y 4/2) gravelly sandy loam; single grain; very friable; few very fine vesicular pores; 15 percent rock fragments; neutral; clear wavy boundary.

C—40 to 72 inches; very dark grayish brown (10YR 3/2) and olive brown (2.5Y 4/4) very channery loam stratified with gravelly loamy sand and gravelly silty clay loam; common fine distinct dark yellowish brown (10YR 4/6) mottles; stratified massive and single grain; firm; few fine and very fine vesicular pores; 40 percent rock fragments, including 5 percent larger than 3 inches in diameter; slightly effervescent; mildly alkaline.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 10 to 60 percent in the subsoil; and from 15 to 65 percent in the substratum. By weighted average, the content of rock fragments is less than 35 percent to a depth of 40 inches.

The A or Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate, fine to coarse granular or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from strongly acid to slightly acid.

The B horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 1 to 4. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is very weak to moderate subangular blocky or platy. Consistence is friable or firm. In areas that have not been limed, reaction ranges from moderately acid to neutral.

The C horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 1 to 4. The texture of the fine-earth fraction ranges from silt loam to sandy loam with lenses or strata of finer or coarser textured material. Reaction ranges from moderately acid to mildly alkaline.

Rhinebeck Series

The Rhinebeck series consists of very deep, somewhat poorly drained soils that formed in water-deposited materials on glacial lake plains and terraces. Slopes range from 0 to 8 percent.

Rhinebeck soils are commonly adjacent to poorly drained or very poorly drained Canandaigua soils in slightly lower landform positions. Somewhat poorly drained Raynham soils are nearby on similar landforms but have more silt and less clay in the upper 40 inches. Well drained Lansing and Honeoye soils are commonly nearby on valley side slopes and drumlins. Well drained Howard soils are commonly adjacent on glacial outwash plains and terraces.

Typical pedon of Rhinebeck silty clay loam, 0 to 3 percent slopes; in the town of Springfield; 3,000 feet northwest of the intersection of County Route 31 and the main entrance road into Glimmerglass State Park and 400 feet northeast of the park road, in an abandoned field (lat. 42°47’35” N.; long. 74°52’01” W.).

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; many fine and few medium roots; strongly acid; abrupt smooth boundary.

Eg—8 to 14 inches; grayish brown (2.5Y 5/2) silty clay loam with light brownish gray (2.5Y 6/2) faces of peds; many medium and coarse prominent strong brown (7.5YR 5/6) mottles; weak medium and coarse subangular blocky structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

Btg1—14 to 25 inches; dark brown (10YR 4/3) silty clay loam with gray (10YR 5/1) faces of prisms; common medium prominent brown (7.5YR 5/4) and strong brown (7.5YR 5/6) mottles; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; few medium tubular and common fine vesicular pores; strongly acid; clear wavy boundary.

Btg2—25 to 34 inches; dark grayish brown (10YR 4/2) and dark gray (10YR 4/1) silty clay loam with gray (5YR 5/1) faces of prisms; common (15 percent) fine prominent strong brown (7.5YR 5/6) and many (35 percent) medium faint brown (10YR 5/3) mottles; weak medium and coarse prismatic structure with weak varving in the lower part; firm; few fine roots; few medium tubular and common fine vesicular pores; mildly alkaline; clear smooth boundary.

Cg1—34 to 40 inches; dark gray (5Y 4/1) and gray (5Y 5/1) clay with gray (N 5/0) faces of prisms; many medium prominent olive brown (2.5Y 4/4) mottles; weak coarse prismatic structure with strong varving; firm; few fine roots; few medium tubular and common fine vesicular pores; slightly effervescent; moderately alkaline; clear smooth boundary.

Cg2—40 to 72 inches; dark gray (10YR 4/1) clay with gray (N 5/0) faces of prisms and dark grayish brown (2.5Y 4/2) and olive brown (2.5Y 4/4) faces of varves; common fine prominent yellowish brown (10YR 5/6) mottles; strong varving with coarse desiccation cracks; firm; few fine tubular pores containing common prominent clay films; strongly effervescent; moderately alkaline.

The thickness of the solum ranges from 20 to 48 inches. The depth to carbonates ranges from 20 to 60 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the surface layer and from 0 to 10 percent in the subsoil and substratum. In areas that have not been limed, reaction ranges from strongly acid to neutral in the surface layer, from strongly acid to mildly alkaline in the subsoil, and from slightly acid to moderately alkaline in the substratum. Carbonates are present in the lower part of the solum in some pedons and not present in the upper part of the substratum in other pedons.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 3. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is subangular blocky or granular. Consistence is very friable or friable.

The E horizon has hue of 7.5YR to 5Y, value of 4 to 6, chroma of 1 to 3. It has mottles. The texture of the fine-earth fraction is silty clay loam, silt loam, or very fine sandy loam. Structure is weak or moderate subangular blocky or platy. Consistence ranges from very friable to firm.

Some pedons have a BE horizon instead of, or underlying, the E horizon. The BE horizon has a range in hue and value similar to that of the E horizon but has chroma of 3 to 6. The BE horizon is mottled. The texture of the fine-earth fraction is silty clay, silty clay loam, or silt loam. Consistence is friable or firm.

The Bt horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 1 to 4. It is mottled. The texture of the fine-earth fraction is silty clay loam or silty clay. In some pedons, the Bt horizon has subhorizons of silt loam or clay. Structure is weak to strong prismatic to subangular blocky or angular blocky. Consistence is firm or very firm.

Some pedons have a BC horizon underlying the Bt horizon. The BC horizon has a range in color, texture, and structure similar to that of Bt horizon, except some pedons have platy structure inherited from rock structure. Consistence is firm or very firm.

The C horizon has hue of 5YR to 5Y or is neutral. It has value of 3 to 5 and chroma of 0 to 4. The texture of the fine-earth fraction ranges mainly from silty clay loam to clay with subhorizons that are typically discontinuous and range to fine sand. The C horizon is massive, with or without varving.

Riverhead Series

The Riverhead series consists of very deep, well drained soils on glacial outwash plains and terraces, old glacial lake deltas and beaches, and inwash landforms. These soils formed in sandy, water-deposited material. Slopes range from 0 to 8 percent.

Riverhead soils are commonly adjacent to well drained Unadilla soils and moderately well drained Scio soils, which have a higher content of silt. Well drained Hamplain soils and moderately well drained Otego soils are nearby on flood plains. Well drained Chenango and Howard soils are nearby on gravelly outwash terraces. Poorly drained Atherton soils are in nearby or adjacent depressional areas.

Typical pedon of Riverhead sandy loam, loamy substratum, 0 to 3 percent slopes; in the town of Plainfield; 4,600 feet south of the intersection of U.S. Route 20 and County Route 18 and 800 feet east of County Route 18, in a cultivated field (lat. 42°51’53” N.; long. 75°14’15” W.).

Ap—0 to 13 inches; dark brown (10YR 3/3) sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many very fine, common fine, and few medium roots; 3 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—13 to 18 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium subangular blocky structure; friable; common fine roots; few fine vesicular pores; very strongly acid; clear wavy boundary.

Bw2—18 to 31 inches; brown (10YR 4/3) coarse sandy loam; weak fine subangular blocky structure; friable; few very fine roots; common fine vesicular pores; strongly acid; gradual wavy boundary.

BC—31 to 39 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; common medium vesicular and many fine tubular pores; 3 percent rock fragments; strongly acid; gradual wavy boundary.

2C—39 to 60 inches; dark brown (10YR 3/3) and brown (10YR 4/3) loamy fine sand; single grain; loose; 5 percent rock fragments; strongly acid; diffuse wavy boundary.

3C—60 to 72 inches; dark brown (10YR 3/3) sandy loam; single grain; loose; 5 percent rock fragments; slightly acid.

The thickness of the solum and depth to sand and gravel range from 20 to 40 inches. The depth to bedrock is mainly more than 60 inches. The content of rock fragments, primarily gravel, ranges from 0 to 15 percent, by volume, in the surface layer; from 0 to 35 percent in the subsoil; and from 5 to 40 percent in the substratum. In some pedons, the substratum below a depth of 40 inches is as much as 60 percent rock fragments.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. Some pedons have a thin A horizon with hue of 10YR, value of 2 to 4, and chroma of 1 or 2. The texture of the fine-earth fraction is sandy loam, fine sandy loam, or loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is sandy loam or fine sandy loam with more than 50 percent fine sand and coarser. Structure is weak subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to moderately acid.

Some pedons have a thin AB or BA horizon.

The BC horizon and the 2BC horizon, where present, have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is loamy sand, fine sandy loam, or sandy loam. The coarser textures are only in the 2BC horizon. Structure is weak granular or subangular blocky, or the horizons are massive. Consistence is friable or very friable. Reaction ranges from very strongly acid to moderately acid.

The C or 2C horizon has hue of 7.5YR to 2.5Y, value of 3 to 7, and chroma of 3 to 6. The texture of the fine-earth fraction is loamy fine sand, but some pedons have layers of loamy sand, sand, coarse sand, or stratified sand and gravel. Below a depth of 40 inches, many pedons also have a loamy 3C horizon that is sandy loam or fine sandy loam in the fine-earth fraction. Reaction ranges from very strongly acid to neutral. Reaction is neutral only below a depth of 30 inches.

Saprists

Saprists consist of very deep, very poorly drained soils that formed in organic deposits in concave areas and impounded areas on lacustrine plains, outwash plains, and till uplands. Slopes are 0 to 1 percent.

Saprists are in an undifferentiated unit with Aquents. Aquents formed in mineral matter. Saprists are commonly near Alden, Canandaigua, Chippewa, Norchip, Palms, and Carlisle soils, all of which formed in more uniform deposits.

Because the organic deposits in Saprists are variable in thickness, a typical pedon is not described.

The organic deposits range in thickness from 16 to more than 72 inches. The depth to bedrock is typically more than 60 inches.

The organic layers have hue of 10YR to 5Y, or they are neutral. They have value of 1 or 2 and chroma of 0 or 1. Texture is dominantly muck, but the organic layers contain small amounts of hemic or fibric material in some places. The texture of the fine-earth fraction of the substratum ranges from loamy sand to silty clay with or without the mucky analogs of those textures. The organic layers do not contain rock fragments. The content of rock fragments in the mineral substratum layers ranges from 0 to 45 percent, by volume. Reaction ranges from strongly acid to mildly alkaline throughout.

Scio Series

The Scio series consists of very deep, moderately well drained soils that formed in water-deposited silts and very fine sands on alluvial terraces and glacial lake plains. Slopes range from 0 to 6 percent.

Scio soils are commonly adjacent to well drained Unadilla soils in slightly higher positions on the same landforms and to somewhat poorly drained Raynham soils in slightly lower positions on the same landforms. Also commonly adjacent are well drained Chenango soils on slightly higher, water-sorted glacial outwash deposits. Well drained Hamplain soils and moderately well drained Otego soils are on adjacent flood plains. In the northwestern part of the county, Scio soils having a texture of fine sandy loam are commonly adjacent to well drained Riverhead soils. Poorly drained Atherton soils are in slightly lower positions on the same landforms as the Scio soils.

Typical pedon of Scio silt loam, 0 to 2 percent slopes; in the town of Oneonta; 1,000 feet east of the end of Stillwater Road and 125 feet south of the railroad tracks, in an abandoned field (lat. 42°27’55” N.; long. 75°00’15” W.).

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam, very pale brown (10YR 7/3) dry; moderate fine granular structure; very friable; many fine and common medium roots; moderately acid (limed); abrupt smooth boundary.

Bw1—9 to 18 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; very friable; common fine roots; common very fine vesicular pores; moderately acid (limed); abrupt smooth boundary.

Bw2—18 to 27 inches; light olive brown (2.5Y 5/4) very fine sandy loam; common fine and medium distinct light brownish gray (2.5Y 6/2) and common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; very friable; few fine roots; common very fine vesicular pores; strongly acid; clear smooth boundary.

C1—27 to 49 inches; brown (10YR 5/3) very fine sandy loam; many medium and coarse prominent olive (5Y 5/3) and many medium and coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable; few fine and medium vesicular pores; strongly acid; clear smooth boundary.

C2—49 to 72 inches; variegated light olive brown (2.5Y 5/4) and dark brown (7.5YR 4/4) very fine sandy loam with pockets of fine sandy loam; many coarse prominent olive gray (5Y 5/2) and common medium and coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable; many fine tubular pores; strongly acid.

The thickness of the solum ranges from 20 to 48 inches. The depth to material that contrasts in texture with the solum is 40 inches or more. The depth to bedrock is more than 60 inches. The depth to free carbonates is more than 80 inches. The content of rock fragments, mainly gravel and cobbles, ranges from 0 to 5 percent, by volume, above 40 inches and from 0 to 60 percent below 40 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Pedons in uncultivated areas have an A horizon that has value as low as 2. The texture of the fine-earth fraction is silt loam or fine sandy loam. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 3 to 6. It has both high- and low-chroma mottles within a depth of 24 inches. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate, thin to thick or fine to coarse platy, prismatic, or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. The texture of the fine-earth fraction dominantly ranges from silt loam to very fine sandy loam but contains stratified gravel and sand in some pedons. The horizon is massive, or it has platy structure. Consistence ranges from loose to firm. Reaction ranges from strongly acid to mildly alkaline.

Torull Series

The Torull series consists of shallow, poorly drained soils on uplands at elevations over 1,750 feet. These soils formed in a thin mantle of glacial till overlying sandstone, siltstone, and shale bedrock. Slopes range from 1 to 6 percent but are generally less than 3 percent.

Torull soils are commonly adjacent to moderately deep, somewhat poorly drained Gretor soils. Moderately deep, well drained Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are nearby on glacial till uplands. Narrow areas of rock outcrops are also near the Torull soils in a few places.

Typical pedon of Torull silt loam, in an area of Torull-Gretor complex, 1 to 6 percent slopes; in the town of Decatur; 3,000 feet east of the intersection of Fish and Game Road and Reservoir Road and 50 feet south of Reservoir Road, in an abandoned field (lat. 42°40'30" N.; long. 74°39'14" W.).

Ap1—0 to 5 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; very friable; many fine and common medium roots; 1 percent rock fragments; moderately acid (limed); abrupt smooth boundary.

Ap2—5 to 7 inches; very dark gray (10YR 3/1) silt loam; weak fine granular structure; friable; common fine and medium roots; many very fine and common fine vesicular pores; 5 percent rock fragments; moderately acid (limed); abrupt smooth boundary.

Bg—7 to 15 inches; grayish brown (2.5Y 5/2) silt loam; common fine and medium prominent dark yellowish brown (10YR 4/6) and few medium and coarse distinct gray (10YR 5/1) mottles; moderate fine subangular blocky structure; friable; few fine and medium roots; common fine vesicular pores; 10 percent rock fragments; moderately acid; abrupt smooth boundary.

2R—15 inches; grayish brown, massive sandstone bedrock.

The thickness of the solum ranges from 10 to 20 inches. The depth to bedrock ranges from 10 to 20 inches. The content of rock fragments ranges from 0 to 15 percent, by volume, in the surface layer and from 0 to 35 percent throughout the remainder of the soil. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid throughout the soil. The pH in $CaCl_2$ is less than 5.0.

The A or Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 3. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, fine to coarse granular. Consistence is very friable or friable.

The Eg horizon, where present, has hue of 5YR to 10YR, value of 5 or 6, and chroma of 1 or 2. The texture of the fine-earth fraction is fine sandy loam or sandy loam. Structure is weak, medium or coarse subangular blocky or thin to thick platy. Consistence is very friable or friable.

The B horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 or 3. It has mottles. Where the horizon has chroma of 3, the faces of peds have chroma of 1 or 2. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak, fine to coarse subangular blocky or prismatic or thin to thick platy. Consistence is friable or firm.

Some pedons have a thin C horizon that has a range in color and texture similar to that of the B horizon.

The R layer consists of hard, grayish sandstone, siltstone, or shale. In some pedons, the upper part of the bedrock is fractured.

Correlation note: The typifying pedon is limed, thus reaction in some layers is slightly outside the range for the acid family reaction class.

Towerville Series

The Towerville series consists of moderately deep, moderately well drained soils in glaciated dissected uplands. These soils formed in glacial till derived from shale and siltstone. Slopes range from 3 to 25 percent.

Towerville soils are commonly adjacent to well drained Manlius soils, which are on slightly higher landforms and ridgetops. Very deep Conesus soils are nearby on toeslopes that are lower on the landscape than the Towerville soils. Very deep, well drained Lansing soils are commonly nearby in areas where the glacial till is deeper. Poorly drained Patchin soils are nearby in slight depressional areas.

Typical pedon of Towerville silt loam, 8 to 15 percent slopes; in the town of Richfield; 2,000 feet east of the intersection of County Route 25 and South Road and 3,500 feet north of County Route 25, in a pasture (lat. 42°52'20" N.; long. 75°06'04" W.).

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; very friable; many fine roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bw1—6 to 21 inches; dark brown (10YR 3/3) silt loam; few fine faint dark yellowish brown (10YR 4/4) mottles; weak fine and very fine subangular blocky structure; very friable; common fine roots; common fine and very fine vesicular pores; 10 percent rock fragments; moderately acid; gradual smooth boundary.

Bw2—21 to 28 inches; dark brown (10YR 3/3) channery silt loam; few fine prominent strong brown (7.5YR 4/6), common fine distinct dark grayish brown (2.5Y 4/2), and common fine faint dark yellowish brown (10YR 4/4) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; common very fine and fine vesicular pores; 15 percent rock fragments; moderately acid; gradual wavy boundary.

2Cr—28 to 35 inches; gray (10YR 5/1) and dark grayish brown (2.5Y 4/2) very channery silt loam; common fine prominent dark yellowish brown (10YR 4/6) and common fine faint dark grayish brown (10YR 4/2) mottles; platy structure inherited from the underlying bedrock; firm; 40 percent rock fragments; moderately acid; gradual wavy boundary.

2R—35 inches; very dark grayish brown (10YR 3/2) and black (N 2/0), horizontally bedded, fractured shale bedrock.

The thickness of the solum and the depth to bedrock range from 20 to 40 inches. The content of rock fragments, mainly channers and flagstones, ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer in the upper part of the solum; and from 10 to 60 percent in the lower part of the solum and in the substratum. By weighted average, the content of rock fragments is less than 35 percent throughout the soil.

The Ap or A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Texture is silt loam or loam in the fine-earth fraction. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam, loam, or silty clay loam. Structure is weak or moderate, fine to coarse subangular blocky. Consistence ranges from very friable to firm. Reaction ranges from very strongly acid to moderately acid.

The Cr or 2Cr horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. The texture of the fine-earth fraction is silt loam, loam, or silty clay loam. Structure is subangular blocky or platy, or the horizon is massive. Reaction ranges from strongly acid to slightly acid.

Some pedons have a BC or C horizon.

The 2R horizon is shale or siltstone bedrock that is commonly interbedded.

Trestle Series

The Trestle series consists of very deep, well drained soils in the higher positions on flood plains and on low terraces. These soils formed in glacial outwash and alluvium along high-gradient streams in narrow valleys. Slopes range from 1 to 4 percent.

Trestle soils are commonly adjacent to moderately well drained Deposit soils on the same landforms. Well drained Chenango soils, moderately well drained Castile soils, and moderately well drained Scio soils are nearby on slightly higher landforms. Moderately well drained Otego soils and Fluvaquents and Udifluvents are nearby on flood plains and are more frequently flooded.

Typical pedon of Trestle gravelly silt loam, in an area of Trestle-Deposit complex, 1 to 4 percent slopes; in the town of Laurens; 150 feet south of the intersection of Strong Cross Road and Pool Brook Road and 600 feet west of Pool Brook Road, in a hayfield (lat. 42°32’44” N.; long. 75°05’04” W.).

Ap—0 to 9 inches; dark brown (10YR 3/3) gravelly silt loam, light yellowish brown (10YR 6/4) dry; moderate fine granular structure; friable; many fine and few medium roots; 20 percent rock fragments; moderately acid; clear wavy boundary.

Bw—9 to 16 inches; dark brown (10YR 4/3) very gravelly loam; weak medium subangular blocky structure; friable; few fine and medium roots; 40 percent rock fragments; moderately acid; clear wavy boundary.

C—16 to 38 inches; dark brown (10YR 4/3) very gravelly sandy loam with thin lenses of gravelly sand; massive; loose; few fine roots; 60 percent rock fragments, including 10 percent larger than 3 inches in diameter; moderately acid; diffuse smooth boundary.

2C1—38 to 50 inches; light brownish gray (2.5Y 6/2) weakly stratified very channery loam; many medium and coarse distinct olive yellow (2.5Y 6/6) mottles; massive; loose; 55 percent rock fragments, including 20 percent larger than 3 inches in diameter; slightly acid; diffuse smooth boundary.

2C2—50 to 72 inches; light olive brown (2.5Y 5/4) weakly stratified very channery sandy loam with lenses of clay loam; massive; slightly sticky and nonplastic; 60 percent rock fragments, including 20 percent larger than 3 inches in diameter; slightly acid.

The thickness of the solum ranges from 15 to 30 inches. The depth to bedrock is more than 60 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam. Structure is weak to strong granular. Consistence is friable or very friable. The content of rock fragments ranges from 15 to 25 percent, by volume. In areas that have not been limed, reaction is strongly acid or moderately acid.

The Bw horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is weak or moderate, fine or medium subangular blocky. Consistence is friable or very friable. The content of rock fragments ranges from 15 to 45 percent, by volume. In areas that have not been limed, reaction is moderately acid or slightly acid.

The C and 2C horizons have hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from silt loam to coarse sandy loam. Consistence is very friable or loose. The content of rock fragments ranges from 40 to 70 percent, by volume. In areas that have not been limed, reaction is moderately acid or slightly acid.

Tuller Series

The Tuller series consists of shallow, poorly drained soils on uplands. These soils formed in a thin mantle of glacial till overlying sandstone, siltstone, and shale bedrock. Slopes range from 1 to 8 percent.

Tuller soils are commonly adjacent to moderately deep, somewhat poorly drained Greene soils in areas where the glacial till is thicker over bedrock. They are also commonly adjacent to shallow, somewhat excessively drained Arnot soils in areas where the water table is deeper. Moderately deep, well drained Lordstown soils and well drained Oquaga soils are nearby in areas where the depth to bedrock is greater. Very deep, well drained Bath and Lackawanna soils and moderately well drained Mardin and Wellsboro soils are nearby in glacial till uplands and have a firm or very firm fragipan subsoil. Long, narrow areas of rock outcrops are also near the Tuller soils in a few places.

Typical pedon of Tuller channery silt loam, in an area of Greene-Tuller complex, 1 to 8 percent slopes; in the Town of Otsego; 2,500 feet north of the intersection of Keys Road and County Route 28 and 300 feet west of County Route 28, in an old field (lat. 42°45'25" N; long. 74°55'45" W.)

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) channery silt loam, light brownish gray (10YR 6/2) dry; few fine distinct dark yellowish brown (10YR 4/4) and few fine distinct dark brown (7.5YR 3/2) mottles; moderate medium granular structure; very friable; many fine and medium roots; 15 percent rock fragments; moderately acid; clear smooth boundary.

Bg—8 to 14 inches; dark grayish brown (2.5Y 4/2) channery silt loam; many fine prominent yellowish brown (10YR 5/6), many fine prominent brown (7.5YR 5/4), and few medium distinct light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable; few fine roots; many fine and medium vesicular pores; 30 percent rock fragments; strongly acid; abrupt smooth boundary.

2R—14 inches; dark gray, horizontally bedded, massive sandstone and fractured shale bedrock.

The thickness of the solum and depth to lithic contact range from 10 to 20 inches. Rock fragments are dominantly flat. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer and from 15 to 35 percent, by weighted average, throughout the soil. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid throughout the soil.

The A or Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is loam or silt loam. Structure is weak or moderate, fine or medium granular. Consistence is very friable or friable.

In forested areas, many pedons have an Oa or Oe horizon that is 1 to 3 inches thick and an A horizon that is 2 to 4 inches thick.

The B horizon dominantly has hue of 5YR to 5Y, value of 4 to 6, and chroma of 2 or 3. It has few to many mottles and faces of peds with chroma of 2 or less. The texture of the fine-earth fraction is silt loam, loam, or very fine sandy loam. Structure is weak or moderate, medium and fine subangular blocky; moderate, medium prismatic; or platy. Consistence is friable or firm.

Some pedons have a thin, mottled, gray, coarser textured C horizon.

The underlying 2R bedrock layer ranges from massive sandstone to interbedded sandstone, siltstone, and shale. It is reddish, olive, or gray.

Tunkhannock Series

The Tunkhannock series consists of very deep, well drained soils on glacial outwash plains, kames, and eskers. These soils formed in reddish, water-sorted, gravelly outwash and inwash deposits. Slopes range from 3 to 50 percent.

Tunkhannock soils are commonly adjacent to well drained Valois soils, which are along valley walls. Also commonly adjacent are well drained Trestle soils and moderately well drained Deposit soils on nearby flood plains.

Typical pedon of Tunkhannock gravelly loam, 8 to 15 percent slopes; in the town of

Butternuts; 700 feet south of County Route 8 and 1,200 feet west of Coon Road, in a meadow (lat. 42°29’07” N.; long. 75°15’57” W.).

Ap—0 to 7 inches; dark brown (7.5YR 3/2) gravelly loam, pinkish gray (7.5YR 6/2) dry; weak fine granular structure; very friable; many fine and few medium roots; 20 percent rock fragments; strongly acid; clear smooth boundary.

Bw1—7 to 17 inches; dark brown (7.5YR 4/4) very gravelly loam; weak fine granular structure; friable; common fine and medium roots; 35 percent rock fragments; strongly acid; gradual wavy boundary.

Bw2—17 to 33 inches; brown (7.5YR 5/4) very gravelly loam; weak medium subangular blocky structure; friable; few fine and medium roots; 40 percent rock fragments; very strongly acid; gradual wavy boundary.

2C—33 to 72 inches; dark brown (7.5YR 4/2) extremely gravelly sandy loam with thin strata of silt; single grain; loose; 65 percent rock fragments; strongly acid.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 15 to 60 percent in the subsoil; and from 40 to 80 percent in the substratum. In areas that have not been limed, reaction ranges from extremely acid to moderately acid throughout the soil.

The Ap horizon has hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, loam, or sandy loam.

Undisturbed pedons have a thin A horizon.

Some pedons have an E horizon, and some have a BA horizon.

The B horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6. Chroma of 5 or 6 is only in the upper part of the horizon. The texture of the fine-earth fraction ranges from silt loam to sandy loam. The content of sand that is coarser than very fine averages less than 50 percent.

The C or 2C horizon has hue of 2.5YR to 10YR. The texture of the fine-earth fraction is sandy loam, loamy sand, or sand.

Some pedons have stratified silt and clay below a depth of 60 inches.

Udifluvents

Udifluvents consist of very deep, somewhat excessively drained to moderately well drained alluvial soils that formed in recent stream and river deposits. These soils are along streams and rivers and are subject to frequent flooding. Slopes range from 0 to 3 percent.

Udifluvents are in a complex with the very poorly drained to somewhat poorly drained Fluvaquents. Udifluvents commonly are near Hamplain, Otego, and Wayland soils, all of which formed in more uniform alluvial deposits. Trestle soils are nearby in the slightly higher and broader positions on the same landform as the Udifluvents. Chenango, Scio, and Unadilla soils are nearby on higher, adjacent landforms.

Because the soil characteristics of Udifluvents are highly variable, a typical pedon is not described. The Udifluvents have little or no profile development. The depth to bedrock is generally more than 60 inches, except for a few areas where the stream has incised itself down to the bedrock valley floor and removed most of the alluvial deposits.

The surface layer has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam, with or without gravelly analogs. Structure is granular, or the horizon is loose. The content of rock fragments ranges from 0 to 50 percent, by volume. Reaction ranges from strongly acid to mildly alkaline. The thickness of the surface layer is variable but commonly ranges from 2 to 13 inches.

The substratum has hue of 5YR to 5Y, value of 3 to 5, and chroma of 3 to 6. In some pedons, it has some mottles below a depth of 22 inches. The texture of the fine-earth fraction ranges from silt loam to sandy loam. The substratum typically includes the gravelly or cobbly analogs of those textures. In some pedons, the substratum has thin subhorizons with textures as coarse as sand. Structure is weak, or the horizon is massive. The content of rock fragments ranges from 5 to 70 percent, by volume. Reaction ranges from strongly acid to moderately alkaline.

Udorthents

Udorthents consist of moderately deep to very deep, somewhat excessively drained to moderately well drained soil material in areas that have been altered by construction operations, cuts and fills, or landfills. The soil material is typically derived from glacial till, glacial outwash, old alluvium, or bedrock. Slopes dominantly range from 0 to 15 percent, but a few small areas have short, steep slopes up to 35 percent.

In the major river valleys, Udorthents are commonly adjacent to very deep, well drained Valois soils, well drained Chenango soils, well drained Hamplain soils, moderately well drained Otego soils, well drained Unadilla soils, and moderately well drained Scio soils. In upland areas, the Udorthents are near well drained Lordstown, Bath, and Lackawanna soils.

Because Udorthents are so variable, a typical pedon is not described. The soil material in this unit typically has little or no soil profile development.

The thickness of the solum ranges from 0 to 20 inches. The content of rock fragments ranges from 0 to 60 percent, by volume, throughout the soil. The depth to bedrock is typically more than 72 inches but is as shallow as 20 inches in a few areas.

Udorthents that have been smoothed typically have a surface layer that has hue of 10YR, value of 3 to 6, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, or sandy loam. The content of rock fragments ranges from 0 to 60 percent. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid. In some areas that have been reclaimed or smoothed and have been limed, reaction is commonly near neutral in the upper part.

The substratum is extremely variable in texture and color, depending upon the fill material. It has hue of 5YR to 5Y and value and chroma of 1 to 6. In areas with a refuse substratum, the texture of the fine-earth fraction of the cover material ranges from clay and silty clay to sandy loam. In areas that have been smoothed or cut and filled, the texture of the fine-earth fraction is commonly sandy loam or loam but ranges from silt loam to sand. Consistence is typically friable or loose but ranges to very firm in some glacial till uplands. Some areas have debris, human refuse, and such in the underlying material.

The 2R layer, which occurs in a few areas of the Udorthents map unit, consists of hard siltstone and shale. Generally, the depth to bedrock is more than 72 inches.

Unadilla Series

The Unadilla series consists of very deep, well drained soils that formed in water-deposited silts and very fine sands on alluvial terraces and glacial lake plains. Slopes range from 0 to 6 percent.

Unadilla soils are commonly adjacent to moderately well drained Scio soils in slightly lower positions on the same landforms. Also commonly adjacent are well drained Chenango soils on slightly higher, water-sorted glacial outwash deposits and well drained Hamplain soils and moderately well drained Otego soils on flood plains.

Typical pedon of Unadilla silt loam, 0 to 2 percent slopes; in the town of Oneonta;

3,100 feet southwest of the intersection of New York Route 205 and the road into the sewage treatment plant and 500 feet southeast of Interstate 88, in a cornfield (lat. 42°26’00” N.; long. 75°06’26” W.).

Ap1—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; few fine roots; neutral (limed); abrupt smooth boundary.

Ap2—9 to 12 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium and thin platy structure parting to weak fine and medium granular; friable; few fine roots; neutral (limed); abrupt smooth boundary.

Bw1—12 to 22 inches; yellowish brown (10YR 5/4) silt loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; many fine vesicular and few fine and common medium tubular pores; neutral (limed); gradual wavy boundary.

Bw2—22 to 41 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; weak fine and medium subangular blocky structure; friable; many fine vesicular and few fine and common medium tubular pores; strongly acid; gradual wavy boundary.

C1—41 to 55 inches; brown (10YR 5/3) and dark brown (7.5YR 4/4) silt loam with thin strata of very fine sandy loam; common fine and medium distinct light brownish gray (2.5Y 6/2) and few fine distinct strong brown (7.5YR 5/6) mottles; massive; friable; common fine vesicular and few fine tubular pores; strongly acid; clear smooth boundary.

C2—55 to 72 inches; grayish brown (2.5Y 5/2) very fine sandy loam; common fine and medium prominent yellowish brown (10YR 5/6) mottles; massive; very friable; strongly acid.

The thickness of the solum ranges from 20 to 50 inches. The depth to bedrock is more than 60 inches, and the depth to strongly contrasting materials is more than 40 inches. The content of rock fragments ranges from 0 to 5 percent in the solum and from 0 to 60 percent in the 2C horizon. The soil has mottles below a depth of 24 inches in some pedons.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is weak or moderate granular or platy. Consistence ranges from very friable to firm. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid. Some pedons have a thin, dark A horizon.

In some pedons, a thin E horizon is directly above the B horizon.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 4 to 8. The texture of the fine-earth fraction is silt loam or very fine sandy loam. In some pedons, the horizon has lenses of loamy very fine sand or fine sand. Structure is weak or moderate subangular blocky or prismatic, or the horizon is massive. Consistence ranges from very friable to firm. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The C or 2C horizons have hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, very fine sandy loam, or loamy fine sand. Below a depth of 40 inches, texture can range from fine sandy loam to very gravelly sand. The C horizon is massive, or it has weak or moderate platy structure. Consistence ranges from loose to firm. Reaction is strongly acid or moderately acid.

Valois Series

The Valois series consists of very deep, well drained soils in valleys, on toeslopes, and along the sides of valleys. These soils formed in glacial till derived from sandstone, siltstone, and shale. Slopes range from 3 to 55 percent.

Valois soils are commonly adjacent to well drained Bath soils and moderately well drained Mardin soils, which have a firm subsoil. Lordstown soils are nearby on higher bedrock-controlled landforms. Well drained Chenango soils are nearby on lower landforms in outwash areas.

Typical pedon of Valois gravelly loam, 8 to 15 percent slopes; in the town of Middlefield; 200 feet north of the intersection of New York Route 166 and County Route 52 and 100 feet east of County Route 52, in a field (lat. 42°40'37" N.; long. 74°52'21" W.).

Ap1—0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly loam, grayish brown (10YR 5/2) dry; moderate medium and fine granular structure; friable; many fine and medium roots; 20 percent rock fragments; strongly acid; clear smooth boundary.

Ap2—3 to 10 inches; dark brown (7.5YR 4/2) gravelly silt loam, light brown (7.5YR 6/4) dry; moderate medium and fine granular structure; friable; many fine roots; 25 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—10 to 14 inches; dark brown (10YR 4/3) gravelly silt loam; moderate medium and fine granular structure; friable; few fine roots; 30 percent rock fragments; strongly acid; clear irregular boundary.

Bw2—14 to 26 inches; dark brown (7.5YR 4/4) gravelly silt loam; weak medium and fine subangular blocky structure; friable; few fine roots; 30 percent rock fragments; strongly acid; clear wavy boundary.

Bw3—26 to 41 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak medium and fine subangular blocky structure parting to weak fine granular; friable; few fine roots; 30 percent rock fragments; moderately acid; clear wavy boundary.

2C—41 to 72 inches; dark grayish brown (10YR 4/2) very gravelly loam; massive; loose; very few fine roots; 55 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 30 to 70 inches. The depth to bedrock is more than 60 inches. The content of rock fragments, including up to 5 percent larger than 3 inches in diameter, ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer in the upper part of the solum; and from 20 to 35 percent in the lower part of the solum. In the substratum, the content of rock fragments ranges from 35 to 70 percent. Some pedons have up to 45 percent rock fragments in thin subhorizons of the subsoil (Bw horizon).

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam. Structure is weak or moderate granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to moderately acid.

Some undisturbed pedons have a thin E horizon.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam. Structure is weak or moderate subangular blocky or granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to moderately acid.

Some pedons have a BC horizon. The BC horizon has a range in hue and value similar to that of the B horizon but has chroma of 2 and platy structure.

The 2C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction is loam or fine sandy loam with thin lenses or strata of loamy sand below a depth of about 40 inches. Structure is platy, or the horizon is massive. Consistence is friable or firm. Reaction ranges from very strongly acid to neutral.

Correlation note: Map unit VcB, Valois fine gravelly silt loam, 2 to 6 percent slopes, is correlated as Valois (ablation till). In some areas, however, it is associated with fluvial and lacustrine deposits.

Vly Series

The Vly series consists of moderately deep, well drained soils that formed in a thin mantle of reddish glacial till over sandstone, siltstone, and shale in bedrock-controlled uplands at elevations over 1,750 feet. Slopes range from 1 to 45 percent.

Vly soils are commonly adjacent to shallow, somewhat excessively drained Hawksnest soils in areas where the depth to bedrock is less than 20 inches. They are also commonly adjacent to very deep, well drained Lewbeach soils and moderately well drained Willowemoc soils, which have firm or very firm (fragipan) subsoil layers, in areas where the glacial till is thicker over bedrock.

Typical pedon of Vly channery silt loam, 8 to 15 percent slopes, rocky; in the town of Otego; 2,200 feet north of the intersection of Hines Road and County Route 8 and 1,000 feet west of Hines Road, in a hayfield (lat. 42°29’39” N.; long. 75°09’59” W.).

Ap—0 to 5 inches; dark reddish brown (5YR 3/3) channery silt loam, light reddish brown (5YR 6/3) dry; moderate fine and medium granular structure; friable; many very fine and fine roots; 25 percent rock fragments; moderately acid (limed); clear smooth boundary.

Bw1—5 to 9 inches; dark reddish brown (5YR 3/4) very channery silt loam; moderate fine and medium subangular blocky structure; friable; few very fine and common fine roots; few fine vesicular pores; 35 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—9 to 18 inches; dark reddish brown (2.5YR 3/4) very gravelly silt loam; moderate medium and coarse subangular blocky structure; friable; many fine roots; common fine and medium vesicular and few medium tubular pores; 45 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw3—18 to 23 inches; dark reddish brown (2.5YR 3/4) very channery silt loam; common coarse prominent brown (10YR 5/3) and few fine prominent strong brown (7.5YR 5/8) mottles in the lower part; weak fine subangular blocky structure with some weak thin platy structure in places; friable; few very fine and fine roots; 35 percent rock fragments; moderately acid; abrupt wavy boundary.

2R—23 inches; weak red (2.5YR 4/2), massive, hard siltstone bedrock.

The thickness of the solum ranges from 20 to 40 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 20 to 35 percent in the surface layer and from 35 to 60 percent in the remainder of the soil. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid throughout the soil. (See correlation note below.)

The A or Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam. Structure is weak or moderate, fine or medium granular. Consistence is very friable or friable.

The Bw horizon has hue of 2.5YR or 5YR, value of 3 or 4, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or loam. Structure is dominantly weak to moderate granular or subangular blocky. In some pedons, however, it is weak platy in the lower part above the bedrock. Consistence is very friable or friable.

The C horizon, where present, has hue of 2.5YR or 5YR, value of 3 or 4, and chroma of 3 or 4. The texture of the fine-earth fraction is silt loam or loam. In some pedons, the horizon has weak platy structure above the bedrock. Consistence is very friable or friable.

The 2R layer is massive, reddish shale, siltstone, or sandstone that is commonly very fractured in the upper part.

Correlation note: The typifying pedon for Vly (limed) is moderately acid throughout, which is higher pH than the very strongly acid or strongly acid reaction that is definitive for the series. This difference does not significantly alter interpretations for use and management.

Volusia Series

The Volusia series consists of very deep, somewhat poorly drained soils on uplands. These soils formed in glacial till derived from gray or brownish sandstone, siltstone, or shale. They have a dense fragipan subsoil starting at a depth of 10 to 20 inches. Slopes range from 0 to 15 percent.

Volusia soils are commonly adjacent to moderately well drained Mardin soils and poorly drained Chippewa soils. Well drained Bath soils and moderately deep, well drained Lordstown soils are nearby on higher landforms. Somewhat poorly drained, moderately deep Greene soils are nearby on flat benches and in depressional areas of bedrock-controlled landforms.

Typical pedon of Volusia silt loam, 3 to 8 percent slopes; in the town of Pittsfield; 0.75 mile east of the intersection of Otsego County Route 13 and Mooretown Road and 225 feet north of Mooretown Road, in an abandoned field (lat. 42°37’04” N.; long. 75°17’52” W.).

Ap—0 to 6 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; many fine and few medium roots; 10 percent rock fragments; moderately acid; clear wavy boundary.

Eg—6 to 10 inches; gray (5Y 6/1) channery silt loam; common medium prominent yellowish red (5YR 5/8) and common fine prominent yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; many fine and few medium roots; common fine vesicular pores; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bw—10 to 19 inches; dark grayish brown (2.5Y 4/2) and olive brown (2.5Y 4/4) channery silt loam; few coarse prominent strong brown (7.5YR 5/6), common fine prominent yellowish brown (10YR 5/6), and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine vesicular and few fine and medium tubular pores; 20 percent rock fragments; moderately acid; clear smooth boundary.

Bx1—19 to 32 inches; olive (5Y 4/3) channery silt loam; few medium prominent gray (N 6/0), common coarse prominent yellowish brown (10YR 5/4), and many medium prominent strong brown (7.5YR 5/8) mottles; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 31 to 35 inches apart, and have gray (5Y 5/1) interiors and strong brown (7.5YR 5/6) edges; firm and brittle; few fine roots along faces of prisms; few very fine and fine vesicular pores; 20 percent rock fragments; slightly acid; gradual wavy boundary.

Bx2—32 to 42 inches; olive gray (5Y 5/2) and dark grayish brown (2.5Y 4/2) very channery silt loam; common fine and medium prominent strong brown (7.5YR 5/6) and few medium distinct gray (N 6/0) mottles; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 31 to 35 inches apart, and have gray (5Y 5/1) interiors and strong brown (7.5YR 5/6) edges; very firm and brittle; common fine and few medium vesicular pores; common distinct brown (10YR 5/3) clay films in some pores and on some vertical faces of peds; 40 percent rock fragments, including 10 percent larger than 3 inches in diameter; slightly acid; diffuse wavy boundary.

Cd—42 to 85 inches; dark grayish brown (2.5Y 4/2) and olive brown (2.5Y 4/4) very channery loam; few fine prominent strong brown (7.5YR 5/6) mottles; massive; firm; common fine and few medium vesicular pores; common distinct grayish brown (2.5Y 5/2) clay films on rock fragments and on some vertical faces of peds; 45 percent rock fragments, including 10 percent larger than 3 inches in diameter; slightly acid; clear broken boundary.

2R—85 inches; dark gray (N 4/0), very fractured shale and siltstone bedrock.

The thickness of the solum ranges from 40 to 72 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 10 to 20 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer; from 5 to 30 percent, by volume, below the surface layer to the top of the fragipan; from 5 to 40 percent in the upper part of the fragipan; and up to 50 percent in the lower part of the fragipan. The content of rock fragments in the substratum ranges from 10 to 60 percent, by volume.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid. Some pedons have an A horizon that ranges from 2 to 5 inches in thickness.

The E horizon, where present, has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It has common or many distinct or prominent mottles with chroma higher than that of the matrix. The texture of the fine-earth fraction is silt loam or loam, with a content of clay between 18 and 27 percent. Structure is subangular blocky or platy, or the horizon is massive. Consistence is friable or firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Bw or Bg horizon, where present, has hue of 10YR to 5Y, value of 3 or 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam or loam, and the content of clay ranges from 18 to 27 percent.

The Bx horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It has few or common, faint or distinct mottles. The texture of the fine-earth fraction is silt loam, loam, clay loam, or silty clay loam. Structure is weak to strong, very coarse prismatic. Clay films coat many pore walls and are on some vertical faces of peds. Consistence is firm or very firm. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Cd horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from loam to silty clay loam. The horizon is massive, or it has lenticular platy structure. Consistence is firm or very firm. Reaction ranges from moderately acid to mildly alkaline below a depth of 60 inches.

Wakeville Series

The Wakeville series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in silty alluvium. Slopes range from 0 to 3 percent.

Wakeville soils are commonly adjacent to well drained Hamplain soils and moderately well drained Otego soils on the same landform. Poorly drained Wayland soils and Fluvaquents and Udifluvents are nearby on flood plains that are more frequently flooded. Moderately well drained Scio soils and somewhat poorly drained Raynham soils are on adjacent higher lacustrine or old alluvial terraces. Moderately well drained Deposit soils and well drained Trestle soils are on some adjacent gravelly low terraces and higher portions of flood plains. Moderately well drained Castile soils and somewhat poorly drained Red Hook soils are nearby on glacial outwash terraces.

Typical pedon of Wakeville silt loam; in the town of Otego; 2,100 feet east of the iron railroad bridge across the Susquehanna River, 150 feet north of the railroad tracks, and 400 feet south of the Susquehanna River, in a hayfield (lat. 42°23’55” N.; long. 75°09’30” W.).

Ap1—0 to 3 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; very friable; many very fine and fine roots; slightly acid (limed); clear smooth boundary.

Ap2—3 to 7 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine granular; very friable; many very fine and fine roots; slightly acid (limed); gradual smooth boundary.

Bg1—7 to 16 inches; dark gray (5Y 4/1) silt loam; common coarse faint olive gray (5Y 4/2) and common fine prominent dark yellowish brown (10YR 4/4) mottles; weak medium and coarse subangular blocky structure; friable; common fine roots; common very fine and fine vesicular pores; slightly acid; gradual smooth boundary.

Bg2—16 to 29 inches; gray (5Y 5/1) silt loam; many (more than 40 percent) fine prominent yellowish brown (10YR 5/6) and common medium distinct grayish brown (2.5Y 5/2) mottles; weak fine subangular blocky structure; friable; few fine roots; common fine and few very fine vesicular pores; moderately acid; diffuse smooth boundary.

Cg1—29 to 40 inches; gray (5Y 5/1) silt loam; common fine and medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; common very fine vesicular pores; moderately acid; diffuse smooth boundary.

Cg2—40 to 72 inches; grayish brown (2.5Y 5/2) silt loam; common fine prominent strong brown (7.5YR 4/6) mottles; massive; friable; few medium vesicular pores; moderately acid.

The thickness of the solum ranges from 24 to 45 inches. The depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 5 percent, by volume, in the surface layer and subsoil and from 0 to 20 percent in the substratum. Reaction ranges from moderately acid to neutral to a depth of 40 inches and from moderately acid to moderately alkaline below 40 inches.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or very fine sandy loam.

The Bw horizon, where present, has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is fine or medium subangular blocky or granular.

The Bg horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2. The texture of the fine-earth fraction is silt loam or very fine sandy loam. Structure is subangular blocky or granular.

The C or Cg horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 to 4. The texture of the fine-earth fraction is silt loam or very fine sandy loam to a depth of 40 inches and ranges to fine sandy loam below 40 inches. Some pedons have thin strata of fine sand or sand below 40 inches. Structure is platy, or the horizon is massive. Consistence ranges from very friable to firm.

Wassaic Series

The Wassaic series consists of moderately deep, well drained soils that formed in a thin mantle of glacial till over limestone bedrock in glaciated uplands in the northern part of the county. Slopes range from 0 to 25 percent but are generally less than 15 percent.

Wassaic soils are commonly adjacent to shallow, somewhat excessively drained Farmington soils in areas where the bedrock is closer to the surface. Very deep, well drained Honeoye and Lansing soils and moderately well drained Lima and Conesus soils are commonly adjacent in areas where the glacial till is deeper over the bedrock.

Typical pedon of Wassaic silt loam, 3 to 8 percent slopes; in the town of Springfield; 3,200 feet north of the intersection of U.S. Route 20 and Van Alstyne Road and 600 feet northwest of Van Alstyne Road, in a hayfield (lat. 42°50’32” N.; long. 74°49’55” W.).

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak fine and medium granular structure; friable; common fine and few medium roots; 10 percent rock fragments; moderately acid; abrupt smooth boundary.

BA—10 to 16 inches; dark brown (10YR 4/3) silt loam; weak fine and medium subangular blocky structure; friable; common distinct dark grayish brown

(10YR 4/2) clay films on faces of some peds; common fine roots; common fine and few medium vesicular pores; 10 percent rock fragments; slightly acid; clear wavy boundary.

B/E—16 to 21 inches; gravelly silt loam, 70 percent yellowish brown (10YR 5/4) B material and 30 percent brown (10YR 5/3) E material, light gray (2.5Y 7/2) dry; weak fine and medium subangular blocky structure; friable; few fine roots; common fine and few medium vesicular pores containing common distinct dark grayish brown (10YR 4/2) clay films; 15 percent rock fragments; neutral; clear wavy boundary.

Bt—21 to 27 inches; dark brown (10YR 4/3) cobbly silt loam; moderate medium and coarse subangular blocky structure; friable; continuous prominent dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; few fine roots; few fine and very fine vesicular pores; 20 percent rock fragments; mildly alkaline; clear wavy boundary.

CB—27 to 31 inches; dark yellowish brown (10YR 4/4) cobbly loam; weak coarse subangular blocky structure; friable; few fine roots; few fine vesicular pores; 25 percent rock fragments; violently effervescent; mildly alkaline; abrupt smooth boundary.

2R—31 inches; gray (N 5/0) limestone bedrock.

The thickness of the solum ranges from 20 to 36 inches. The depth to bedrock ranges from 20 to 40 inches. The content of rock fragments, mainly pebbles, cobbles, and some stones, ranges from 0 to 15 percent, by volume, in the surface and subsurface layers and from 3 to 35 percent in the subsoil and substratum.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. The texture of the fine-earth fraction is sandy loam, loam, or silt loam. Structure is weak or moderate granular. Reaction ranges from moderately acid to neutral. In undisturbed areas, some pedons have an A horizon that is 3 to 5 inches thick.

Some pedons have a BA horizon below the Ap horizon.

The E horizon, where present, has hue of 5YR to 2.5Y, value of 5 or 6, and chroma of 2 to 4. It has a range in texture similar to that of the Ap horizon. Material from the E horizon interfingers into the B horizon to depths ranging from 2 to 10 inches, forming a B/E horizon. Some pedons have a thin E/B horizon above the B/E horizon. The B/E and E/B horizons have properties similar to those of the E and Bt horizons, respectively.

The Bt horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. In some pedons, it has higher-chroma mottles. The texture of the fine-earth fraction ranges from loam to silty clay loam. Structure is prismatic or subangular blocky. Reaction ranges from moderately acid to neutral. Clay films are common.

The C horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. The texture of the fine-earth fraction ranges from fine sandy loam to silty clay loam. Reaction ranges from moderately acid to mildly alkaline. Some pedons have a CB horizon above the bedrock.

Wayland Series

The Wayland series consists of very deep, poorly drained soils that formed in recent silty alluvium on flood plains. Slopes range from 0 to 2 percent.

Wayland soils are commonly adjacent to somewhat poorly drained Wakeville soils and moderately well drained Otego soils on the same landform. Fluvaquents and Udifluvents are nearby in areas of the flood plain where flooding is more frequent and the deposits have more variable drainage and texture. Canandaigua and Palms soils are nearby in low lying areas that are not prone to flooding.

Typical pedon of Wayland silt loam; in the town of Edmeston; 1,500 feet north of the intersection of County Route 18 and County Route 20, about 800 feet west of County Route 18, and 200 feet east of the Unadilla River, in a brushy backwater channel (lat. 42°47’07” N.; long. 75°15’01” W.).

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium and coarse granular structure; very friable, nonsticky and nonplastic; common fine and few medium roots; neutral; abrupt smooth boundary.

Cg1—9 to 12 inches; greenish gray (5BG 6/1) silt loam; few medium prominent dark yellowish brown (10YR 4/4) mottles and root stains; massive; friable, nonsticky and nonplastic; few fine roots; neutral; clear smooth boundary.

Cg2—12 to 24 inches; very dark grayish brown (2.5Y 3/2) silt loam; few medium prominent dark yellowish brown (10YR 4/4) mottles; massive; friable, nonsticky and slightly plastic; few fine roots; neutral; gradual smooth boundary.

Cg3—24 to 36 inches; greenish gray (5BG 5/1) silty clay loam; common coarse prominent gray (N 6/0) and few medium and coarse prominent reddish brown (5YR 4/4) mottles; massive; firm, slightly sticky and slightly plastic; neutral; gradual smooth boundary.

2Cg1—36 to 59 inches; greenish gray (5BG 5/1) stratified silty clay loam; common coarse prominent gray (N 6/0) and few medium and coarse prominent reddish brown (5YR 4/4) mottles; massive; firm, sticky and plastic; 1 percent rock fragments; neutral; gradual smooth boundary.

2Cg2—59 to 72 inches; greenish gray (5BG 5/1) stratified silty clay loam; common coarse prominent gray (N 6/0) and few medium and coarse prominent reddish brown (5YR 4/4) mottles; massive; firm, sticky and plastic; 1 percent rock fragments; slightly effervescent; mildly alkaline.

The thickness of silty deposits over stratified materials ranges from 36 to more than 60 inches. The depth to carbonates ranges from 24 to 60 inches. The depth to bedrock is more than 60 inches. The soil generally has no rock fragments. In some pedons, however, the content of rock fragments ranges up to 5 percent, by volume, within a depth of 36 inches and up to 30 percent below 36 inches.

The A or Ap horizon has hue of 10YR or 2.5Y, or it is neutral. It has value of 2 or 3 and chroma of 0 to 2. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is moderate or strong, fine to coarse granular or subangular blocky. Reaction ranges from strongly acid to neutral.

Some pedons have a Bg horizon. It is up to 24 inches thick and has a range in color and a range in texture of the fine-earth fraction similar to those of the C horizon. In some pedons, this horizon is in place of the upper part of the C horizon. Structure is weak or moderate, fine or medium subangular blocky; or it is weak or moderate, coarse prismatic. Reaction ranges from strongly acid to neutral.

The Cg horizon has hue of 7.5YR to 5Y or 5BG, value of 3 to 6, and chroma of 1 or 2, or it is neutral. It typically has high-chroma mottles. The texture of the fine-earth fraction is silt loam or silty clay loam. Structure is platy, or the horizon is massive. Consistence is friable or firm. Reaction ranges from strongly acid to moderately alkaline.

The 2Cg horizon has the same range in color as the Cg horizon. The texture of the fine-earth fraction ranges from silty clay loam or silt loam to fine sandy loam. Reaction ranges from moderately acid to moderately alkaline.

Wellsboro Series

The Wellsboro series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till derived from reddish sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 20 to 26 inches. Slopes range from 3 to 25 percent.

Wellsboro soils are commonly adjacent to well drained Lackawanna soils, which are on slightly higher landforms, and to somewhat poorly drained Morris soils, which are in concave landform positions. Moderately deep, well drained Oquaga soils and shallow, somewhat excessively drained Arnot soils are nearby on slightly higher landforms that are bedrock controlled.

Typical pedon of Wellsboro channery silt loam, 15 to 25 percent slopes; in the town of Oneonta; 2,100 feet south of the intersection of New York State Route 28 and Township Road and 2,650 feet southeast of the intersection of New York State Route 28 and County Route 48, in an abandoned field (lat. 42°26’10” N.; long. 75°03’55” W.).

Ap—0 to 5 inches; dark brown (10YR 4/3) channery silt loam, pale brown (10YR 6/3) dry; strong medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bw1—5 to 15 inches; reddish brown (2.5YR 4/4) channery silt loam; moderate fine subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragments; moderately acid; clear smooth boundary.

Bw2—15 to 23 inches; reddish brown (5YR 4/3) channery silt loam; many coarse prominent strong brown (7.5YR 5/6) and common fine prominent grayish brown (2.5Y 5/2) mottles; moderate fine subangular blocky structure; friable; few fine roots; common fine and medium tubular pores; 20 percent rock fragments; moderately acid; abrupt smooth boundary.

Bx1—23 to 40 inches; reddish brown (2.5YR 4/4) channery loam; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1 inch wide, are 18 to 24 inches apart, and have gray (10YR 6/1) interiors and yellowish brown (10YR 5/6) edges; firm and brittle; few fine roots along faces of prisms; many fine tubular and vesicular pores containing common distinct dark red (2.5YR 3/6) silt linings; 30 percent rock fragments; moderately acid; gradual wavy boundary.

Bx2—40 to 70 inches; dark reddish brown (2.5YR 3/4) very channery loam; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are $^1/_2$ to 1 inch wide, are 24 inches apart, and have gray (10YR 6/1) interiors and yellowish brown (10YR 5/6) edges; firm and brittle; common fine vesicular pores; 45 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 40 to 70 inches. The depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 20 to 26 inches. The content of rock fragments ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 40 percent below the surface layer to the top of the fragipan; and from 15 to 45 percent in the fragipan and substratum. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid throughout.

The Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam or loam.

Some pedons in wooded areas have an A horizon with hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 or 2. An E horizon may also be present. It has hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 or 3. The texture of the fine-earth fraction in the A and E horizons is silt loam, loam, or fine sandy loam.

The Bw horizon to a depth of 20 inches has hue of 2.5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. It has both high- and low-chroma mottles. The Bw horizon below 20 inches includes subhorizons that have chroma of 2. The texture of the fine-earth fraction is silt loam or loam.

The E´ horizon, where present, is silt loam, loam, or fine sandy loam.

The Bx horizon has hue of 10R to 5YR, value of 3 to 5, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, loam, or sandy loam.

The C horizon, where present, has a range in color and texture similar to that of the Bx horizon.

Willdin Series

The Willdin series consists of very deep, moderately well drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from brownish or gray sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 16 to 26 inches. Slopes range from 3 to 25 percent.

Willdin soils are commonly adjacent to well drained Lewbath soils and somewhat poorly drained Ontusia soils. Moderately deep, well drained Mongaup soils and shallow, somewhat excessively drained Hawksnest soils are nearby on higher bedrock-controlled landforms where the glacial till is thinner over bedrock.

Typical pedon of Willdin channery silt loam, 3 to 8 percent slopes; in the town of Middlefield; 500 feet west of the intersection of Shipway Road and Hayes Road and 100 feet south of Hayes Road, in a hayfield (lat. 42°47'22" N.; long. 74°48'34" W.).

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) channery silt loam; moderate fine and medium granular structure; very friable; many fine and few medium and coarse roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw—7 to 14 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine and medium subangular blocky structure; very friable; common fine and few medium roots; common fine and few medium vesicular and tubular pores; 25 percent rock fragments; moderately acid; clear smooth boundary.

E—14 to 17 inches; brown (10YR 5/3) channery silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak thin and medium platy structure; friable; few fine and medium roots; common fine and medium vesicular pores; 25 percent rock fragments; moderately acid; abrupt smooth boundary.

Bx1—17 to 22 inches; dark brown (10YR 3/3) channery silt loam; moderate very coarse prismatic structure parting to weak coarse subangular blocky; streaks separating the prisms are $^{1}/_{4}$ to $1^{1}/_{2}$ inches wide, are 16 to 28 inches apart, and have grayish brown (10YR 5/2) interiors and dark brown (7.5YR 4/4) edges; firm and brittle; few fine roots; common fine vesicular and few fine tubular pores; common faint clay films in pores and on some vertical faces of peds; 30 percent rock fragments; strongly acid; clear wavy boundary.

Bx2—22 to 27 inches; dark brown (10YR 3/3) channery silt loam; common fine distinct yellowish brown (10YR 5/4 and 5/6) mottles in the lower part; moderate very coarse prismatic structure parting to weak coarse subangular blocky; streaks separating the prisms are $^{1}/_{4}$ to $1^{1}/_{2}$ inches wide, are 16 to 28 inches apart, and have gray (10YR 5/1) interiors and dark brown (7.5YR 4/4) edges; firm and brittle; few fine roots; common fine vesicular and few fine tubular pores; common faint clay films in pores and on some vertical faces of peds; 30 percent rock fragments; strongly acid; clear wavy boundary.

Bx3—27 to 44 inches; grayish brown (10YR 5/2) and dark brown (10YR 4/3) channery silt loam; common fine faint yellowish brown (10YR 5/4) and few fine prominent strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to weak coarse subangular blocky; streaks that separate prisms are $^{1}/_{4}$ to $1^{1}/_{2}$ inches wide, are 16 to 29 inches apart, and have gray (10YR 5/1) interiors and dark brown (7.5YR 4/4) edges; very firm and brittle; few fine roots along faces of prisms; many fine vesicular and few fine tubular pores; many faint dark grayish brown (2.5Y 4/2) clay films in pores and on some faces of peds; 25 percent rock fragments; moderately acid; gradual wavy boundary.

Cd—44 to 80 inches; dark brown (10YR 4/3) channery silt loam; common coarse distinct light olive brown (2.5Y 5/4) mottles; weak very coarse prismatic structure in the upper part grading to massive in the lower part, massive within the prisms; streaks that separate prisms are 1/4 to 1 1/2 inches wide, are 16 to 29 inches apart, and have gray (10YR 5/1) interiors and olive brown (2.5Y 4/4) edges; very firm; 25 percent rock fragments; moderately acid.

The thickness of the solum ranges from 38 to 70 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 16 to 26 inches. The content of rock fragments, dominantly channers and flagstones, ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer to the top of the fragipan; from 15 to 50 percent in the fragipan; and from 15 to 60 percent in the substratum. The fine-earth fraction of the Bx and C horizons has over 50 percent silt plus very fine sand. Mottles are present beginning at a depth of 12 to 24 inches.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. The texture of the fine-earth fraction is silt loam, silty clay loam, or loam. Structure is weak or moderate granular or subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from very strongly acid to moderately acid.

The E horizon, where present, is above the Bx horizon and has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 or 3. The texture of the fine-earth fraction is silt loam, fine sandy loam, or loam. In areas that have not been limed, reaction ranges from very strongly acid to slightly acid.

The Bx horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It has common or many mottles. The texture of the fine-earth fraction is silt loam or loam. Structure is coarse or very coarse prismatic with platy, blocky, or massive interiors. Consistence is firm or very firm and is brittle. Reaction ranges from very strongly acid to slightly acid.

The Cd horizon, where present, is massive or has weak prismatic structure. It has a range in color and texture similar to that of the Bx horizon. Reaction ranges from strongly acid to slightly acid.

Willowemoc Series

The Willowemoc series consists of very deep, moderately well drained soils on uplands at elevations over 1,750 feet. These soils formed in glacial till derived from reddish sandstone, siltstone, and shale. They have a dense fragipan subsoil starting at a depth of 20 to 26 inches. Slopes range from 3 to 15 percent.

Willowemoc soils are commonly adjacent to well drained Lewbeach soils, which are on slightly higher landforms, and to somewhat poorly drained Onteora soils, which are in slightly lower, concave landform positions. Moderately deep, well drained Vly soils are nearby on higher bedrock-controlled landforms where the glacial till is thinner over bedrock.

Typical pedon of Willowemoc channery silt loam, 8 to 15 percent slopes; in the town of Butternuts; 1,200 feet southeast of the intersection of Lobdell Road and Tower Road and 20 feet north of Tower Road, in a wooded area (lat. 42°27’33” N.; long. 75°14’16” W.).

Oe—0 to 2 inches; very dark gray (5YR 3/1) partially decomposed leaf litter and moss; weak very fine granular structure; very friable; many very fine and fine roots; very strongly acid; abrupt smooth boundary.

A—2 to 7 inches; dark reddish brown (5YR 3/3) channery silt loam, light reddish brown (5YR 6/3) dry; strong fine granular structure; very friable; many fine and medium and few coarse roots; 15 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—7 to 12 inches; reddish brown (5YR 4/4) channery silt loam; moderate fine and medium subangular blocky structure; friable; common fine and medium and few coarse roots; common fine vesicular pores; 15 percent rock fragments; moderately acid; clear smooth boundary.

Bw2—12 to 17 inches; reddish brown (5YR 4/3) channery silt loam; few fine faint reddish gray (5YR 5/2) mottles in the lower part; weak fine and medium subangular blocky structure; friable; few fine and medium roots; few fine vesicular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

E—17 to 25 inches; light reddish brown (5YR 6/3) channery loam; common coarse prominent yellowish red (5YR 4/6) and few medium distinct pinkish gray (7.5YR 6/2) mottles; weak medium platy structure; friable; few fine roots; few fine vesicular pores; 15 percent rock fragments; moderately acid; abrupt wavy boundary.

Bx1—25 to 37 inches; reddish brown (5YR 4/3 and 5/3) channery silt loam; few medium prominent strong brown (7.5YR 5/8) and few fine distinct pinkish gray (7.5YR 6/2) mottles; moderate very coarse prismatic structure, weak medium platy within the prisms; streaks separating the prisms are 1/2 to 1 inch wide, are 20 to 24 inches apart, and have pinkish gray (7.5YR 6/2) interiors and strong brown (7.5YR 5/6) edges; very firm and brittle; few fine roots along faces of prisms; many fine and medium vesicular pores; common faint reddish gray (5YR 5/2) clay films in pores and on some vertical faces of peds; 20 percent rock fragments, including 3 percent larger than 3 inches in diameter; moderately acid; gradual smooth boundary.

Bx2—37 to 70 inches; dark reddish brown (2.5YR 3/4) channery silt loam; few medium prominent strong brown (7.5YR 5/8) and few fine distinct pinkish gray (7.5YR 6/2) mottles; weak very coarse prismatic structure, massive within the prisms; streaks separating the prisms are 1/2 to 1 inch wide, are 20 to 24 inches apart, and have pinkish gray (7.5YR 6/2) interiors and strong brown (7.5YR 5/6) edges; very firm and brittle; few fine and many medium vesicular and tubular pores; common faint reddish gray (5YR 5/2) clay films in pores and on some vertical faces of peds; 30 percent rock fragments, including 5 percent larger than 3 inches in diameter; moderately acid.

The thickness of the solum ranges from 35 to 72 inches. The depth to bedrock is more than 60 inches. Depth to the top of the fragipan ranges from 20 to 26 inches. The content of rock fragments, dominantly channers and flagstones, ranges from 15 to 35 percent, by volume, in the surface layer; from 5 to 35 percent below the surface layer to the top of the fragipan; and from 15 to 50 percent in the fragipan and substratum. Mottles are present beginning at a depth of 12 to 24 inches.

Some pedons have an O horizon.

The Ap or A horizon has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 3. The texture of the fine-earth fraction ranges from silt loam to fine sandy loam. Structure is weak to strong granular. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely acid to moderately acid.

The Bw horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6. The texture of the fine-earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate subangular blocky. Consistence is friable or very friable. In areas that have not been limed, reaction ranges from extremely to moderately acid.

Some pedons have an E horizon above the Bx horizon. The E horizon is up to 8 inches thick

The Bx horizon has hue of 2.5YR or 5YR, value of 3 to 5, and chroma of 2 to 4. In some pedons, it has high- and low-chroma mottles. The texture of the fine-earth fraction ranges from silt loam to sandy loam. Structure is very coarse prismatic with platy, blocky, or massive prism interiors. Consistence is firm to extremely firm and brittle. Reaction ranges from extremely acid to moderately acid.

The Cd horizon, where present, is massive. It has a range in color and texture similar to that of the Bx horizon. Reaction ranges from extremely acid to moderately acid. Consistence is firm or very firm and is slightly more friable than the Bx horizon.

Formation of the Soils

The first part of this section describes the factors of soil formation and relates them to the formation of the soils in the survey area. The second part defines the processes of soil horizon development as they relate to soil formation in the survey area.

Factors of Soil Formation

Soil is a collection of natural bodies on the earth's surface, in places modified by or made by humans, of earthy materials containing living matter and supporting or capable of supporting plants out-of-doors (Soil Survey Division Staff, 1951). Soils are natural, three-dimensional bodies at the earth's surface. Soil includes the horizons near the surface that differ from the underlying rock material as a result of the interactions of five major factors: parent material, relief, climate, living organisms, and time (Soil Survey Division Staff, 1951). Soils are products of weathering and other physical and chemical processes that act on parent material. The properties of a soil at a given point depend on the combination of the five factors. The relative influence of each of these factors differs from place to place, and each modifies the effect of the others. For example, the impact of climate over a given area is tempered by relief or parent material. In many areas, the influence of a single factor is dominant.

Parent Material

Parent material is the unconsolidated earthy material in which soils are formed. It influences the physical, chemical, and mineralogical composition of the soils. It also influences the rate at which soil forming processes proceed.

Many of the soils in Otsego County formed in deposits left as a result of glaciation. Some formed in deposits as a result of the erosion and transport of early, post-glacial sediment. Glacial till is the most extensive type of parent material in the county. Less extensive are glacial outwash, inwash deposits, alluvial deposits, lacustrine deposits, and organic deposits.

Soils that formed in glacial till have a wide range of characteristics as a result of the heterogeneous nature of the till, its rock, and soil particles. Some soils formed in very deep glacial till deposits and have a dense substratum. Examples are Bath and Mardin soils. Other soils formed in very deep, coarser textured till and do not have a dense layer. Examples are Valois and Chadakoin soils. In places, the glacial till is moderately deep or shallow over bedrock. The Lordstown soil is an example of a soil that is moderately deep to shale, siltstone, and sandstone. Farmington soils are shallow to limestone bedrock. In some areas, bedrock is exposed at the surface. Rock outcrop is included as part of the map unit in these areas or is shown on the maps by an ad hoc spot symbol.

As the glacial ice melted, large quantities of meltwater transported and sorted soil and rock debris. This material is referred to as glacial outwash. It was redeposited in layers of sand and gravel on outwash plains, kames, eskers, and valley terraces. Chenango and Howard soils formed in this material. These soils are coarse textured.

In more recent times, floodwater from streams deposited alluvial material on the flood plains. Soils that formed in this material tend to have little soil development and are commonly variable in texture. Otego, Wakeville, and Wayland soils formed in this material. They formed in medium textured alluvium having a low content of rock fragments. Deposit and Trestle soils formed in older, gravelly textured alluvial materials and show somewhat better soil development than the soils that formed in more recent alluvium.

At one time, many of the larger valleys in the county and areas adjacent to the present-day lakes in the northern part of the county contained glacial lakes in which meltwater was trapped. The bulk of the sediment deposited from the meltwater was stone-free, clayey or silty lacustrine materials. Rhinebeck and Fonda soils formed in these fine textured deposits.

Some of the valleys in Otsego County have soils that formed during the collapse and subsidence of ice-cored deposits. These valleys once contained glacial ice that had become stagnant or isolated from the main glacial lobe. As a result, large blocks of ice were buried by flood plain sediments and inwash sediments. These areas, known as “dead-ice sinks,” were a site for continuous deposition of sediment for some period of time. As the buried ice melted and subsided, the deposition of sediment continued to fill most of the depression that formed. Hamplain and Wayland soils formed in dead-ice sinks.

Soils that formed in organic deposits are mainly in closed depressions in the uplands and in some of the dead-ice sinks in stream valleys. Carbondale, Carlisle, Edwards, and Palms soils formed in well decomposed organic material.

Relief

The shape of the land surface, commonly called the lay of the land, the slope, and the position of the land surface as related to the water table have a great influence on the formation of soils. Soils that formed in convex positions, where little or no runoff accumulates, are generally well drained and do not contain gray mottles in the subsoil. These soils are also leached to a greater depth than wetter soils in the same general area. Unadilla and Valois soils are in convex positions. In the more gently sloping or concave areas, where runoff is slower, the soils generally exhibit some evidence of short periods of wetness, such as mottling in the subsoil. In level or slightly depressional areas, the water table is typically closer to the surface for extended periods, resulting in gray mottling close to the surface. These soils commonly have more organic matter in the surface layer, may have an accumulation of sediment at the surface, and have a strongly mottled or grayish subsoil. Lyons and Chippewa soils are in depressional areas having a water table close to the surface.

Local differences in soils are largely the result of differences in parent material and relief. Table 27 shows the relationships between parent material, landscape position, and drainage class of the soils.

Climate

Climate, in particular temperature and precipitation, is one of the most influential soil forming factors. It determines to a large degree the kind of weathering processes that occur. It also affects the growth and kind of vegetation and the leaching and translocation of weathered materials.

Otsego County has a humid, temperate climate that tends to promote the development of moderately weathered, leached soils. More detailed and specific data on the climate of Otsego County is in the climate section under the heading “General Nature of the Survey Area.”

Plant and Animal Life

All living organisms, including plants, animals, bacteria, and fungi, influence soil formation. Vegetation is generally responsible for the amount of organic matter and nutrients in the soil and for the color and structure of the surface layer. Earthworms and burrowing animals help to keep the soil porous and increase permeability to air and water. Their waste products cause aggregations of soil particles and improve soil structure. Bacteria and fungi decompose vegetation, resulting in the release of nutrients.

The vegetation in the survey area was originally native forest consisting of northern hardwoods and pines. The loss of nutrients through leaching is slow in soils under hardwoods. The hardwoods take up large quantities of bases (nutrients) and return much of them to the soil surface each year as leaf litter. Conifers, such as pines, do not use large amounts of nutrients; therefore, leaching is more rapid under conifers than it is under hardwoods. As a result of the rapid leaching, soils under conifers becomes more acidic.

Trees on many of the upland soils are susceptible to windthrow because of shallow rooting depth. Windthrow causes mixing of soil materials.

Human activities have large influences on the changes that occur in soils. People add nutrients through the application of fertilizer, manure, and lime. In many areas, soil horizons have been destroyed or mixed by people plowing and cultivating the land, clearing trees, and causing accelerated soil erosion.

Time

Time is a passive but important soil-forming factor. In geological terms, the deposits in which soils formed in Otsego County are relatively young. They were deposited when the last glacier receded about 10,000 to 15,000 years ago.

The degree of profile development reflects the age of a soil and the influence of other soil-forming factors. The soils in the survey area have not all reached the same stage of profile development because of the influence of the other soil-forming factors. Because the time factor is relatively constant within the county (except for deposits on flood plains), the difference in appearance of the soils and the depth of weathering is commonly a function of differences in the parent material.

An immature soil is one that has not had enough time to develop distinct horizons. The soils in the Udifluvents-Fluvaquents map unit are an example of immature soils that lack distinct horizonation. They formed in recent alluvium in areas that are regularly flooded and receive periodic sediment deposition. The deposition regularly interrupts the time for soil development, resulting in thin horizons or irregular soil profiles.

Processes of Soil Formation

The following is a brief explanation of soil horizon nomenclature and a description of the processes involved in soil horizon development as they relate to soil formation.

The soil-forming factors cause the formation of different layers, or soil horizons. These soil horizons can be viewed in a vertical cut of soil known as a soil profile. The soil profile extends from the surface downward into material that is little altered by the soil-forming processes. Most soils contain three major horizons, called A, B, and C horizons.

Several processes cause the formation of soil horizons. They include the accumulation of organic matter, the leaching of soluble salts and minerals, the translocation of clay minerals, the reduction and transfer of iron, and the formation of dense and compact layers in the subsoil (Grossman and Carlisle, 1969).

The accumulation of organic matter takes place as plant residue decomposes. This process darkens the surface layer and helps to form the A horizon. It takes a long time to replace this organic matter if it has been lost. The content of organic matter in the surface layer of soils in the survey area averages about 5 percent.

For soils to develop a distinct subsoil, some of the lime and other soluble salts must be leached before other soil processes, such as translocation of clay minerals, can take place. Factors that affect leaching include the kinds of salts originally present, the rate and depth of percolation, and the texture of the soil.

One of the more important processes of soil horizon development in some of the soils in Otsego County is the translocation of silicate clay minerals. The amount of clay minerals in a soil is inherent in the parent material, but clay content varies from one soil horizon to another. Clay particles are transported (eluviated) downward out of the A horizon and redeposited (illuviated) in the B horizon as clay films on ped faces, as linings along pores and root channels, and as coatings on some coarse fragments. In some soils, an E horizon has formed by considerable eluviation of clay and organic matter to the B horizon. The Conesus soil is an example of a soil that has a higher content of clay in the B horizon than in the A horizon because of translocation.

The reduction and transfer of iron compounds in soils can occur under intense reducing conditions. This process is known as gleying (Soil Survey Staff, 1975). It is commonly associated with the wetter, more poorly drained soils. In poorly drained and very poorly drained soils, such as Chippewa, Canandaigua, and Lyons soils, a grayish subsoil indicates the reduction of iron. In moderately well drained and somewhat poorly drained soils, such as Mardin and Ontusia soils, yellowish brown and reddish brown mottles indicate the segregation of iron compounds. A bright-colored, mottle-free subsoil normally indicates a well drained soil where no reduction or transfer of iron has taken place. Valois, Riverhead, and Chenango soils are examples of well drained soils.

In some of the soils in Otsego County, a distinct fragipan has developed in the subsoil. The fragipan is very firm and brittle when moist and very hard when dry. The swelling and shrinking that takes place during alternating wet and dry periods may result in the dense packing of soil particles, low pore space, and a gross polygonal pattern of vertical cracks that are characteristic of most fragipans (Grossman and Carlisle, 1969). Clay, silica, and oxides of aluminum are the cementing agents that cause brittleness and hardness. Lewbath, Mardin, Volusia, and Wellsboro soils have a well expressed fragipan.

Many well drained and moderately well drained soils in the county have a strong brown, yellowish brown, or reddish brown subsoil. These colors are mainly caused by thin coatings of iron oxides on sand and silt particles. A bright colored subsoil with iron oxide coatings is commonly termed a “color B horizon.” These soils contain little or no clay translocated from the surface horizon and commonly have subangular blocky structure. Valois and Riverhead soils are examples of well drained soils having a color B horizon with little or no apparent illuvial accumulation of materials.

Relationships Between Soil Series, Parent Material, Landscape Position, Temperature, and Drainage Class

Table 27 shows the relationship between some of the factors that have influenced the development and morphology of the soils in Otsego County. The soils are grouped according to the type of landscape position on which they occur. These landscape positions include uplands; outwash plains, kames, and terraces; alluvial fans; lacustrine plains; flood plains; swamps and bogs; and areas disturbed by human activities. The soils that are on similar landscapes are grouped according to their depth over bedrock. The soils are also grouped by texture, temperature, and by the morphology of the parent material in which they formed. Finally, the soils are grouped by drainage class.

Soils that have the same parent material, soil depth, and landscape position but are in a different drainage class form a soil catena. Bath, Mardin, Volusia, Chippewa soils for example, form a catena in Otsego County. Some soils, such as Torull soils, have drainage features that place them in more than one drainage class. These soils are listed more than once in the table.

The relationship between the position of selected soils on the landscape and soil parent material is shown in figure 2. Soils that have a water table close to the surface, such as the Atherton soil, generally are in depressions or in the lowest positions on the landscape. Some soils, such as the Bath and Mardin soils, have a seasonal water table that occurs at varying depths below the surface. The water table in these soils is the result of water being perched on top of dense glacial till. Thus, the depth to the water table is generally dependent upon the depth to dense glacial till in these type of soils.

The information in table 27 establishes general relationships among the soils in the county. It supplements the information provided in the section “Formation of the Soils.” Detailed information on the morphology and characteristics of each soil is provided in the section “Taxonomic Units and Their Morphology.”

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Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

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.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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. In most cases the capacity was calculated by using the average value within a range for each horizon in a 40-inch profile, or to a limiting layer, and is expressed as:

Very low	0 to 2.4 inches
Low	2.4 to 3.2 inches
Moderate	3.2 to 5.2 inches
High more than	5.2 inches

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.

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.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

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.

Census water. Water bodies 40 acres or greater in size.

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.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

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.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

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.

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.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dead-ice sink A valley floor landform consisting of a broad, collapsed depression much like a kettle, but larger, in which meltwater sedimentation continued after glacier retreat.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

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.

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized: *excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

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.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

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.

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.

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 ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

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.

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).

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fosse. A long, narrow depression or trough-like hollow between the edge of a retreating glacier and the wall of its valley.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift. 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.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

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.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

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.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

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.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depressed floor at the base of the hill.

Hilltop. See “Summit”.

Histosols. Organic soils that have organic soil materials in more than half of the upper 80 centimeters (31.5 inches). An order in the U.S. system of soil taxonomy.

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.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

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 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.

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.

Inwash. Alluvium deposited by a stream of non-glacial origin in contact with glacier ice or remnant glacier ice; commonly occurs in relationship to materials and deposits of glacial origin.

Kame. An irregular, short ridge or hill of stratified glacial drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Kettle. A steep-sided, bowl-shaped depression commonly without surface drainage (closed depression) in drift deposits, often containing a lake or swamp, and formed by the melting of a large, detached block of stagnant ice that had been wholly or partly buried in the drift. Kettles range in depth from 1 to tens of meters and have diameters up to 13 kilometers.

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.

Landform. Any physical, recognizable form or feature on the earth’s surface, having a characteristic shape and range in composition, and produced by natural causes.

Landscape. A collection of related, natural landforms; usually the land surface which the eye can comprehend in a single view.

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.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine-grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. Periodically wet or continually flooded areas in which the surface is not deeply submerged. Marshes are covered dominantly with sedges, cattails, rushes, or other hydrophytic plants.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

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.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.
Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.
Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.
Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.
Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
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). Mottling is generally caused by oxidation and reduction of iron in the soil, but may also be attributable to colors inherent from the parent material.
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.)
Mucky peat. Partially decomposed organic material that is intermediate in decomposition between muck and peat and which much of the original fiber or plant parts are not recognizable; the organic matter accumulated under conditions of excessive moisture.
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.
Noncensus water. Water bodies less than 40 acres in size.
Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.
Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
Organic matter. Plant and animal residue in the soil in various stages of decomposition.
Outwash plain. An extensive lowland area of coarse textured, glaciofluvial material.

An outwash plain is commonly smooth; where pitted, due to melt-out of incorporated ice masses, it is generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The 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:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipe-like cavities by water moving through the soil.

Pitted outwash. Outwash with pits or kettles, generally lacking any kames or rolling higher outwash deposits, produced by the partial or complete burial of glacial ice by outwash and the subsequent thaw of the ice and collapse of the surficial materials.

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.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

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.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	less than 4.5
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
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

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).

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth’s surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill 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.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

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.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

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.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

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.

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.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 2 percent
Nearly level	0 to 3 percent
Gently sloping	3 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 35 percent
Very steep	35 percent and higher

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, 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.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter 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.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are: *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. 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.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

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.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

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.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by 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.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

[Recorded in the period 1961-90 at Cooperstown, New York, and Cherry Valley, New York]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	*°F*	*°F*	*°F*	*°F*	*Units*	*In*	*In*	*In*		*In*
COOPERSTOWN[2]:											
January-----	30.2	10.5	20.3	56	-21	3	2.45	1.43	3.36	6	21.0
February----	32.8	11.5	22.1	58	-20	6	2.19	1.31	2.97	6	16.8
March-------	42.8	21.7	32.2	74	-7	41	3.04	1.89	4.08	7	13.4
April-------	55.5	31.5	43.5	83	11	165	3.29	2.38	4.13	7	5.4
May---------	68.0	41.9	54.9	88	24	465	3.65	2.18	4.96	8	.9
June--------	75.7	50.9	63.3	90	32	698	4.29	2.37	5.98	8	.0
July--------	80.1	55.5	67.8	92	39	862	3.52	2.21	4.70	7	.0
August------	77.9	54.5	66.2	90	36	811	3.50	2.06	4.78	7	.0
September---	70.5	47.3	58.9	87	27	566	3.72	2.02	5.21	7	.0
October-----	59.9	36.9	48.4	81	16	282	3.05	1.52	4.38	7	.2
November----	46.8	29.1	37.9	72	7	82	3.40	2.19	4.50	8	7.2
December----	34.4	17.3	25.9	61	-15	13	3.17	2.04	4.20	8	20.8
Yearly:											
Average---	56.2	34.0	45.1	---	---	---	---	---	---	---	---
Extreme---	97	-30	---	93	-24	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,994	39.26	32.89	44.49	86	85.7
CHERRY VALLEY[3]:											
January-----	27.5	10.5	19.0	55	-17	3	2.61	1.55	3.56	7	27.4
February----	29.7	12.0	20.9	55	-16	5	2.47	1.39	3.42	6	20.0
March-------	39.7	21.9	30.8	71	-6	34	3.40	2.29	4.42	7	20.8
April-------	53.0	32.6	42.8	80	13	155	3.65	2.47	4.73	8	7.6
May---------	65.9	43.4	54.7	86	26	455	4.21	2.73	5.55	9	1.1
June--------	74.0	52.4	63.2	89	34	696	4.31	2.36	6.02	8	.0
July--------	78.4	57.3	67.9	90	41	864	4.01	2.43	5.44	7	.0
August------	76.1	55.6	65.8	89	38	797	3.68	2.36	4.88	7	.0
September---	68.3	48.7	58.5	85	29	556	3.77	1.94	5.37	7	.0
October-----	57.4	38.5	47.9	78	19	269	3.32	1.62	4.79	7	.7
November----	44.4	29.2	36.8	70	8	71	4.03	2.70	5.24	9	12.3
December----	31.8	16.6	24.2	59	-14	10	3.51	2.05	4.81	8	28.3
Yearly:											
Average---	53.9	34.9	44.4	---	---	---	---	---	---	---	---
Extreme---	93	-26	---	91	-20	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,914	42.97	36.16	49.25	90	118.2

[1] A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minumum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

[2] Average number of days per year with at least 1 inch of snow on the ground is 103.

[3] Average number of days per year with at least 1 inch of snow on the ground is 93.

Table 2.--Freeze Dates in Spring and Fall

[Recorded in the period 1961-90 at Cooperstown, New York, and Cherry Valley, New York]

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
COOPERSTOWN:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 13	May 20	June 6
2 years in 10 later than--	May 8	May 17	June 1
5 years in 10 later than--	Apr. 28	May 10	May 23
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 5	Sept. 22	Sept. 8
2 years in 10 earlier than--	Oct. 9	Sept. 27	Sept. 13
5 years in 10 earlier than--	Oct. 18	Oct. 6	Sept. 21
CHERRY VALLEY:			
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 29	May 14	May 30
2 years in 10 later than--	Apr. 25	May 9	May 24
5 years in 10 later than--	Apr. 17	Apr. 29	May 15
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 8	Sept. 28	Sept. 14
2 years in 10 earlier than--	Oct. 13	Oct. 3	Sept. 19
5 years in 10 earlier than--	Oct. 22	Oct. 13	Sept. 28

Table 3.--Growing Season

[Recorded in the period 1961-1990 at Cooperstown, New York, and Cherry Valley, New York]

Probability	Daily Minimum Temperature During growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	*Days*	*Days*
COOPERSTOWN:			
9 years in 10	152	132	101
8 years in 10	159	138	108
5 years in 10	172	150	121
2 years in 10	186	161	135
1 year in 10	193	167	142
CHERRY VALLEY:			
9 years in 10	168	144	113
8 years in 10	174	152	121
5 years in 10	187	166	136
2 years in 10	200	180	151
1 year in 10	206	188	159

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
Ad	Alden mucky silt loam	1,275	0.2
At	Atherton silt loam	1,968	0.3
BfB	Bath channery silt loam, 3 to 8 percent slopes	2,294	0.4
BfC	Bath channery silt loam, 8 to 15 percent slopes	7,463	1.1
BfD	Bath channery silt loam, 15 to 25 percent slopes	20,297	3.1
BfE	Bath channery silt loam, 25 to 45 percent slopes	6,059	0.9
BhC	Bath and Lackawanna soils, 8 to 15 percent slopes, very stony	565	*
BhE	Bath and Lackawanna soils, 15 to 35 percent slopes, very stony	2,969	0.5
Cb	Canandaigua silt loam	4,226	0.7
Cc	Canandaigua mucky silt loam	1,288	0.2
Cd	Carbondale mucky peat	539	*
Ce	Carlisle muck	1,019	0.2
CfA	Castile channery silt loam, 0 to 3 percent slopes	768	0.1
CfB	Castile channery silt loam, 3 to 8 percent slopes	2,037	0.3
ChA	Chenango gravelly silt loam, 0 to 3 percent slopes	3,347	0.5
ChB	Chenango gravelly silt loam, 3 to 8 percent slopes	13,705	2.1
ChC	Chenango gravelly silt loam, 8 to 15 percent slopes	6,943	1.1
ChD	Chenango gravelly silt loam, 15 to 25 percent slopes	2,939	0.5
ClE	Chenango, Howard, and Tunkhannock soils, 25 to 50 percent slopes	3,253	0.5
CnA	Chenango channery loam, fan, 0 to 3 percent slopes	1,166	0.2
CnB	Chenango channery loam, fan, 3 to 8 percent slopes	4,832	0.7
Cp	Chippewa and Norwich soils	9,134	1.4
Cr	Chippewa and Norwich soils, very stony	255	*
CsB	Conesus silt loam, 3 to 8 percent slopes	8,431	1.3
CsC	Conesus silt loam, 8 to 15 percent slopes	6,610	1.0
DaB	Danley and Nunda soils, 3 to 8 percent slopes	338	*
DaC	Danley and Nunda soils, 8 to 15 percent slopes	802	0.1
DaD	Danley and Nunda soils, 15 to 25 percent slopes	863	0.1
DeB	Darien and Burdett soils, 1 to 8 percent slopes	1,065	0.2
DeC	Darien and Burdett soils, 8 to 15 percent slopes	608	*
Ed	Edwards muck	487	*
FaB	Farmington silt loam, 0 to 8 percent slopes	2,551	0.4
FeB	Farmington-Rock outcrop complex, 0 to 8 percent slopes	1,304	0.2
FeC	Farmington-Rock outcrop complex, 8 to 15 percent slopes	443	*
FeD	Farmington-Rock outcrop complex, 15 to 35 percent slopes	1,096	0.2
FeF	Farmington-Rock outcrop complex, 35 to 60 percent slopes	451	*
Fg	Fluvaquents-Udifluvents complex, frequently flooded	10,238	1.6
Fo	Fonda mucky silt loam	830	0.1
GrB	Greene-Tuller complex, 1 to 8 percent slopes	2,863	0.4
Hb	Hamplain silt loam	2,264	0.3
HdC	Hawksnest silt loam, 8 to 15 percent slopes	458	*
HeA	Herkimer gravelly silt loam, fan, 0 to 2 percent slopes	851	0.1
HeB	Herkimer gravelly silt loam, fan, 2 to 6 percent slopes	1,219	0.2
HnB	Honeoye silt loam, 3 to 8 percent slopes	1,438	0.2
HnC	Honeoye silt loam, 8 to 15 percent slopes	2,304	0.4
HnD	Honeoye silt loam, 15 to 25 percent slopes	861	0.1
HoE	Honeoye and Lansing soils, 25 to 50 percent slopes	2,314	0.4
HrB	Howard gravelly silt loam, 2 to 8 percent slopes	3,053	0.5
HrC	Howard gravelly silt loam, 8 to 15 percent slopes	1,798	0.3
HrD	Howard gravelly silt loam, 15 to 25 percent slopes	497	*
LaB	Lackawanna channery silt loam, 3 to 8 percent slopes	550	*
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes	3,094	0.5
LaD	Lackawanna channery silt loam, 15 to 25 percent slopes	5,526	0.9
LaE	Lackawanna channery silt loam, 25 to 35 percent slopes	489	*
LeB	Lansing silt loam, 3 to 8 percent slopes	3,948	0.6
LeC	Lansing silt loam, 8 to 15 percent slopes	7,839	1.2
LeD	Lansing silt loam, 15 to 25 percent slopes	9,700	1.5
LfB	Lewbath channery silt loam, 3 to 8 percent slopes	1,373	0.2
LfC	Lewbath channery silt loam, 8 to 15 percent slopes	4,461	0.7
LfD	Lewbath channery silt loam, 15 to 25 percent slopes	5,439	0.8
LfE	Lewbath channery silt loam, 25 to 35 percent slopes	857	0.1
LhC	Lewbeach channery silt loam, 8 to 15 percent slopes	479	*
LkB	Lima gravelly silt loam, 3 to 8 percent slopes	1,669	0.3

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
LkC	Lima gravelly silt loam, 8 to 15 percent slopes	222	*
LoB	Lordstown-Arnot complex, 1 to 8 percent slopes, rocky	13,443	2.1
LpC	Lordstown-Chadakoin complex, 8 to 15 percent slopes	17,016	2.6
LpD	Lordstown-Chadakoin complex, 15 to 25 percent slopes	19,939	3.1
LrE	Lordstown, Chadakoin, and Manlius soils, 25 to 50 percent slopes, very rocky	31,671	4.9
Ly	Lyons silt loam	3,641	0.6
MaA	Manheim silt loam, 0 to 3 percent slopes	810	0.1
MaB	Manheim silt loam, 3 to 8 percent slopes	5,308	0.8
MaC	Manheim silt loam, 8 to 15 percent slopes	1,117	0.2
McB	Manlius channery silt loam, 3 to 8 percent slopes	840	0.1
McC	Manlius channery silt loam, 8 to 15 percent slopes	850	0.1
McD	Manlius channery silt loam, 15 to 25 percent slopes	764	0.1
MeB	Mardin channery silt loam, 3 to 8 percent slopes	21,332	3.3
MeC	Mardin channery silt loam, 8 to 15 percent slopes	39,857	6.1
MeD	Mardin channery silt loam, 15 to 25 percent slopes	8,964	1.4
MmC	Mongaup-Franklinville complex, 8 to 15 percent slopes	17,561	2.7
MmD	Mongaup-Franklinville complex, 15 to 25 percent slopes	16,636	2.6
MnB	Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky	16,913	2.6
MnE	Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky	19,731	3.0
MoB	Morris channery silt loam, 2 to 8 percent slopes	3,400	0.5
MoC	Morris channery silt loam, 8 to 15 percent slopes	1,625	0.3
MpC	Morris and Volusia soils, 3 to 15 percent slopes, very stony	2,989	0.5
Np	Norchip channery silt loam	2,798	0.4
ObB	Onteora channery silt loam, 3 to 8 percent slopes	436	*
ObC	Onteora channery silt loam, 8 to 15 percent slopes	93	*
OeB	Ontusia channery silt loam, 2 to 8 percent slopes	8,587	1.3
OeC	Ontusia channery silt loam, 8 to 15 percent slopes	2,285	0.4
OgB	Oquaga-Arnot complex, 1 to 8 percent slopes, rocky	3,642	0.6
OgC	Oquaga-Arnot complex, 8 to 15 percent slopes, rocky	3,440	0.5
OgD	Oquaga-Arnot complex, 15 to 25 percent slopes, rocky	4,592	0.7
OgE	Oquaga-Arnot complex, 25 to 45 percent slopes, rocky	6,190	1.0
OpB	Oquaga and Lordstown soils, 1 to 8 percent slopes, very rocky	263	*
OpC	Oquaga and Lordstown soils, 8 to 15 percent slopes, very rocky	794	0.1
OpD	Oquaga and Lordstown soils, 15 to 25 percent slopes, very rocky	718	0.1
Ot	Otego silt loam	3,717	0.6
Pa	Palms muck	1,198	0.2
PdB	Patchin silt loam, 1 to 4 percent slopes	181	*
Pt	Pits, gravel and sand	457	*
Pu	Pits, quarry	95	*
Ra	Raynham silt loam	3,374	0.5
Re	Red Hook silt loam	2,317	0.4
RhA	Rhinebeck silty clay loam, 0 to 3 percent slopes	474	*
RhB	Rhinebeck silty clay loam, 3 to 8 percent slopes	549	*
RlA	Riverhead sandy loam, loamy substratum, 0 to 3 percent slopes	819	0.1
RlB	Riverhead sandy loam, loamy substratum, 3 to 8 percent slopes	743	0.1
Sa	Saprists and Aquents, inundated	3,227	0.5
SbB	Scio fine sandy loam, 1 to 6 percent slopes	595	*
ScA	Scio silt loam, 0 to 2 percent slopes	1,857	0.3
ScB	Scio silt loam, 2 to 6 percent slopes	1,949	0.3
ThB	Torull-Gretor complex, 1 to 6 percent slopes	2,355	0.4
TkB	Towerville silt loam, 3 to 8 percent slopes	349	*
TkC	Towerville silt loam, 8 to 15 percent slopes	312	*
TkD	Towerville silt loam, 15 to 25 percent slopes	424	*
TlB	Trestle-Deposit complex, 1 to 4 percent slopes	2,441	0.4
TpB	Tunkhannock gravelly loam, 3 to 8 percent slopes	981	0.2
TpC	Tunkhannock gravelly loam, 8 to 15 percent slopes	352	*
Ud	Udorthents, refuse substratum	116	*
Ue	Udorthents, smoothed	2,931	0.5
UnA	Unadilla silt loam, 0 to 2 percent slopes	916	0.1
UnB	Unadilla silt loam, 2 to 6 percent slopes	955	0.1
VaB	Valois gravelly loam, 3 to 8 percent slopes	3,908	0.6
VaC	Valois gravelly loam, 8 to 15 percent slopes	11,115	1.7

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
VaD	Valois gravelly loam, 15 to 25 percent slopes	10,137	1.6
VaE	Valois gravelly loam, 25 to 35 percent slopes	4,768	0.7
VaF	Valois gravelly loam, 35 to 55 percent slopes	1,515	0.2
VcB	Valois fine gravelly silt loam, 2 to 6 percent slopes	315	*
VlB	Vly channery silt loam, 1 to 8 percent slopes, rocky	1,533	0.2
VlC	Vly channery silt loam, 8 to 15 percent slopes, rocky	1,766	0.3
VlD	Vly channery silt loam, 15 to 25 percent slopes, rocky	1,591	0.2
VlE	Vly channery silt loam, 25 to 45 percent slopes, rocky	1,726	0.3
VoA	Volusia silt loam, 0 to 3 percent slopes	647	*
VoB	Volusia silt loam, 3 to 8 percent slopes	16,988	2.6
VoC	Volusia silt loam, 8 to 15 percent slopes	10,378	1.6
W	Water	9,816	1.5
Wb	Wakeville silt loam	2,703	0.4
WeA	Wassaic silt loam, 0 to 3 percent slopes	453	*
WeB	Wassaic silt loam, 3 to 8 percent slopes	3,176	0.5
WeC	Wassaic silt loam, 8 to 15 percent slopes	608	*
WeD	Wassaic silt loam, 15 to 25 percent slopes	145	*
Wg	Wayland silt loam	5,578	0.9
WlB	Wellsboro channery silt loam, 3 to 8 percent slopes	4,861	0.7
WlC	Wellsboro channery silt loam, 8 to 15 percent slopes	9,494	1.5
WlD	Wellsboro channery silt loam, 15 to 25 percent slopes	801	0.1
WmC	Wellsboro and Mardin soils, 3 to 15 percent slopes, very stony	3,438	0.5
WpB	Willdin channery silt loam, 3 to 8 percent slopes	11,827	1.8
WpC	Willdin channery silt loam, 8 to 15 percent slopes	13,956	2.1
WpD	Willdin channery silt loam, 15 to 25 percent slopes	1,356	0.2
WsB	Willowemoc channery silt loam, 3 to 8 percent slopes	1,602	0.2
WsC	Willowemoc channery silt loam, 8 to 15 percent slopes	1,046	0.2
	Total	649,200	100.0

* Less than 0.1 percent.

Table 5.--Farmland Classification

[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
BfB	Bath channery silt loam, 3 to 8 percent slopes	All areas are prime farmland
CfA	Castile channery silt loam, 0 to 3 percent slopes	All areas are prime farmland
CfB	Castile channery silt loam, 3 to 8 percent slopes	All areas are prime farmland
ChA	Chenango gravelly silt loam, 0 to 3 percent slopes	All areas are prime farmland
ChB	Chenango gravelly silt loam, 3 to 8 percent slopes	All areas are prime farmland
CnA	Chenango channery loam, fan, 0 to 3 percent slopes	All areas are prime farmland
CnB	Chenango channery loam, fan, 3 to 8 percent slopes	All areas are prime farmland
CsB	Conesus silt loam, 3 to 8 percent slopes	All areas are prime farmland
DaB	Danley and Nunda soils, 3 to 8 percent slopes	All areas are prime farmland
Hb	Hamplain silt loam	All areas are prime farmland
HeA	Herkimer gravelly silt loam, fan, 0 to 2 percent slopes	All areas are prime farmland
HeB	Herkimer gravelly silt loam, fan, 2 to 6 percent slopes	All areas are prime farmland
HnB	Honeoye silt loam, 3 to 8 percent slopes	All areas are prime farmland
HrB	Howard gravelly silt loam, 2 to 8 percent slopes	All areas are prime farmland
LaB	Lackawanna channery silt loam, 3 to 8 percent slopes	All areas are prime farmland
LeB	Lansing silt loam, 3 to 8 percent slopes	All areas are prime farmland
LfB	Lewbath channery silt loam, 3 to 8 percent slopes	All areas are prime farmland
LkB	Lima gravelly silt loam, 3 to 8 percent slopes	All areas are prime farmland
LoB	Lordstown-Arnot complex, 1 to 8 percent slopes, rocky	All areas are prime farmland
MnB	Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky	All areas are prime farmland
Ot	Otego silt loam	All areas are prime farmland
RlA	Riverhead sandy loam, loamy substratum, 0 to 3 percent slopes	All areas are prime farmland
RlB	Riverhead sandy loam, loamy substratum, 3 to 8 percent slopes	All areas are prime farmland
SbB	Scio fine sandy loam, 1 to 6 percent slopes	All areas are prime farmland
ScA	Scio silt loam, 0 to 2 percent slopes	All areas are prime farmland
ScB	Scio silt loam, 2 to 6 percent slopes	All areas are prime farmland
TkB	Towerville silt loam, 3 to 8 percent slopes	All areas are prime farmland
TlB	Trestle-Deposit complex, 1 to 4 percent slopes	All areas are prime farmland
TpB	Tunkhannock gravelly loam, 3 to 8 percent slopes	All areas are prime farmland
UnA	Unadilla silt loam, 0 to 2 percent slopes	All areas are prime farmland
UnB	Unadilla silt loam, 2 to 6 percent slopes	All areas are prime farmland
VaB	Valois gravelly loam, 3 to 8 percent slopes	All areas are prime farmland
VcB	Valois fine gravelly silt loam, 2 to 6 percent slopes	All areas are prime farmland
WeA	Wassaic silt loam, 0 to 3 percent slopes	All areas are prime farmland
WeB	Wassaic silt loam, 3 to 8 percent slopes	All areas are prime farmland
DeB	Darien and Burdett soils, 1 to 8 percent slopes	Prime farmland where drained
GrB	Greene-Tuller complex, 1 to 8 percent slopes	Prime farmland where drained
MaA	Manheim silt loam, 0 to 3 percent slopes	Prime farmland where drained
MaB	Manheim silt loam, 3 to 8 percent slopes	Prime farmland where drained
Ra	Raynham silt loam	Prime farmland where drained
Re	Red Hook silt loam	Prime farmland where drained
RhA	Rhinebeck silty clay loam, 0 to 3 percent slopes	Prime farmland where drained
RhB	Rhinebeck silty clay loam, 3 to 8 percent slopes	Prime farmland where drained
Wb	Wakeville silt loam	Prime farmland where drained
At	Atherton silt loam	Farmland of statewide importance
BfC	Bath channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
Cb	Canandaigua silt loam	Farmland of statewide importance
ChC	Chenango gravelly silt loam, 8 to 15 percent slopes	Farmland of statewide importance
CsC	Conesus silt loam, 8 to 15 percent slopes	Farmland of statewide importance
DaC	Danley and Nunda soils, 8 to 15 percent slopes	Farmland of statewide importance
DeC	Darien and Burdett soils, 8 to 15 percent slopes	Farmland of statewide importance
FaB	Farmington silt loam, 0 to 8 percent slopes	Farmland of statewide importance
HnC	Honeoye silt loam, 8 to 15 percent slopes	Farmland of statewide importance
HrC	Howard gravelly silt loam, 8 to 15 percent slopes	Farmland of statewide importance
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
LeC	Lansing silt loam, 8 to 15 percent slopes	Farmland of statewide importance

Table 5.--Farmland Classification--Continued

Map symbol	Map unit name	Farmland Classification
LfC	Lewbath channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
LhC	Lewbeach channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
LkC	Lima gravelly silt loam, 8 to 15 percent slopes	Farmland of statewide importance
LpC	Lordstown-Chadakoin complex, 8 to 15 percent slopes	Farmland of statewide importance
MaC	Manheim silt loam, 8 to 15 percent slopes	Farmland of statewide importance
McB	Manlius channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
McC	Manlius channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
MeB	Mardin channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
MeC	Mardin channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
MmC	Mongaup-Franklinville complex, 8 to 15 percent slopes	Farmland of statewide importance
MoB	Morris channery silt loam, 2 to 8 percent slopes	Farmland of statewide importance
MoC	Morris channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
ObB	Onteora channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
ObC	Onteora channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
OeB	Ontusia channery silt loam, 2 to 8 percent slopes	Farmland of statewide importance
OeC	Ontusia channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
OgB	Oquaga-Arnot complex, 1 to 8 percent slopes, rocky	Farmland of statewide importance
OgC	Oquaga-Arnot complex, 8 to 15 percent slopes, rocky	Farmland of statewide importance
PdB	Patchin silt loam, 1 to 4 percent slopes	Farmland of statewide importance
ThB	Torull-Gretor complex, 1 to 6 percent slopes	Farmland of statewide importance
TkC	Towerville silt loam, 8 to 15 percent slopes	Farmland of statewide importance
TpC	Tunkhannock gravelly loam, 8 to 15 percent slopes	Farmland of statewide importance
VaC	Valois gravelly loam, 8 to 15 percent slopes	Farmland of statewide importance
VlB	Vly channery silt loam, 1 to 8 percent slopes, rocky	Farmland of statewide importance
VlC	Vly channery silt loam, 8 to 15 percent slopes, rocky	Farmland of statewide importance
VoA	Volusia silt loam, 0 to 3 percent slopes	Farmland of statewide importance
VoB	Volusia silt loam, 3 to 8 percent slopes	Farmland of statewide importance
VoC	Volusia silt loam, 8 to 15 percent slopes	Farmland of statewide importance
WeC	Wassaic silt loam, 8 to 15 percent slopes	Farmland of statewide importance
WlB	Wellsboro channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
WlC	Wellsboro channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
WpB	Willdin channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
WpC	Willdin channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance
WsB	Willowemoc channery silt loam, 3 to 8 percent slopes	Farmland of statewide importance
WsC	Willowemoc channery silt loam, 8 to 15 percent slopes	Farmland of statewide importance

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage

[Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
Ad: Alden	5w	---	---	---	---	---
At: Atherton	4w	---	---	---	---	---
BfB: Bath	2e	---	110	21	5	75
BfC: Bath	3e	---	90	18	4	75
BfD: Bath	4e	---	70	14	3.5	70
BfE: Bath	6e	---	---	---	---	---
BhC: Bath and Lackawana	6s	---	---	---	---	---
BhE: Bath and Lackawana	7s	---	---	---	---	---
Cb: Canandaigua	4w	---	---	---	---	---
Cc: Canandaigua	5w	---	---	---	3.5	---
Cd: Carbondale	5w	---	---	---	---	---
Ce: Carlisle	5w	---	---	---	---	---
CfA: Castile	2w	---	115	23	4	90
CfB: Castile	2w	---	100	20	4	90
ChA: Chenango	1	4.5	100	---	3.5	80
ChB: Chenango	2e	4.5	100	---	3.5	80
ChC: Chenango	3e	4.5	90	---	3.5	75
ChD: Chenango	4e	---	80	---	---	65
ClE: Chenango-Howard-Tunkhannock	7e	---	---	---	---	---

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
CnA:						
Chenango----------------	2s	5	100	20	---	80
CnB:						
Chenango----------------	2s	5	100	20	---	80
Cp:						
Chippewa and Norwich----	5w	---	---	---	---	---
Cr:						
Chippewa and Norwich----	5s	---	---	---	---	---
CsB:						
Conesus-----------------	2e	5.5	120	24	5	90
CsC:						
Conesus-----------------	3e	5	110	22	4.5	85
DaB:						
Danley and Nunda--------	2e	5	90	18	4.5	90
DaC:						
Danley and Nunda--------	3e	4.5	95	16	4	65
DaD:						
Danley and Nunda--------	4e	---	85	14	3.5	---
DeB:						
Darien and Burdett------	3w	3	85	17	3.5	65
DeC:						
Darien and Burdett------	3e	3	75	15	3.5	60
Ed:						
Edwards-----------------	5w	---	---	---	---	---
FaB:						
Farmington--------------	2s	---	70	14	3.5	70
FeB:						
Farmington--------------	6s	---	70	14	3.5	70
Rock outcrop------------	---					
FeC:						
Farmington--------------	6s	---	---	---	3	---
Rock outcrop------------	---					
FeD:						
Farmington--------------	7s	---	---	---	---	---
Rock outcrop------------	---					
FeF:						
Farmington--------------	7s	---	---	---	---	---
Rock outcrop------------	---					
Fg:						
Fluvaquents-Udifluvents-	5w	---	---	---	---	---
Fo:						
Fonda-------------------	5w	---	---	---	---	---

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
GrB:						
Greene-Tuller-----------	3w	---	75	15	3	60
Hb:						
Hamplain----------------	1	6	120	24	5	80
HdC:						
Hawksnest---------------	4e	---	---	---	---	---
HeA:						
Herkimer, fan-----------	1	5	110	22	4.5	85
HeB:						
Herkimer, fan-----------	2e	5	120	24	4.5	85
HnB:						
Honeoye-----------------	2e	6	130	26	4.5	100
HnC:						
Honeoye-----------------	3e	6	120	24	4.5	100
HnD:						
Honeoye-----------------	4e	5	105	21	4	90
HoE:						
Honeoye and Lansing-----	6e	---	---	---	---	---
HrB:						
Howard------------------	2e	5	105	21	3.5	80
HrC:						
Howard------------------	3e	4.5	90	18	3.5	75
HrD:						
Howard------------------	4e	4	80	16	3	65
LaB:						
Lackawanna--------------	2e	---	100	20	4	75
LaC:						
Lackawanna--------------	3e	---	95	19	4	75
LaD:						
Lackawanna--------------	4e	---	90	18	3.5	70
LaE:						
Lackawanna--------------	6e	---	---	---	---	---
LeB:						
Lansing-----------------	2e	5.5	120	24	5	95
LeC:						
Lansing-----------------	3e	5.5	110	22	5	95
LeD:						
Lansing-----------------	4e	5	100	20	4.5	80
LfB:						
Lewbath-----------------	2e	4	---	17	3.5	85
LfC:						
Lewbath-----------------	3e	3.5	---	16	3	85

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	Bu	Tons	Tons	Bu
LfD:						
Lewbath	4e	3	---	14	2.5	70
LfE:						
Lewbath	6e	---	---	---	---	---
LhC:						
Lewbeach	3e	3	---	14	---	70
LkB:						
Lima	2e	5	120	24	4.5	90
LkC:						
Lima	3e	4.5	110	22	4	85
LoB:						
Lordstown-Arnot	2s	3.5	85	17	3	75
LpC:						
Lordstown-Chadakoin	3e	3.5	85	17	3	70
LpD:						
Lordstown-Chadakoin	4e	3	80	16	3	65
LrE:						
Lordstown-Chadakoin-Manlius	7s					
Ly:						
Lyons	5w	---	---	---	---	---
MaA:						
Manheim	3w	---	90	18	4	70
MaB:						
Manheim	3w	3.5	90	18	4	70
MaC:						
Manheim	3e	3.5	80	16	3.5	70
McB:						
Manlius	2s	---	90	18	4	70
McC:						
Manlius	3e	---	80	16	3.5	65
McD:						
Manlius	4e	---	65	13	3	65
MeB:						
Mardin	2w	4	95	---	3	70
MeC:						
Mardin	3e	4	85	---	3	65
MeD:						
Mardin	4e	3.5	80	---	3	65
MmC:						
Mongaup-Franklinville	3e	3	---	15	---	65

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
MmD: Mongaup-Franklinville---	4e	3	---	14	---	60
MnB: Mongaup-Hawksnest-------	2s	3	---	15	---	70
MnE: Mongaup-Hawksnest-------	7e	---	---	---	---	---
MoB: Morris------------------	3w	3	80	---	3	65
MoC: Morris------------------	3e	3	70	---	3	60
MpC: Morris and Volusia------	6s	---	---	---	---	---
Np: Norchip-----------------	5w	---	---	10	---	---
ObB: Onteora-----------------	3w	---	---	10	---	40
ObC: Onteora-----------------	3e	---	---	10	---	40
OeB: Ontusia-----------------	3w	---	---	14	2.5	55
OeC: Ontusia-----------------	3e	---	---	11	2	50
OgB: Oquaga-Arnot------------	3s	3.5	---	17	3	75
OgC: Oquaga-Arnot------------	3e	3.5	---	17	3	70
OgD: Oquaga-Arnot------------	4e	3	---	16	3	65
OgE: Oquaga-Arnot------------	7e	---	---	---	---	---
OpB: Oquaga and Lordstown----	6s	3.5	---	17	3	75
OpC: Oquaga and Lordstown----	6s	3.5	---	17	3	70
OpD: Oquaga and Lordstown----	6s	3	---	16	3	65
Ot: Otego-------------------	2w	4.5	120	24	4	80
Pa: Palms-------------------	5w	---	---	---	---	---

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
PdB:						
Patchin-----------------	4w	---	---	---	2.5	---
Pt:						
Pits, gravel and sand.						
Pu:						
Pits, quarry.						
Ra:						
Raynham-----------------	3w	---	---	---	---	---
Re:						
Red Hook----------------	3w	3.5	100	20	3	60
RhA:						
Rhinebeck---------------	3w	3	85	17	3	65
RhB:						
Rhinebeck---------------	3w	3	85	17	3	65
RlA:						
Riverhead, loamy substratum-------------	1	---	95	19	3	70
RlB:						
Riverhead, loamy substratum-------------	2e	---	95	19	3	70
Sa:						
Saprists and Aquents----	8w	---	---	---	---	---
SbB:						
Scio--------------------	2e	4.5	110	22	3.5	85
ScA:						
Scio--------------------	2w	4.5	110	22	3.5	85
ScB:						
Scio--------------------	2e	4.5	110	22	3.5	85
ThB:						
Torull-Gretor-----------	4w	---	---	14	2	60
TkB:						
Towerville--------------	2e	---	85	17	3	70
TkC:						
Towerville--------------	3e	---	80	16	3	65
TkD:						
Towerville--------------	4e	---	75	15	2.5	60
TlB:						
Trestle-Deposit---------	2w	4.5	120	24	4.5	80
TpB:						
Tunkhannock-------------	2e	4	90	---	3	75
TpC:						
Tunkhannock-------------	3e	3.5	75	---	2.5	70

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
Ud: Udorthents, refuse substratum.						
Ue: Udorthents, smoothed.						
UnA: Unadilla	1	6	120	24	4	75
UnB: Unadilla	2e	6	120	24	4	75
VaB: Valois	2e	4	100	20	---	75
VaC: Valois	3e	4	95	19	---	75
VaD: Valois	4e	3.5	90	18	---	70
VaE: Valois	6e	---	---	---	---	---
VaF: Valois	7e	---	---	---	---	---
VcB: Valois	2e	---	---	---	---	---
VlB: Vly	2s	3	75	15	---	65
VlC: Vly	3e	3	75	15	---	60
VlD: Vly	4e	2.5	70	14	---	55
VlE: Vly	7e	---	---	---	---	---
VoA: Volusia	3w	3	80	16	---	65
VoB: Volusia	3w	3	80	16	---	65
VoC: Volusia	3e	2.5	70	14	---	60
W: Water.						
Wb: Wakeville	3w	3	85	17	3	45
WeA: Wassaic	2s	---	105	21	4.5	75

Table 6.--Land Capability Classes and Nonirrigated Yields per Acre of Crops and Forage--Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Corn silage	Grass-legume hay	Oats
		Tons	*Bu*	*Tons*	*Tons*	*Bu*
WeB:						
Wassaic-----------------	2e	---	105	21	4.5	75
WeC:						
Wassaic-----------------	3e	---	95	19	4	70
WeD:						
Wassaic-----------------	4e	---	85	17	4	65
Wg:						
Wayland-----------------	5w	---	---	---	---	---
WlB:						
Wellsboro---------------	2w	4	90	---	3	70
WlC:						
Wellsboro---------------	3e	4	85	---	3	65
WlD:						
Wellsboro---------------	4e	3.5	80	---	3	65
WmC:						
Wellsboro and Mardin----	6s	---	---	---	---	---
WpB:						
Willdin-----------------	2w	3.5	---	15	3	70
WpC:						
Willdin-----------------	3e	3	---	14	2.5	60
WpD:						
Willdin-----------------	4e	2	---	13	2	50
WsB:						
Willowemoc--------------	2w	3	---	14	---	55
WsC:						
Willowemoc--------------	3e	2.5	---	13	---	50

Table 7.--Capability Classes and Subclasses

[Dashes indicate no acreage. The total for water includes both census and noncensus water. Miscellaneous areas include those not assigned a capability class]

Class	Major Management concerns (subclass)			
	Total Acreage	Erosion (e)	Wetness (w)	Soil Problems (s)
1	8,098	---	---	---
2	112,918	50,664	50,942	11,312
3	243,003	161,057	46,069	35,877
4	133,818,	121,966	8,814	3,038
5	36,666	---	36,666	---
6	22,723	19,098	---	3,625
7	75,271	32,236	---	43,035
8	3,269	---	3,269	---
Water	9,816	---	---	---
Misc.	3,618	---	---	---
Total:	649,200	385,021	145,760	96,887

Table 8.--Forestland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ad:				
Alden	Red maple	50	29	---
At:				
Atherton	Red maple	60	43	---
BfB:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
BfC:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
BfD:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
BfE:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
BhC:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
Lackawanna	Sugar maple	70	43	Eastern white pine, European larch, Norway spruce, white spruce
BhE:				
Bath	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
Lackawanna	Sugar maple	70	43	Eastern white pine, European larch, Norway spruce, white spruce
Cb:				
Canandaigua	Red maple	60	43	---
Cc:				
Canandaigua	Red maple	60	43	---

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Cd:				
Carbondale	Red maple	55	43	---
Ce:				
Carlisle	Red maple	55	29	---
CfA:				
Castile	Sugar maple	63	43	Eastern white pine, Norway spruce, white spruce
CfB:				
Castile	Sugar maple	63	43	Eastern white pine, Norway spruce, white spruce
ChA:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
ChB:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
ChC:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
ChD:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
ClE:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
Howard	Sugar maple	70	43	Eastern white pine, European larch, red pine
Tunkhannock	Sugar maple	65	43	Eastern white pine, European larch, red pine
CnA:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine
CnB:				
Chenango	Sugar maple	70	43	Eastern white pine, European larch, red pine

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Cp:				
Chippewa	Red maple	50	29	---
Norwich	Red maple	50	29	---
Cr:				
Chippewa	Red maple	50	29	---
Norwich	Red maple	50	29	---
CsB:				
Conesus	Sugar maple	75	43	Eastern white pine, European larch, Norway spruce, white spruce
CsC:				
Conesus	Sugar maple	75	43	Eastern white pine, European larch, Norway spruce, white spruce
DaB:				
Danley	Sugar maple	70	43	European larch, Norway spruce, white spruce
Nunda	Sugar maple	70	43	European larch, Norway spruce, white spruce
DaC:				
Danley	Sugar maple	70	43	European larch, Norway spruce, white spruce
Nunda	Sugar maple	70	43	European larch, Norway spruce, white spruce
DaD:				
Danley	Sugar maple	70	43	European larch, Norway spruce, white spruce
Nunda	Sugar maple	70	43	European larch, Norway spruce, white spruce
DeB:				
Darien	Sugar maple	60	43	Japanese larch, Norway spruce, white spruce
Burdett	Sugar maple	60	43	Japanese larch, Norway spruce, white spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
DeC:				
Darien	Sugar maple	60	43	Japanese larch, Norway spruce, white spruce
Burdett	Sugar maple	60	43	Japanese larch, Norway spruce, white spruce
Ed:				
Edwards	Red maple	56	29	---
FaB:				
Farmington	Sugar maple	50	29	---
FeB:				
Farmington	Sugar maple	40	29	---
Rock outcrop.				
FeC:				
Farmington	Sugar maple	40	29	---
Rock outcrop.				
FeD:				
Farmington	Sugar maple	40	29	---
Rock outcrop.				
FeF:				
Farmington	Sugar maple	40	29	---
Rock outcrop.				
Fg:				
Fluvaquents.				
Udifluvents.				
Fo:				
Fonda	Red maple	50	29	---
GrB:				
Greene	Red maple	60	29	Eastern white pine, Norway spruce, white spruce
Tuller	Red maple	50	29	---
Hb:				
Hamplain	Sugar maple	75	43	Black locust, black walnut, Norway spruce
HdC:				
Hawksnest	Northern red oak	40	29	---
	Sugar maple	40	43	

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HeA:				
Herkimer, fan	Sugar maple	69	43	Eastern white pine, European larch, Norway spruce
HeB:				
Herkimer, fan	Sugar maple	69	43	Eastern white pine, European larch, Norway spruce
HnB:				
Honeoye	Sugar maple	80	57	Eastern white pine, European larch, Norway spruce, white spruce
HnC:				
Honeoye	Sugar maple	80	57	Eastern white pine, European larch, Norway spruce, white spruce
HnD:				
Honeoye	Sugar maple	80	57	Eastern white pine, European larch, Norway spruce, white spruce
HoE:				
Honeoye	Sugar maple	80	57	Eastern white pine, European larch, Norway spruce, white spruce
Lansing	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
HrB:				
Howard	Sugar maple	70	43	Black locust, black walnut, Norway spruce, red pine
HrC:				
Howard	Sugar maple	70	43	Black locust, black walnut, Norway spruce, red pine
HrD:				
Howard	Sugar maple	70	43	Black locust, black walnut, Norway spruce, red pine
LaB:				
Lackawanna	Northern red oak Sugar maple	70 70	57 43	Eastern white pine, European larch, Norway spruce, white spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
LaC:				
Lackawanna	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LaD:				
Lackawanna	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LaE:				
Lackawanna	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LeB:				
Lansing	Sugar maple	75	43	Eastern white pine, European larch, Norway spruce, white spruce
LeC:				
Lansing	Sugar maple	75	43	Eastern white pine, European larch, Norway spruce, white spruce
LeD:				
Lansing	Sugar maple	75	43	Eastern white pine, European larch, Norway spruce, white spruce
LfB:				
Lewbath	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LfC:				
Lewbath	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LfD:				
Lewbath	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	
LfE:				
Lewbath	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, white spruce
	Sugar maple	70	43	

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
LhC:				
Lewbeach	Northern red oak	70	57	Eastern white pine,
	Sugar maple	70	43	European larch,
				Norway spruce,
				white spruce
LkB:				
Lima	Sugar maple	75	43	Eastern white pine,
				European larch,
				Norway spruce,
				white spruce
LkC:				
Lima	Sugar maple	75	43	Eastern white pine,
				European larch,
				Norway spruce,
				white spruce
LoB:				
Lordstown	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	73	43	Norway spruce
Arnot	Black cherry	40	43	---
	Northern red oak	40	57	
	Sugar maple	40	43	
LpC:				
Lordstown	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	73	43	Norway spruce
Chadakoin	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	70	43	Norway spruce
LpD:				
Lordstown	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	73	43	Norway spruce
Chadakoin	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	70	43	Norway spruce
LrE:				
Lordstown	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	73	43	Norway spruce
Chadakoin	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	70	43	Norway spruce
Manlius	Black cherry	70	43	Eastern white pine,
	Northern red oak	65	57	European larch,
	Sugar maple	70	43	Norway spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ly:				
Lyons-------------------	Red maple-----------	50	29	---
MaA:				
Manheim-----------------	Red maple-----------	70	43	Eastern arborvitae,
	Sugar maple---------	60	43	Japanese larch,
	White ash-----------	70	29	Norway spruce,
				white spruce
MaB:				
Manheim-----------------	Red maple-----------	70	43	Eastern arborvitae,
	Sugar maple---------	60	43	Japanese larch,
	White ash-----------	70	29	Norway spruce,
				white spruce
MaC:				
Manheim-----------------	Red maple-----------	70	43	Eastern arborvitae,
	Sugar maple---------	60	43	Japanese larch,
	White ash-----------	70	29	Norway spruce,
				white spruce
McB:				
Manlius-----------------	Black cherry--------	70	43	Eastern white pine,
	Northern red oak----	65	57	European larch,
	Sugar maple---------	70	43	Norway spruce
McC:				
Manlius-----------------	Black cherry--------	70	43	Eastern white pine,
	Northern red oak----	65	57	European larch,
	Sugar maple---------	70	43	Norway spruce
McD:				
Manlius-----------------	Black cherry--------	70	43	Eastern white pine,
	Northern red oak----	65	57	European larch,
	Sugar maple---------	70	43	Norway spruce
MeB:				
Mardin------------------	Sugar maple---------	60	43	Eastern white pine,
				European larch,
				Norway spruce,
				white spruce
MeC:				
Mardin------------------	Sugar maple---------	60	43	Eastern white pine,
				European larch,
				Norway spruce,
				white spruce
MeD:				
Mardin------------------	Sugar maple---------	60	43	Eastern white pine,
				European larch,
				Norway spruce,
				white spruce
MmC:				
Mongaup-----------------	Black cherry--------	70	43	European larch,
	Northern red oak----	70	57	Norway spruce, red
	Sugar maple---------	73	43	pine, white spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MmC:				
Franklinville	Black cherry	70	43	European larch, Norway spruce, red pine, white spruce
	Northern red oak	70	57	
	Sugar maple	73	43	
MmD:				
Mongaup	Black cherry	70	43	European larch, Norway spruce, red pine, white spruce
	Northern red oak	70	57	
	Sugar maple	73	43	
Franklinville	Black cherry	70	43	European larch, Norway spruce, red pine, white spruce
	Northern red oak	70	57	
	Sugar maple	73	43	
MnB:				
Mongaup	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	70	57	
	Sugar maple	73	43	
Hawksnest	Black cherry	40	43	---
	Northern red oak	40	57	
	Sugar maple	40	43	
MnE:				
Mongaup	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	70	57	
	Sugar maple	73	43	
Hawksnest	Black cherry	40	43	---
	Northern red oak	40	57	
	Sugar maple	40	43	
MoB:				
Morris	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	57	
MoC:				
Morris	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	57	
MpC:				
Morris	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	57	
Volusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	43	
Np:				
Norchip	Red maple	50	29	---
ObB:				
Onteora	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	43	

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ObC:				
Onteora	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	43	
OeB:				
Ontusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	43	
OeC:				
Ontusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
	Sugar maple	60	43	
OgB:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Arnot	Black cherry	40	29	---
	Northern red oak	40	43	
	Sugar maple	40	29	
OgC:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Arnot	Black cherry	40	29	---
	Northern red oak	40	43	
	Sugar maple	40	29	
OgD:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Arnot	Black cherry	40	29	---
	Northern red oak	40	43	
	Sugar maple	40	29	
OgE:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Arnot	Black cherry	40	29	---
	Northern red oak	40	43	
	Sugar maple	40	29	
OpB:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Lordstown	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	65	57	
	Sugar maple	73	43	

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
OpC:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Lordstown	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	65	57	
	Sugar maple	73	43	
OpD:				
Oquaga	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	71	57	
	Sugar maple	69	43	
Lordstown	Black cherry	70	43	Eastern white pine, European larch, Norway spruce
	Northern red oak	65	57	
	Sugar maple	73	43	
Ot:				
Otego	Sugar maple	80	43	Black locust, black walnut, Norway spruce
Pa:				
Palms	Red maple	55	29	---
PdB:				
Patchin	Red maple	55	43	---
Pt:				
Pits, gravel and sand.				
Pu:				
Pits, quarry.				
Ra:				
Raynham	Red maple	73	43	Japanese larch, Norway spruce, white spruce
Re:				
Red Hook	Red maple	73	43	Eastern arborvitae, Japanese larch, Norway spruce, white spruce
RhA:				
Rhinebeck	Red maple	70	43	Japanese larch, Norway spruce, white spruce
RhB:				
Rhinebeck	Red maple	70	43	Japanese larch, Norway spruce, white spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RlA:				
Riverhead, loamy substratum	Sugar maple	63	43	Black locust, black walnut, red pine
RlB:				
Riverhead, loamy substratum	Sugar maple	63	43	Black locust, black walnut, red pine
Sa:				
Saprists.				
Aquents.				
SbB:				
Scio	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
ScA:				
Scio	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
ScB:				
Scio	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
ThB:				
Torull	Red maple	50	29	---
Gretor	Red maple	60	29	Eastern white pine, Norway spruce, white spruce
TkB:				
Towerville	Sugar maple	63	43	Eastern white pine, European larch, Norway spruce
TkC:				
Towerville	Sugar maple	63	43	Eastern white pine, European larch, Norway spruce
TkD:				
Towerville	Sugar maple	63	43	Eastern white pine, European larch, Norway spruce
TlB:				
Trestle	Sugar maple	70	43	Black locust, black walnut, eastern white pine, Norway spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
TlB:				
Deposit	Sugar maple	70	43	Black locust, black walnut, eastern white pine, Norway spruce
TpB:				
Tunkhannock	Sugar maple	65	43	Eastern white pine, European larch, red pine
TpC:				
Tunkhannock	Sugar maple	65	43	Eastern white pine, European larch, red pine
Ud:				
Udorthents, refuse substratum.				
Ue:				
Udorthents, smoothed.				
UnA:				
Unadilla	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
UnB:				
Unadilla	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce, white spruce
VaB:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	
VaC:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	
VaD:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	
VaE:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	
VaF:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
VcB:				
Valois	Black cherry	75	43	Eastern white pine, European larch, red pine
	Sugar maple	73	43	
VlB:				
Vly	Northern red oak	69	57	Eastern white pine, European larch, Norway spruce
	Sugar maple	70	43	
VlC:				
Vly	Northern red oak	69	57	Eastern white pine, European larch, Norway spruce
	Sugar maple	70	43	
VlD:				
Vly	Northern red oak	69	57	Eastern white pine, European larch, Norway spruce
	Sugar maple	70	43	
VlE:				
Vly	Northern red oak	69	57	Eastern white pine, European larch, Norway spruce
	Sugar maple	70	43	
VoA:				
Volusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
VoB:				
Volusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
VoC:				
Volusia	Red maple	65	43	Japanese larch, Norway spruce, white spruce
W:				
Water.				
Wb:				
Wakeville	Red maple	70	43	Japanese larch, Norway spruce, white spruce
WeA:				
Wassaic	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce
WeB:				
Wassaic	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WeC:				
Wassaic	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce
WeD:				
Wassaic	Sugar maple	73	43	Eastern white pine, European larch, Norway spruce
Wg:				
Wayland	Red maple	65	43	---
WlB:				
Wellsboro	Sugar maple	70	43	Eastern white pine, European larch, Norway spruce, white spruce
WlC:				
Wellsboro	Sugar maple	70	43	Eastern white pine, European larch, Norway spruce, white spruce
WlD:				
Wellsboro	Sugar maple	70	43	Eastern white pine, European larch, Norway spruce, white spruce
WmC:				
Wellsboro	Sugar maple	65	43	Eastern white pine, European larch, Norway spruce, white spruce
Mardin	Sugar maple	60	43	Eastern white pine, European larch, Norway spruce, white spruce
WpB:				
Willdin	Sugar maple	60	43	Eastern white pine, European larch, Norway spruce, white spruce
WpC:				
Willdin	Sugar maple	60	43	Eastern white pine, European larch, Norway spruce, white spruce
WpD:				
Willdin	Sugar maple	60	43	Eastern white pine, European larch, Norway spruce, white spruce

Table 8.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WsB:				
Willowemoc--------------	Sugar maple---------	70	43	Eastern white pine, European larch, Norway spruce, white spruce
WsC:				
Willowemoc--------------	Sugar maple---------	70	43	Eastern white pine, European larch, Norway spruce, white spruce

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland

[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	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ad:							
Alden---------------	70	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
At:							
Atherton-----------	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
BfB:							
Bath----------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
BfC:							
Bath----------------	75	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
BfD:							
Bath----------------	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
BfE:							
Bath----------------	75	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
BhC:							
Bath----------------	50	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
Lackawanna----------	30	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
BhE:							
Bath----------------	50	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Lackawanna----------	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cb:							
Canandaigua---------	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
Cc:							
Canandaigua---------	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Wetness	1.00		
				Strength	0.50		
Cd:							
Carbondale----------	75	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
Ce:							
Carlisle------------	75	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
CfA:							
Castile-------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
CfB:							
Castile-------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
ChA:							
Chenango------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
ChB:							
Chenango------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
ChC:							
Chenango------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
ChD:							
Chenango------------	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Sandiness	0.50	Strength	0.50		
ClE:							
Chenango------------	50	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ClE:							
Howard	15	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Tunkhannock	15	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Strength	0.50
CnA:							
Chenango	85	Slight		Well suited		Moderate	
						Strength	0.50
CnB:							
Chenango	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
Cp:							
Chippewa	45	Severe		Poorly suited		Severe	
		Strength	1.00	Strength	1.00	Strength	1.00
				Wetness	1.00		
Norwich	35	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
Cr:							
Chippewa	45	Severe		Poorly suited		Severe	
		Strength	1.00	Strength	1.00	Strength	1.00
				Wetness	1.00		
Norwich	35	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
CsB:							
Conesus	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
CsC:							
Conesus	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
DaB:							
Danley	60	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
Nunda	25	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
DaC:							
Danley	60	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
Nunda	25	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
DaD:							
Danley	60	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
Nunda	25	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
DeB:							
Darien	60	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
Burdett	25	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
DeC:							
Darien	60	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
Burdett	25	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
Ed:							
Edwards	75	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
FaB:							
Farmington	80	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Strength	0.50	Strength	1.00
		Strength	0.50				
FeB:							
Farmington	60	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Strength	0.50	Strength	1.00
		Strength	0.50				

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
FeB:							
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeC:							
Farmington----------	60	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeD:							
Farmington----------	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
		Strength	0.50				
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeF:							
Farmington----------	50	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Rock outcrop--------	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents---------	50	Severe		Poorly suited		Moderate	
		Flooding	1.00	Ponding	1.00	Strength	0.50
				Flooding	1.00		
				Wetness	1.00		
Udifluvents---------	35	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Strength	0.50
Fo:							
Fonda---------------	90	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Wetness	1.00		
				Strength	0.50		
GrB:							
Greene--------------	50	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
		Restrictive layer	0.50	Strength	0.50		
Tuller--------------	30	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Wetness	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Hb:							
Hamplain------------	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
HdC:							
Hawksnest-----------	75	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
HeA:							
Herkimer, fan	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
HeB:							
Herkimer, fan	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
HnB:							
Honeoye	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
HnC:							
Honeoye	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
HnD:							
Honeoye	70	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
HoE:							
Honeoye	45	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Lansing	35	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
HrB:							
Howard	85	Slight		Moderately suited		Severe	
				Strength	0.50	Strength	1.00
HrC:							
Howard	85	Slight		Moderately suited		Severe	
				Slope	0.50	Strength	1.00
				Strength	0.50		
HrD:							
Howard	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
LaB:							
Lackawanna	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
LaC:							
Lackawanna	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
LaD:							
Lackawanna	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
LaE:							
Lackawanna	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
LeB:							
Lansing	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
LeC:							
Lansing	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
LeD:							
Lansing	70	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
LfB:							
Lewbath	75	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
LfC:							
Lewbath	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
LfD:							
Lewbath	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
LfE:							
Lewbath	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
LhC:							
Lewbeach	75	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LkB:							
Lima	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
LkC:							
Lima	70	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
LoB:							
Lordstown	55	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50				
Arnot	25	Severe		Well suited		Slight	
		Restrictive layer	1.00			Strength	0.10
LpC:							
Lordstown	55	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
Chadakoin	25	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
LpD:							
Lordstown	55	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
Chadakoin	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Restrictive layer	0.50	Strength	0.50		
LrE:							
Lordstown	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Chadakoin	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Manlius	20	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Ly:							
Lyons	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MaA:							
Manheim	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
MaB:							
Manheim	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
				Slope	0.50		
MaC:							
Manheim	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
McB:							
Manlius	75	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50	Slope	0.50		
McC:							
Manlius	75	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
McD:							
Manlius	75	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
MeB:							
Mardin	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
MeC:							
Mardin	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
MeD:							
Mardin	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
MmC:							
Mongaup	50	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
Franklinville	30	Slight		Moderately suited		Severe	
				Slope	0.50	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
MmD:							
Mongaup-------------	50	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
Franklinville-------	30	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Restrictive layer	0.50	Strength	0.50		
MnB:							
Mongaup-------------	50	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Strength	0.50	Strength	1.00
Hawksnest-----------	30	Severe		Moderately suited		Severe	
		Restrictive layer	1.00	Strength	0.50	Strength	1.00
		Strength	0.50				
MnE:							
Mongaup-------------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Hawksnest-----------	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
MoB:							
Morris--------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
				Slope	0.50		
MoC:							
Morris--------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
MpC:							
Morris--------------	50	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Slope	0.50		
				Strength	0.50		
Volusia-------------	30	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Slope	0.50		
				Strength	0.50		
Np:							
Norchip-------------	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
ObB:							
Onteora-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ObC:							
Onteora-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
OeB:							
Ontusia-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
OeC:							
Ontusia-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
OgB:							
Oquaga--------------	60	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Strength	0.50	Strength	1.00
Arnot---------------	20	Severe		Well suited		Slight	
		Restrictive layer	1.00			Strength	0.10
OgC:							
Oquaga--------------	60	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
Arnot---------------	20	Severe		Moderately suited		Slight	
		Restrictive layer	1.00	Slope	0.50	Strength	0.10
OgD:							
Oquaga--------------	60	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
Arnot---------------	20	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Slope	1.00	Strength	0.10
		Slope	0.50				
OgE:							
Oquaga--------------	60	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
				Strength	0.50		
Arnot---------------	20	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
OpB:							
Oquaga--------------	40	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Strength	0.50	Strength	1.00
Lordstown-----------	35	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50				

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OpC:							
Oquaga--------------	40	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
Lordstown-----------	35	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
OpD:							
Oquaga--------------	40	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
Lordstown-----------	35	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
Ot:							
Otego---------------	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Pa:							
Palms---------------	75	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
PdB:							
Patchin-------------	80	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
				Strength	0.50		
Pt:							
Pits, gravel and sand---------------	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry--------	75	Not rated		Not rated		Not rated	
Ra:							
Raynham-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
Re:							
Red Hook------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
RhA:							
Rhinebeck-----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RhB:							
Rhinebeck-----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
RlA:							
Riverhead, loamy substratum---------	75	Slight		Well suited		Moderate	
						Strength	0.50
RlB:							
Riverhead, loamy substratum---------	75	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
Sa:							
Saprists------------	45	Severe		Poorly suited		Severe	
		Strength	1.00	Ponding	1.00	Strength	1.00
				Strength	1.00		
				Wetness	1.00		
Aquents-------------	40	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
SbB:							
Scio----------------	80	Slight		Moderately suited		Moderate	
				Wetness	0.50	Strength	0.50
ScA:							
Scio----------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
ScB:							
Scio----------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
ThB:							
Torull--------------	50	Severe		Poorly suited		Severe	
		Restrictive layer	1.00	Wetness	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Gretor--------------	30	Moderate		Poorly suited		Severe	
		Strength	0.50	Wetness	1.00	Strength	1.00
		Restrictive layer	0.50	Strength	0.50		
TkB:							
Towerville----------	75	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50	Wetness	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TkC:							
Towerville----------	75	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
TkD:							
Towerville----------	75	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
		Strength	0.50	Wetness	0.50		
TlB:							
Trestle-------------	50	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Deposit-------------	35	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Strength	0.50
				Wetness	0.50		
TpB:							
Tunkhannock---------	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
TpC:							
Tunkhannock---------	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
Ud:							
Udorthents, refuse substratum---------	85	Not rated		Not rated		Not rated	
Ue:							
Udorthents, smoothed	70	Not rated		Not rated		Not rated	
UnA:							
Unadilla------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
UnB:							
Unadilla------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
VaB:							
Valois--------------	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
VaC:							
Valois--------------	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Strength	0.50
VaD:							
Valois--------------	85	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Strength	0.50

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VaE:							
Valois	80	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Strength	0.50
VaF:							
Valois	80	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Strength	0.50
VcB:							
Valois	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
VlB:							
Vly	80	Moderate		Well suited		Slight	
		Restrictive layer	0.50			Strength	0.10
VlC:							
Vly	80	Moderate		Moderately suited		Slight	
		Restrictive layer	0.50	Slope	0.50	Strength	0.10
VlD:							
Vly	80	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Slope	1.00	Strength	0.10
		Slope	0.50				
VlE:							
Vly	80	Severe		Poorly suited		Slight	
		Slope	1.00	Slope	1.00	Strength	0.10
VoA:							
Volusia	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
VoB:							
Volusia	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Wetness	0.50	Strength	1.00
				Strength	0.50		
				Slope	0.50		
VoC:							
Volusia	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Wetness	0.50		
				Strength	0.50		
W:							
Water	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Wetness	0.50		
				Strength	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
WeA:							
Wassaic-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50				
WeB:							
Wassaic-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50	Slope	0.50		
WeC:							
Wassaic-------------	80	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
WeD:							
Wassaic-------------	80	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Strength	1.00
		Slope	0.50	Strength	0.50		
		Strength	0.50				
Wg:							
Wayland-------------	75	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Wetness	1.00		
				Strength	0.50		
WlB:							
Wellsboro-----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
WlC:							
Wellsboro-----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
WlD:							
Wellsboro-----------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
WmC:							
Wellsboro-----------	50	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
Mardin--------------	30	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		

Table 9.--Haul Roads, Log Landings, and Soil Rutting on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WpB:							
Willdin-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Slope	0.50		
				Wetness	0.50		
WpC:							
Willdin-------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
WpD:							
Willdin-------------	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
WsB:							
Willowemoc----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
				Slope	0.50		
WsC:							
Willowemoc----------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland

[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	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
Ad:							
Alden---------------	70	Slight		Slight		Poorly suited	
						Ponding	1.00
						Strength	1.00
						Wetness	1.00
At:							
Atherton------------	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50
BfB:							
Bath----------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
BfC:							
Bath----------------	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
BfD:							
Bath----------------	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
BfE:							
Bath----------------	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
BhC:							
Bath----------------	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
Lackawanna----------	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
BhE:							
Bath----------------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Lackawanna----------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Cb:							
Canandaigua---------	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
Cc:							
Canandaigua	85	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	1.00
						Strength	0.50
Cd:							
Carbondale	75	Severe		Severe		Poorly suited	
		Histosol	1.00	Histosol	1.00	Ponding	1.00
						Strength	1.00
						Wetness	1.00
Ce:							
Carlisle	75	Severe		Severe		Poorly suited	
		Histosol	1.00	Histosol	1.00	Ponding	1.00
						Strength	1.00
						Wetness	1.00
CfA:							
Castile	85	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50
CfB:							
Castile	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
ChA:							
Chenango	85	Slight		Slight		Moderately suited	
						Strength	0.50
ChB:							
Chenango	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
ChC:							
Chenango	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
ChD:							
Chenango	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
ClE:							
Chenango	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Howard	15	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
ClE:							
Tunkhannock	15	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
CnA:							
Chenango	85	Slight		Slight		Well suited	
CnB:							
Chenango	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Cp:							
Chippewa	45	Slight		Slight		Poorly suited	
						Strength	1.00
						Wetness	1.00
Norwich	35	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50
Cr:							
Chippewa	45	Slight		Slight		Poorly suited	
						Strength	1.00
						Wetness	1.00
Norwich	35	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50
CsB:							
Conesus	70	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
CsC:							
Conesus	70	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
DaB:							
Danley	60	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
Nunda	25	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
DaC:							
Danley	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
Nunda	25	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
DaD:							
Danley--------------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
Nunda---------------	25	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
DeB:							
Darien--------------	60	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
Burdett-------------	25	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
DeC:							
Darien--------------	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
Burdett-------------	25	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
Ed:							
Edwards-------------	75	Severe		Severe		Poorly suited	
		Histosol	1.00	Histosol	1.00	Ponding	1.00
						Strength	1.00
						Wetness	1.00
FaB:							
Farmington----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
FeB:							
Farmington----------	60	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeC:							
Farmington----------	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeD:							
Farmington----------	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FeF:							
Farmington----------	50	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents---------	50	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	1.00
Udifluvents---------	35	Slight		Slight		Poorly suited	
						Flooding	1.00
Fo:							
Fonda---------------	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	1.00
						Strength	0.50
GrB:							
Greene--------------	50	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Strength	0.50
Tuller--------------	30	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Strength	0.50
Hb:							
Hamplain------------	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Strength	0.50
HdC:							
Hawksnest-----------	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
HeA:							
Herkimer, fan-------	80	Slight		Slight		Moderately suited	
						Strength	0.50
HeB:							
Herkimer, fan-------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
HnB:							
Honeoye-------------	70	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
HnC:							
Honeoye-------------	70	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
HnD:							
Honeoye	70	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
HoE:							
Honeoye	45	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Lansing	35	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
HrB:							
Howard	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
HrC:							
Howard	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
HrD:							
Howard	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
LaB:							
Lackawanna	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
LaC:							
Lackawanna	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
LaD:							
Lackawanna	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
LaE:							
Lackawanna	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
LeB:							
Lansing	70	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
LeC:							
Lansing	70	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
LeD:							
Lansing	70	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
LfB:							
Lewbath	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
LfC:							
Lewbath	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
LfD:							
Lewbath	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
LfE:							
Lewbath	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
LhC:							
Lewbeach	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
LkB:							
Lima	70	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
LkC:							
Lima	70	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
LoB:							
Lordstown	55	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
Arnot	25	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
LpC:							
Lordstown	55	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
LpC:							
Chadakoin-----------	25	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
LpD:							
Lordstown-----------	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Chadakoin-----------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
LrE:							
Lordstown-----------	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Chadakoin-----------	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Manlius-------------	20	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Ly:							
Lyons---------------	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50
MaA:							
Manheim-------------	80	Slight		Slight		Moderately suited	
						Wetness	0.50
						Strength	0.50
MaB:							
Manheim-------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
						Slope	0.50
MaC:							
Manheim-------------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
McB:							
Manlius-------------	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
McC:							
Manlius-------------	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
McD:							
Manlius-------------	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
MeB:							
Mardin--------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
MeC:							
Mardin--------------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
MeD:							
Mardin--------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
MmC:							
Mongaup-------------	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
Franklinville-------	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
MmD:							
Mongaup-------------	50	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Franklinville-------	30	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
MnB:							
Mongaup-------------	50	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
Hawksnest-----------	30	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
MnE:							
Mongaup-------------	55	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Hawksnest-----------	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
MoB:							
Morris	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
						Slope	0.50
MoC:							
Morris	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
MpC:							
Morris	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Wetness	0.50
						Slope	0.50
						Strength	0.50
Volusia	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Wetness	0.50
						Slope	0.50
						Strength	0.50
Np:							
Norchip	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Strength	0.50
ObB:							
Onteora	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
ObC:							
Onteora	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
OeB:							
Ontusia	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
OeC:							
Ontusia	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
OgB:							
Oquaga	60	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
Arnot	20	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
OgC:							
Oquaga	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
Arnot	20	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
OgD:							
Oquaga	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Arnot	20	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
OgE:							
Oquaga	60	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Arnot	20	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
OpB:							
Oquaga	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
Lordstown	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
OpC:							
Oquaga	40	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
Lordstown	35	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
OpD:							
Oquaga	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Lordstown	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Ot:							
Otego	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Strength	0.50
Pa:							
Palms	75	Severe		Severe		Poorly suited	
		Histosol	1.00	Histosol	1.00	Ponding	1.00
						Strength	1.00
						Wetness	1.00

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
PdB:							
Patchin-------------	80	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Strength	0.50
Pt:							
Pits, gravel and sand---------------	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry--------	75	Not rated		Not rated		Not rated	
Ra:							
Raynham-------------	80	Slight		Slight		Moderately suited	
						Wetness	0.50
						Strength	0.50
Re:							
Red Hook------------	80	Slight		Slight		Moderately suited	
						Wetness	0.50
						Strength	0.50
RhA:							
Rhinebeck-----------	80	Slight		Slight		Moderately suited	
						Wetness	0.50
						Strength	0.50
RhB:							
Rhinebeck-----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
RlA:							
Riverhead, loamy substratum---------	75	Slight		Slight		Well suited	
RlB:							
Riverhead, loamy substratum---------	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Sa:							
Saprists------------	45	Severe		Severe		Poorly suited	
		Histosol	1.00	Histosol	1.00	Ponding	1.00
						Strength	1.00
						Wetness	1.00
Aquents-------------	40	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	0.50
						Strength	0.50
SbB:							
Scio----------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
ScA:							
Scio	80	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50
ScB:							
Scio	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
ThB:							
Torull	50	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Strength	0.50
Gretor	30	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Strength	0.50
TkB:							
Towerville	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
TkC:							
Towerville	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
TkD:							
Towerville	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
TlB:							
Trestle	50	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Flooding	1.00
						Strength	0.50
Deposit	35	Slight		Slight		Poorly suited	
						Flooding	1.00
						Wetness	0.50
TpB:							
Tunkhannock	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
TpC:							
Tunkhannock	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Ud:							
Udorthents, refuse substratum	85	Not rated		Not rated		Not rated	
Ue:							
Udorthents, smoothed	70	Not rated		Not rated		Not rated	

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
UnA:							
Unadilla------------	80	Slight		Slight		Moderately suited	
						Strength	0.50
UnB:							
Unadilla------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
VaB:							
Valois--------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
VaC:							
Valois--------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
VaD:							
Valois--------------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
VaE:							
Valois--------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
VaF:							
Valois--------------	80	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
VcB:							
Valois--------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
VlB:							
Vly-----------------	80	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
VlC:							
Vly-----------------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
VlD:							
Vly-----------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
VlE:							
Vly-----------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
VoA:							
Volusia-------------	80	Slight		Slight		Moderately suited	
						Wetness	0.50
						Strength	0.50
VoB:							
Volusia-------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50
						Strength	0.50
						Slope	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
VoC:							
Volusia	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Wetness	0.50
						Strength	0.50
W:							
Water	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Wetness	0.50
						Strength	0.50
WeA:							
Wassaic	80	Slight		Slight		Moderately suited	
						Strength	0.50
WeB:							
Wassaic	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
WeC:							
Wassaic	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
WeD:							
Wassaic	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Wg:							
Wayland	75	Slight		Slight		Poorly suited	
						Flooding	1.00
						Wetness	1.00
						Strength	0.50
WlB:							
Wellsboro	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
WlC:							
Wellsboro	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
WlD:							
Wellsboro	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50

Table 10.--Hazard of Erosion and Suitability for Roads on Forestland--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: Rating class and limiting features	Value	Hazard of erosion on roads and trails: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value
WmC:							
Wellsboro-----------	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
Mardin--------------	30	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
WpB:							
Willdin-------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Slope	0.50
						Wetness	0.50
WpC:							
Willdin-------------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50
WpD:							
Willdin-------------	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
						Wetness	0.50
WsB:							
Willowemoc----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
						Slope	0.50
WsC:							
Willowemoc----------	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50

Table 11.--Forestland Planting and Harvesting

[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	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Ad:							
Alden----------------	70	Well suited		Well suited		Poorly suited	
						Strength	1.00
At:							
Atherton------------	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
BfB:							
Bath----------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
BfC:							
Bath----------------	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
BfD:							
Bath----------------	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
BfE:							
Bath----------------	75	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
						Strength	0.50
BhC:							
Bath----------------	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Lackawanna----------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
BhE:							
Bath----------------	50	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Lackawanna----------	30	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Cb:							
Canandaigua---------	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
Cc:							
Canandaigua---------	85	Well suited		Well suited		Moderately suited	
						Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Cd:							
Carbondale----------	75	Well suited		Well suited		Poorly suited	
						Strength	1.00
Ce:							
Carlisle------------	75	Well suited		Well suited		Poorly suited	
						Strength	1.00
CfA:							
Castile-------------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
CfB:							
Castile-------------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
ChA:							
Chenango------------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
ChB:							
Chenango------------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
ChC:							
Chenango------------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
ChD:							
Chenango------------	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
ClE:							
Chenango------------	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Howard--------------	15	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Tunkhannock---------	15	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
CnA:							
Chenango------------	85	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
CnB:							
Chenango------------	85	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Cp:							
Chippewa------------	45	Well suited		Moderately suited		Poorly suited	
				Rock fragments	0.50	Strength	1.00
Norwich-------------	35	Well suited		Well suited		Moderately suited	
						Strength	0.50
Cr:							
Chippewa------------	45	Well suited		Moderately suited		Poorly suited	
				Rock fragments	0.50	Strength	1.00
Norwich-------------	35	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
CsB:							
Conesus-------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
CsC:							
Conesus-------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
DaB:							
Danley--------------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Nunda---------------	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
DaC:							
Danley--------------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Nunda---------------	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
DaD:							
Danley--------------	60	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Nunda---------------	25	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
DeB:							
Darien--------------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Burdett-------------	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
DeC:							
Darien--------------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
DeC:							
Burdett-------------	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
Ed:							
Edwards-------------	75	Well suited		Well suited		Poorly suited	
						Strength	1.00
FaB:							
Farmington----------	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
FeB:							
Farmington----------	60	Well suited		Well suited		Moderately suited	
						Strength	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeC:							
Farmington----------	60	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeD:							
Farmington----------	60	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeF:							
Farmington----------	50	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Strength	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents---------	50	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
Udifluvents---------	35	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
Fo:							
Fonda---------------	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
GrB:							
Greene--------------	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
Tuller--------------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Hb:							
Hamplain------------	75	Well suited		Well suited		Moderately suited	
						Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
HdC:							
Hawksnest	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
HeA:							
Herkimer, fan	80	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
HeB:							
Herkimer, fan	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
HnB:							
Honeoye	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
HnC:							
Honeoye	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
HnD:							
Honeoye	70	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
HoE:							
Honeoye	45	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Strength	0.50
Lansing	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Strength	0.50
HrB:							
Howard	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
HrC:							
Howard	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
HrD:							
Howard	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
LaB:							
Lackawanna	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
LaC:							
Lackawanna	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
LaD:							
Lackawanna----------	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
LaE:							
Lackawanna----------	75	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Strength	0.50
						Slope	0.50
LeB:							
Lansing-------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
LeC:							
Lansing-------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
LeD:							
Lansing-------------	70	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
LfB:							
Lewbath-------------	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
LfC:							
Lewbath-------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
LfD:							
Lewbath-------------	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
LfE:							
Lewbath-------------	80	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Strength	0.50
				Rock fragments	0.50	Slope	0.50
LhC:							
Lewbeach------------	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
LkB:							
Lima----------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
LkC:							
Lima----------------	70	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
LoB:							
Lordstown-----------	55	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
LoB:							
Arnot	25	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
LpC:							
Lordstown	55	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
Chadakoin	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
LpD:							
Lordstown	55	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Chadakoin	30	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
LrE:							
Lordstown	40	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Chadakoin	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Manlius	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Ly:							
Lyons	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
MaA:							
Manheim	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
MaB:							
Manheim	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
MaC:							
Manheim	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
McB:							
Manlius	75	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
McC:							
Manlius-------------	75	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
McD:							
Manlius-------------	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
MeB:							
Mardin--------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
MeC:							
Mardin--------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
MeD:							
Mardin--------------	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
MmC:							
Mongaup-------------	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Franklinville-------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
MmD:							
Mongaup-------------	50	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Franklinville-------	30	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
MnB:							
Mongaup-------------	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Hawksnest-----------	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
MnE:							
Mongaup-------------	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50
Hawksnest-----------	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
MoB:							
Morris--------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
MoC:							
Morris--------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
MpC:							
Morris--------------	50	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
Volusia-------------	30	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
Np:							
Norchip-------------	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
ObB:							
Onteora-------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
ObC:							
Onteora-------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
OeB:							
Ontusia-------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
OeC:							
Ontusia-------------	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
OgB:							
Oquaga--------------	60	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
Arnot---------------	20	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
OgC:							
Oquaga--------------	60	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
Arnot---------------	20	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
OgD:							
Oquaga--------------	60	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Strength	0.50
				Rock fragments	0.75	Slope	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
OgD:							
Arnot----------------	20	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
OgE:							
Oquaga--------------	60	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
Arnot----------------	20	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.50		
OpB:							
Oquaga--------------	40	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
Lordstown-----------	35	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
OpC:							
Oquaga--------------	40	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
Lordstown-----------	35	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
				Slope	0.50		
OpD:							
Oquaga--------------	40	Moderately suited		Poorly suited		Moderately suited	
		Rock fragments	0.50	Slope	0.75	Strength	0.50
				Rock fragments	0.75	Slope	0.50
Lordstown-----------	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
Ot:							
Otego----------------	75	Well suited		Well suited		Moderately suited	
						Strength	0.50
Pa:							
Palms----------------	75	Well suited		Well suited		Poorly suited	
						Strength	1.00
PdB:							
Patchin-------------	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
Pt:							
Pits, gravel and sand---------------	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry--------	75	Not rated		Not rated		Not rated	

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Ra:							
Raynham	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
Re:							
Red Hook	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
RhA:							
Rhinebeck	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
RhB:							
Rhinebeck	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
RlA:							
Riverhead, loamy substratum	75	Well suited		Well suited		Well suited	
RlB:							
Riverhead, loamy substratum	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
Sa:							
Saprists	45	Well suited		Well suited		Poorly suited	
						Strength	1.00
Aquents	40	Well suited		Well suited		Moderately suited	
						Strength	0.50
SbB:							
Scio	80	Well suited		Well suited		Well suited	
ScA:							
Scio	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
ScB:							
Scio	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
ThB:							
Torull	50	Well suited		Well suited		Moderately suited	
						Strength	0.50
Gretor	30	Well suited		Well suited		Moderately suited	
						Strength	0.50
TkB:							
Towerville	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
TkC:							
Towerville	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
TkD:							
Towerville	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
TlB:							
Trestle	50	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
Deposit	35	Moderately suited		Moderately suited		Well suited	
		Sandiness	0.50	Rock fragments	0.50		
				Sandiness	0.50		
TpB:							
Tunkhannock	85	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
TpC:							
Tunkhannock	85	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
Ud:							
Udorthents, refuse substratum	85	Not rated		Not rated		Not rated	
Ue:							
Udorthents, smoothed	70	Not rated		Not rated		Not rated	
UnA:							
Unadilla	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
UnB:							
Unadilla	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
VaB:							
Valois	85	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
VaC:							
Valois	85	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
VaD:							
Valois	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
VaE:							
Valois	80	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
VaF:							
Valois	80	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		
VcB:							
Valois	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Strength	0.50
VlB:							
Vly	80	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
VlC:							
Vly	80	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
				Slope	0.50		
VlD:							
Vly	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
VlE:							
Vly	80	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.50		
VoA:							
Volusia	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
VoB:							
Volusia	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
VoC:							
Volusia	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
W:							
Water	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville	75	Well suited		Well suited		Moderately suited	
						Strength	0.50
WeA:							
Wassaic	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
WeB:							
Wassaic	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
WeC:							
Wassaic	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50

Table 11.--Forestland Planting and Harvesting--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
WeD:							
Wassaic	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
Wg:							
Wayland	75	Well suited		Well suited		Moderately suited	
						Strength	0.50
WlB:							
Wellsboro	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
WlC:							
Wellsboro	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
WlD:							
Wellsboro	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
WmC:							
Wellsboro	50	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
Mardin	30	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
WpB:							
Willdin	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
WpC:							
Willdin	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
				Rock fragments	0.50		
WpD:							
Willdin	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
				Rock fragments	0.50	Slope	0.50
WsB:							
Willowemoc	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
WsC:							
Willowemoc	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50

Table 12.--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: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
Ad:							
Alden	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	0.49	Restricted permeability	0.49	Restricted permeability	0.49
At:							
Atherton	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BfB:							
Bath	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Gravel content	0.06	Gravel content	0.06	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Restricted permeability	0.99
						Depth to saturated zone	0.03
BfC:							
Bath	75	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Gravel content	0.06	Gravel content	0.06	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Depth to saturated zone	0.03
BfD:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Gravel content	0.06	Gravel content	0.06	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Depth to saturated zone	0.03
BfE:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Gravel content	0.06	Gravel content	0.06	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Depth to saturated zone	0.03

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
BhC:							
Bath	50	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Too Stony	0.53	Too Stony	0.53	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Too Stony	0.53
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Depth to saturated zone	0.03
Lackawanna	30	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Too Stony	0.53	Too Stony	0.53	Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12	Too Stony	0.53
		Gravel content	0.04	Gravel content	0.04	Depth to saturated zone	0.24
BhE:							
Bath	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Too Stony	0.53	Too Stony	0.53	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Too Stony	0.53
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Depth to saturated zone	0.03
Lackawanna	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Too Stony	0.53	Too Stony	0.53	Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12	Too Stony	0.53
		Gravel content	0.04	Gravel content	0.04	Depth to saturated zone	0.24
Cb:							
Canandaigua	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Restricted permeability	0.26
Cc:							
Canandaigua	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Restricted permeability	0.26
Cd:							
Carbondale	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Ponding	1.00

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
Ce:							
Carlisle------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Ponding	1.00
CfA:							
Castile-------------	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Gravel content	1.00
		Gravel content	0.08	Gravel content	0.08	Depth to saturated zone	0.77
CfB:							
Castile-------------	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Gravel content	1.00
		Gravel content	0.08	Gravel content	0.08	Slope	1.00
						Depth to saturated zone	0.77
ChA:							
Chenango------------	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
ChB:							
Chenango------------	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Slope	1.00
ChC:							
Chenango------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
ChD:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
ClE:							
Chenango------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Howard--------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
Tunkhannock---------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
CnA:							
Chenango------------	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Gravel content	0.08	Gravel content	1.00
		Gravel content	0.08				

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
CnB:							
Chenango------------	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Gravel content	0.08	Gravel content	1.00
		Gravel content	0.08			Slope	1.00
Cp:							
Chippewa------------	45	Not rated		Not rated		Not rated	
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Gravel content	0.22
Cr:							
Chippewa------------	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Too Stony	0.53	Too Stony	0.53	Too Stony	0.53
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Too Stony	0.53	Too Stony	0.53	Too Stony	0.53
						Gravel content	0.22
CsB:							
Conesus-------------	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Slope	0.88
						Depth to saturated zone	0.77
CsC:							
Conesus-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.77	Slope	0.63	Restricted permeability	0.99
		Slope	0.63	Depth to saturated zone	0.43	Depth to saturated zone	0.77
DaB:							
Danley--------------	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Slope	0.88
						Depth to saturated zone	0.77
Nunda---------------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Slope	0.88
		Restricted permeability	0.26	Restricted permeability	0.26	Depth to saturated zone	0.77
						Restricted permeability	0.26

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
DaC:							
Danley	60	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Depth to saturated zone	0.77	Slope	0.63	Restricted permeability	0.96
		Slope	0.63	Depth to saturated zone	0.43	Depth to saturated zone	0.77
Nunda	25	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.77	Slope	0.63	Slope	1.00
		Slope	0.63	Depth to saturated zone	0.43	Depth to saturated zone	0.77
		Restricted permeability	0.26	Restricted permeability	0.26	Restricted permeability	0.26
DaD:							
Danley	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
Nunda	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
		Restricted permeability	0.26	Restricted permeability	0.26	Restricted permeability	0.26
DeB:							
Darien	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	0.96
						Slope	0.88
						Restricted permeability	0.26
						Content of large stones	0.03
Burdett	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Slope	0.88
DeC:							
Darien	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	0.96
						Restricted permeability	0.26
						Content of large stones	0.03

Table 12.--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
DeC:							
Burdett-------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.96
Ed:							
Edwards-------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Ponding	1.00
FaB:							
Farmington----------	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.50
						Gravel content	0.22
FeB:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.50
						Gravel content	0.22
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeC:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
						Gravel content	0.22
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeD:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.22
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeF:							
Farmington----------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.22
Rock outcrop--------	25	Not rated		Not rated		Not rated	

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
Fg:							
Fluvaquents	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Ponding	1.00	Flooding	0.40	Ponding	1.00
						Gravel content	0.88
						Content of large stones	0.01
Udifluvents	35	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Gravel content	0.22	Gravel content	0.22	Gravel content	1.00
						Content of large stones	0.01
Fo:							
Fonda	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
GrB:							
Greene	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Slope	0.88
						Depth to bedrock	0.54
Tuller	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Restricted permeability	0.49	Restricted permeability	0.49	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	0.88
						Restricted permeability	0.49
Hb:							
Hamplain	75	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
HdC:							
Hawksnest	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
						Gravel content	0.22
HeA:							
Herkimer, fan	80	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Gravel content	0.06	Gravel content	1.00
		Gravel content	0.06				
HeB:							
Herkimer, fan	80	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Gravel content	0.06	Gravel content	1.00
		Gravel content	0.06			Slope	0.88

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
HnB:							
Honeoye	70	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Restricted permeability	0.99
						Gravel content	0.78
						Depth to saturated zone	0.03
HnC:							
Honeoye	70	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Gravel content	0.78
						Depth to saturated zone	0.03
HnD:							
Honeoye	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Gravel content	0.78
						Depth to saturated zone	0.03
HoE:							
Honeoye	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.03	Depth to saturated zone	0.02	Gravel content	0.78
						Depth to saturated zone	0.03
Lansing	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
HrB:							
Howard	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Slope	0.88
HrC:							
Howard	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
HrD:							
Howard	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00

Table 12.--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
LaB:							
Lackawanna----------	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Slope	1.00
		Depth to saturated zone	0.24	Depth to saturated zone	0.12	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Depth to saturated zone	0.24
LaC:							
Lackawanna----------	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12		
						Depth to saturated zone	0.24
		Gravel content	0.06	Gravel content	0.06		
LaD:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12		
						Depth to saturated zone	0.24
		Gravel content	0.06	Gravel content	0.06		
LaE:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12		
						Depth to saturated zone	0.24
		Gravel content	0.06	Gravel content	0.06		
LeB:							
Lansing-------------	70	Not limited		Not limited		Very limited	
						Slope	1.00
						Gravel content	0.22
LeC:							
Lansing-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.22
LeD:							
Lansing-------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
LfB:							
Lewbath-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Slope	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Depth to saturated zone	0.88

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
LfC:							
Lewbath	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Depth to saturated zone	0.88	Slope	0.63	Restricted permeability	0.99
		Slope	0.63	Depth to saturated zone	0.56	Depth to saturated zone	0.88
		Gravel content	0.06	Gravel content	0.06		
LfD:							
Lewbath	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Depth to saturated zone	0.88
LfE:							
Lewbath	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Restricted permeability	0.99
		Gravel content	0.06	Gravel content	0.06	Depth to saturated zone	0.88
LhC:							
Lewbeach	75	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
		Depth to saturated zone	0.24	Depth to saturated zone	0.12	Gravel content	0.96
						Depth to saturated zone	0.24
						Content of large stones	0.03
LkB:							
Lima	70	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Restricted permeability	0.99
		Gravel content	0.01	Gravel content	0.01	Depth to saturated zone	0.77
LkC:							
Lima	70	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Depth to saturated zone	0.77	Slope	0.63	Restricted permeability	0.99
		Slope	0.63	Depth to saturated zone	0.43	Depth to saturated zone	0.77
		Gravel content	0.01	Gravel content	0.01		
LoB:							
Lordstown	55	Not limited		Not limited		Somewhat limited	
						Gravel content	0.99
						Slope	0.88
						Depth to bedrock	0.65

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
LoB:							
Arnot	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
						Slope	0.88
						Content of large stones	0.01
LpC:							
Lordstown	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.99
						Depth to bedrock	0.65
Chadakoin	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.22
LpD:							
Lordstown	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.99
						Depth to bedrock	0.65
Chadakoin	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
LrE:							
Lordstown	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.99
						Depth to bedrock	0.65
Chadakoin	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
Manlius	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
						Depth to bedrock	0.65
Ly:							
Lyons	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Gravel content	0.22
MaA:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Restricted permeability	0.50
						Gravel content	0.22

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
MaB:							
Manheim-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Slope	1.00
						Restricted permeability	0.50
						Gravel content	0.22
MaC:							
Manheim-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Restricted permeability	0.50
						Gravel content	0.22
McB:							
Manlius-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
						Slope	1.00
						Depth to bedrock	0.65
McC:							
Manlius-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
						Depth to bedrock	0.65
McD:							
Manlius-------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.06	Gravel content	0.06	Gravel content	1.00
						Depth to bedrock	0.65
MeB:							
Mardin--------------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Restricted permeability	0.99
						Gravel content	0.96
						Depth to saturated zone	0.93
						Content of large stones	0.03
MeC:							
Mardin--------------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Restricted permeability	0.99
		Slope	0.63	Slope	0.63	Gravel content	0.96
						Depth to saturated zone	0.93
						Content of large stones	0.03

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
MeD:							
Mardin--------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Gravel content	0.96
						Depth to saturated zone	0.93
						Content of large stones	0.03
MmC:							
Mongaup-------------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.16
Franklinville-------	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.22
MmD:							
Mongaup-------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.16
Franklinville-------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
MnB:							
Mongaup-------------	50	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Slope	0.88
						Depth to bedrock	0.16
Hawksnest-----------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.88
						Gravel content	0.22
MnE:							
Mongaup-------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.16
Hawksnest-----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.22
MoB:							
Morris--------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Slope	1.00
						Restricted permeability	0.99

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
MoC:							
Morris	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
		Gravel content	0.01	Gravel content	0.01		
MpC:							
Morris	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Slope	1.00
		Too Stony	0.53	Too Stony	0.53	Restricted permeability	0.99
		Slope	0.04	Slope	0.04		
		Gravel content	0.01	Gravel content	0.01	Too Stony	0.53
Volusia	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Restricted permeability	0.99
		Too Stony	0.53	Too Stony	0.53		
		Slope	0.04	Slope	0.04	Too Stony	0.53
						Gravel content	0.18
Np:							
Norchip	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Restricted permeability	0.99
		Gravel content	0.01	Gravel content	0.01		
ObB:							
Onteora	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
						Restricted permeability	0.99
		Gravel content	0.01	Gravel content	0.01		
						Slope	0.88
ObC:							
Onteora	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
		Gravel content	0.01	Gravel content	0.01		

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
OeB:							
Ontusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Restricted permeability	0.99
						Slope	0.88
OeC:							
Ontusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Restricted permeability	0.99
OgB:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Slope	0.88
						Depth to bedrock	0.65
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
						Slope	0.88
						Content of large stones	0.01
OgC:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
						Content of large stones	0.01
OgD:							
Oquaga	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
Arnot	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
						Content of large stones	0.01

Table 12.--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
OgE:							
Oquaga	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
Arnot	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.54	Gravel content	0.54	Gravel content	1.00
						Content of large stones	0.01
OpB:							
Oquaga	40	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Slope	0.88
						Depth to bedrock	0.65
Lordstown	35	Not limited		Not limited		Somewhat limited	
						Gravel content	0.99
						Slope	0.88
						Depth to bedrock	0.65
OpC:							
Oquaga	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
Lordstown	35	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
						Gravel content	0.99
						Depth to bedrock	0.65
OpD:							
Oquaga	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
						Depth to bedrock	0.65
Lordstown	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.99
						Depth to bedrock	0.65
Ot:							
Otego	75	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.19	Flooding	0.60
		Depth to saturated zone	0.39			Depth to saturated zone	0.39
Pa:							
Palms	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
PdB:							
Patchin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Depth to bedrock	0.29
						Slope	0.12
Pt:							
Pits, gravel and sand	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	
Ra:							
Raynham	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Re:							
Red Hook	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
						Gravel content	0.22
RhA:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
RhB:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Slope	0.50
RlA:							
Riverhead, loamy substratum	75	Not limited		Not limited		Not limited	
RlB:							
Riverhead, loamy substratum	75	Not limited		Not limited		Very limited	
						Slope	1.00
Sa:							
Saprists	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Ponding	1.00

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
Sa:							
Aquents	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
SbB:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Slope	0.50
ScA:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
ScB:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Slope	0.50
ThB:							
Torull	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Restricted permeability	0.49	Restricted permeability	0.49	Restricted permeability	0.49
						Slope	0.12
Gretor	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Depth to bedrock	0.54
						Slope	0.50
						Gravel content	0.22
TkB:							
Towerville	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.77	Restricted permeability	0.49	Slope	0.88
		Restricted permeability	0.49	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Restricted permeability	0.49
						Depth to bedrock	0.10
TkC:							
Towerville	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.77	Slope	0.63	Slope	1.00
		Slope	0.63	Restricted permeability	0.49	Depth to saturated zone	0.77
		Restricted permeability	0.49	Depth to saturated zone	0.43	Restricted permeability	0.49
						Depth to bedrock	0.10

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
TkD:							
Towerville----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.77	Restricted permeability	0.49	Depth to saturated zone	0.77
		Restricted permeability	0.49	Depth to saturated zone	0.43	Restricted permeability	0.49
						Depth to bedrock	0.10
TlB:							
Trestle-------------	50	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Gravel content	0.08	Gravel content	1.00
		Gravel content	0.08			Flooding	0.60
						Slope	0.12
Deposit-------------	35	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Depth to saturated zone	0.43	Gravel content	1.00
		Depth to saturated zone	0.77	Gravel content	0.06	Depth to saturated zone	0.77
		Gravel content	0.06			Flooding	0.60
						Slope	0.12
TpB:							
Tunkhannock---------	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
						Slope	1.00
TpC:							
Tunkhannock---------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.08	Gravel content	0.08	Gravel content	1.00
Ud:							
Udorthents, refuse substratum---------	85	Not limited		Not limited		Very limited	
						Slope	1.00
						Gravel content	0.91
Ue:							
Udorthents, smoothed	70	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.22	Gravel content	0.22	Gravel content	1.00
						Slope	1.00
						Content of large stones	0.01
UnA:							
Unadilla------------	80	Not limited		Not limited		Not limited	
UnB:							
Unadilla------------	80	Not limited		Not limited		Somewhat limited	
						Slope	0.50
VaB:							
Valois--------------	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
						Slope	1.00
VaC:							
Valois--------------	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.68	Gravel content	0.68	Slope	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
VaD:							
Valois	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
VaE:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
VaF:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
VcB:							
Valois	85	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
						Slope	0.50
VlB:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Gravel content	0.27	Gravel content	0.27	Gravel content	1.00
						Depth to bedrock	0.95
						Slope	0.88
VlC:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Gravel content	0.27	Gravel content	0.27	Slope	1.00
						Depth to bedrock	0.95
VlD:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.27	Gravel content	0.27	Slope	1.00
						Depth to bedrock	0.95
VlE:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.27	Gravel content	0.27	Slope	1.00
						Depth to bedrock	0.95
VoA:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Gravel content	0.22
VoB:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Restricted permeability	0.99
						Gravel content	0.22

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
VoC:							
Volusia-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.63	Slope	0.63	Restricted permeability	0.99
						Gravel content	0.22
W:							
Water---------------	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville-----------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Flooding	1.00			Flooding	0.60
WeA:							
Wassaic-------------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.05	Depth to saturated zone	0.02	Gravel content	0.22
						Depth to saturated zone	0.05
WeB:							
Wassaic-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.05	Depth to saturated zone	0.02	Slope	1.00
						Depth to bedrock	0.35
						Gravel content	0.22
						Depth to saturated zone	0.05
WeC:							
Wassaic-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
		Depth to saturated zone	0.05	Depth to saturated zone	0.02	Depth to bedrock	0.35
						Gravel content	0.22
						Depth to saturated zone	0.05
WeD:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.05	Depth to saturated zone	0.02	Depth to bedrock	0.35
						Gravel content	0.22
						Depth to saturated zone	0.05
Wg:							
Wayland-------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Restricted permeability	0.96	Flooding	1.00
		Restricted permeability	0.96	Flooding	0.40	Restricted permeability	0.96

Table 12.--Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
WlB:							
Wellsboro-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.81	Depth to saturated zone	0.48	Gravel content	0.99
						Restricted permeability	0.99
						Depth to saturated zone	0.81
WlC:							
Wellsboro-----------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.81	Slope	0.63	Gravel content	0.99
		Slope	0.63	Depth to saturated zone	0.48	Restricted permeability	0.99
						Depth to saturated zone	0.81
WlD:							
Wellsboro-----------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	0.99
		Depth to saturated zone	0.81	Depth to saturated zone	0.48	Restricted permeability	0.99
						Depth to saturated zone	0.81
WmC:							
Wellsboro-----------	50	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.81	Slope	0.63	Gravel content	0.99
		Slope	0.63	Too Stony	0.53	Restricted permeability	0.99
		Too Stony	0.53	Depth to saturated zone	0.48	Depth to saturated zone	0.81
						Too Stony	0.53
Mardin--------------	30	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Restricted permeability	0.99
		Slope	0.63	Slope	0.63	Gravel content	0.96
		Too Stony	0.53	Too Stony	0.53	Depth to saturated zone	0.93
						Too Stony	0.53
WpB:							
Willdin-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Gravel content	0.99
						Restricted permeability	0.99
						Depth to saturated zone	0.93

Table 12.--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
WpC:							
Willdin-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	0.99
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Restricted permeability	0.99
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.93
WpD:							
Willdin-------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Gravel content	0.99
		Depth to saturated zone	0.93	Depth to saturated zone	0.64	Restricted permeability	0.99
						Depth to saturated zone	0.93
WsB:							
Willowemoc----------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	0.99
		Depth to saturated zone	0.81	Depth to saturated zone	0.48	Restricted permeability	0.99
						Depth to saturated zone	0.81
WsC:							
Willowemoc----------	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
						Gravel content	0.99
		Depth to saturated zone	0.81	Slope	0.63	Restricted permeability	0.99
		Slope	0.63	Depth to saturated zone	0.48	Depth to saturated zone	0.81

Table 13.--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: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
Ad:							
Alden	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
At:							
Atherton	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BfB:							
Bath	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.06
						Depth to saturated zone	0.02
BfC:							
Bath	75	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Gravel content	0.06
						Depth to saturated zone	0.02
BfD:							
Bath	75	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.06
						Depth to saturated zone	0.02
BfE:							
Bath	75	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
						Gravel content	0.06
						Depth to saturated zone	0.02
BhC:							
Bath	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too Stony	0.53	Too Stony	0.53	Slope	0.63
						Gravel content	0.06
						Depth to saturated zone	0.02
Lackawanna	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Too Stony	0.53	Too Stony	0.53	Slope	0.63
						Depth to saturated zone	0.12
						Droughty	0.06
						Gravel content	0.04
						Content of large stones	0.01

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
BhE:							
Bath----------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Too Stony	0.53	Slope	1.00
		Too Stony	0.53			Gravel content	0.06
						Depth to saturated zone	0.02
Lackawanna----------	30	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Too Stony	0.53	Slope	1.00
		Too Stony	0.53			Depth to saturated zone	0.12
						Droughty	0.06
						Gravel content	0.04
						Content of large stones	0.01
Cb:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cc:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Cd:							
Carbondale----------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Ce:							
Carlisle------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
CfA:							
Castile-------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Droughty	0.63
						Depth to saturated zone	0.43
						Gravel content	0.08
CfB:							
Castile-------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Droughty	0.63
						Depth to saturated zone	0.43
						Gravel content	0.08

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
ChA:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.15
						Gravel content	0.01
ChB:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.15
						Gravel content	0.01
ChC:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Droughty	0.15
						Gravel content	0.01
ChD:							
Chenango------------	85	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.15
						Gravel content	0.01
ClE:							
Chenango------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Droughty	0.15
						Gravel content	0.01
Howard--------------	15	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Droughty	0.12
						Gravel content	0.01
Tunkhannock---------	15	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Gravel content	0.08
						Droughty	0.02
CnA:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.15
						Gravel content	0.08
CnB:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.15
						Gravel content	0.08
Cp:							
Chippewa------------	45	Not rated		Not rated		Not rated	
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Droughty	0.49

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
Cr:							
Chippewa------------	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too Stony	0.53	Too Stony	0.53	Droughty	0.80
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too Stony	0.53	Too Stony	0.53	Droughty	0.49
CsB:							
Conesus-------------	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
CsC:							
Conesus-------------	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.63
						Depth to saturated zone	0.43
DaB:							
Danley--------------	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
Nunda---------------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
DaC:							
Danley--------------	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.63
						Depth to saturated zone	0.43
Nunda---------------	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.63
						Depth to saturated zone	0.43
DaD:							
Danley--------------	60	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.08	Slope	1.00
		Depth to saturated zone	0.08			Depth to saturated zone	0.43
Nunda---------------	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.08	Slope	1.00
		Depth to saturated zone	0.08			Depth to saturated zone	0.43
DeB:							
Darien--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Content of large stones	0.03

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
DeB:							
Burdett	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DeC:							
Darien	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.63
						Content of large stones	0.03
Burdett	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.63
Ed:							
Edwards	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
FaB:							
Farmington	80	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.84
FeB:							
Farmington	60	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.84
Rock outcrop	20	Not rated		Not rated		Not rated	
FeC:							
Farmington	60	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.84
						Slope	0.63
Rock outcrop	20	Not rated		Not rated		Not rated	
FeD:							
Farmington	60	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.84
Rock outcrop	20	Not rated		Not rated		Not rated	
FeF:							
Farmington	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.84

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
FeF:							
Rock outcrop	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
						Content of large stones	0.01
Udifluvents	35	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Droughty	0.99
						Gravel content	0.22
						Content of large stones	0.01
Fo:							
Fonda	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
GrB:							
Greene	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Depth to bedrock	0.54
Tuller	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
						Depth to saturated zone	1.00
						Droughty	1.00
						Gravel content	0.01
Hb:							
Hamplain	75	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
HdC:							
Hawksnest	75	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.89
						Slope	0.63
HeA:							
Herkimer, fan	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.06
HeB:							
Herkimer, fan	80	Not limited		Not limited		Somewhat limited	
						Gravel content	0.06
HnB:							
Honeoye	70	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.02

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
HnC:							
Honeoye	70	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to saturated zone	0.02
HnD:							
Honeoye	70	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to saturated zone	0.02
HoE:							
Honeoye	45	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Depth to saturated zone	0.02
Lansing	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
HrB:							
Howard	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.12
						Gravel content	0.01
HrC:							
Howard	85	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Droughty	0.12
						Gravel content	0.01
HrD:							
Howard	85	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.12
						Gravel content	0.01
LaB:							
Lackawanna	85	Not limited		Not limited		Somewhat limited	
						Depth to saturated zone	0.12
						Gravel content	0.06
						Droughty	0.06
LaC:							
Lackawanna	85	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to saturated zone	0.12
						Gravel content	0.06
						Droughty	0.06
LaD:							
Lackawanna	75	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to saturated zone	0.12
						Gravel content	0.06
						Droughty	0.06

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
LaE:							
Lackawanna----------	75	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Depth to saturated zone	0.12
						Gravel content	0.06
						Droughty	0.06
LeB:							
Lansing-------------	70	Not limited		Not limited		Not limited	
LeC:							
Lansing-------------	70	Not limited		Not limited		Somewhat limited	
						Slope	0.63
LeD:							
Lansing-------------	70	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
LfB:							
Lewbath-------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
						Droughty	0.09
						Gravel content	0.06
LfC:							
Lewbath-------------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Slope	0.63
						Depth to saturated zone	0.56
						Droughty	0.09
						Gravel content	0.06
LfD:							
Lewbath-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.18	Slope	1.00
		Depth to saturated zone	0.18			Depth to saturated zone	0.56
						Droughty	0.09
						Gravel content	0.06
LfE:							
Lewbath-------------	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
						Droughty	0.09
						Gravel content	0.06
LhC:							
Lewbeach------------	75	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Droughty	0.14
						Depth to saturated zone	0.12
						Content of large stones	0.03

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
LkB:							
Lima	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
						Droughty	0.06
						Gravel content	0.01
LkC:							
Lima	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.63
						Depth to saturated zone	0.43
						Droughty	0.06
						Gravel content	0.01
LoB:							
Lordstown	55	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Droughty	0.05
Arnot	25	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.99
						Gravel content	0.54
						Content of large stones	0.01
LpC:							
Lordstown	55	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.63
						Droughty	0.05
Chadakoin	25	Not limited		Not limited		Somewhat limited	
						Slope	0.63
LpD:							
Lordstown	55	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.05
Chadakoin	30	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
LrE:							
Lordstown	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.05
Chadakoin	25	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
Manlius	20	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Droughty	0.81
						Depth to bedrock	0.65
						Gravel content	0.06

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
Ly:							
Lyons	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MaA:							
Manheim	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
MaB:							
Manheim	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
MaC:							
Manheim	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Slope	0.63
McB:							
Manlius	75	Not limited		Not limited		Somewhat limited	
						Droughty	0.81
						Depth to bedrock	0.65
						Gravel content	0.06
McC:							
Manlius	75	Not limited		Not limited		Somewhat limited	
						Droughty	0.81
						Depth to bedrock	0.65
						Slope	0.63
						Gravel content	0.06
McD:							
Manlius	75	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.81
						Depth to bedrock	0.65
						Gravel content	0.06
MeB:							
Mardin	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Depth to saturated zone	0.64
						Droughty	0.55
						Content of large stones	0.03
MeC:							
Mardin	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Depth to saturated zone	0.64
						Slope	0.63
						Droughty	0.55
						Content of large stones	0.03

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
MeD:							
Mardin	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.27	Slope	1.00
		Depth to saturated zone	0.27			Depth to saturated zone	0.64
						Droughty	0.55
						Content of large stones	0.03
MmC:							
Mongaup	50	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to bedrock	0.16
						Gravel content	0.01
Franklinville	30	Not limited		Not limited		Somewhat limited	
						Slope	0.63
MmD:							
Mongaup	50	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.16
						Gravel content	0.01
Franklinville	30	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
MnB:							
Mongaup	50	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.16
						Gravel content	0.01
Hawksnest	30	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.83
MnE:							
Mongaup	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Slope	1.00
						Depth to bedrock	0.16
						Gravel content	0.01
Hawksnest	25	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.96	Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.83
MoB:							
Morris	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Droughty	0.95
						Gravel content	0.01

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
MoC:							
Morris	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Droughty	0.95
						Slope	0.63
						Gravel content	0.01
MpC:							
Morris	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Too Stony	0.53	Too Stony	0.53	Droughty	0.95
						Slope	0.04
						Gravel content	0.01
Volusia	30	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
		Too Stony	0.53	Too Stony	0.53	Droughty	0.73
						Slope	0.04
Np:							
Norchip	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Droughty	1.00
						Gravel content	0.01
ObB:							
Onteora	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Droughty	1.00
						Depth to saturated zone	0.99
						Gravel content	0.01
ObC:							
Onteora	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Droughty	1.00
						Depth to saturated zone	0.99
						Slope	0.63
						Gravel content	0.01
OeB:							
Ontusia	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Droughty	1.00
						Depth to saturated zone	0.99
						Gravel content	0.01
OeC:							
Ontusia	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Droughty	1.00
						Depth to saturated zone	0.99
						Slope	0.63
						Gravel content	0.01

Table 13.--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
OgB:							
Oquaga---------------	60	Not limited		Not limited		Somewhat limited	
						Droughty	0.86
						Depth to bedrock	0.65
						Gravel content	0.01
Arnot----------------	20	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.99
						Gravel content	0.54
						Content of large stones	0.01
OgC:							
Oquaga---------------	60	Not limited		Not limited		Somewhat limited	
						Droughty	0.86
						Depth to bedrock	0.65
						Slope	0.63
						Gravel content	0.01
Arnot----------------	20	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.99
						Slope	0.63
						Gravel content	0.54
						Content of large stones	0.01
OgD:							
Oquaga---------------	60	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.86
						Depth to bedrock	0.65
						Gravel content	0.01
Arnot----------------	20	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.99
						Gravel content	0.54
						Content of large stones	0.01
OgE:							
Oquaga---------------	60	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
						Droughty	0.86
						Depth to bedrock	0.65
						Gravel content	0.01
Arnot----------------	20	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.99
						Gravel content	0.54
						Content of large stones	0.01

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
OpB:							
Oquaga	40	Not limited		Not limited		Somewhat limited	
						Droughty	0.86
						Depth to bedrock	0.65
						Gravel content	0.01
Lordstown	35	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Droughty	0.05
OpC:							
Oquaga	40	Not limited		Not limited		Somewhat limited	
						Droughty	0.86
						Depth to bedrock	0.65
						Slope	0.63
						Gravel content	0.01
Lordstown	35	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.63
						Droughty	0.05
OpD:							
Oquaga	40	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Droughty	0.86
						Depth to bedrock	0.65
						Gravel content	0.01
Lordstown	35	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.05
Ot:							
Otego	75	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Depth to saturated zone	0.19
Pa:							
Palms	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
PdB:							
Patchin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Depth to bedrock	0.29
Pt:							
Pits, gravel and sand	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
Ra:							
Raynham	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
Re:							
Red Hook	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
RhA:							
Rhinebeck	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
RhB:							
Rhinebeck	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
RlA:							
Riverhead, loamy substratum	75	Not limited		Not limited		Not limited	
RlB:							
Riverhead, loamy substratum	75	Not limited		Not limited		Not limited	
Sa:							
Saprists	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
Aquents	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
SbB:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
ScA:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
ScB:							
Scio	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
ThB:							
Torull	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
						Depth to saturated zone	1.00
						Droughty	0.99
Gretor	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Depth to bedrock	0.54
TkB:							
Towerville	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
						Depth to bedrock	0.10
TkC:							
Towerville	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.63
						Depth to saturated zone	0.43
						Depth to bedrock	0.10
TkD:							
Towerville	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.08	Slope	1.00
		Depth to saturated zone	0.08			Depth to saturated zone	0.43
						Depth to bedrock	0.10
TlB:							
Trestle	50	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
						Droughty	0.10
						Gravel content	0.08
Deposit	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Flooding	0.60
						Depth to saturated zone	0.43
						Droughty	0.09
						Gravel content	0.06
TpB:							
Tunkhannock	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.08
						Droughty	0.02
TpC:							
Tunkhannock	85	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Gravel content	0.08
						Droughty	0.02
Ud:							
Udorthents, refuse substratum	85	Not limited		Not limited		Very limited	
						Droughty	1.00

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
Ue:							
Udorthents, smoothed	70	Not limited		Not limited		Somewhat limited	
						Gravel content	0.22
						Droughty	0.09
						Content of large stones	0.01
UnA:							
Unadilla------------	80	Not limited		Not limited		Not limited	
UnB:							
Unadilla------------	80	Not limited		Not limited		Not limited	
VaB:							
Valois--------------	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.68
VaC:							
Valois--------------	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.68
						Slope	0.63
VaD:							
Valois--------------	85	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Gravel content	0.68
VaE:							
Valois--------------	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.22	Slope	1.00
						Gravel content	0.68
VaF:							
Valois--------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.68
VcB:							
Valois--------------	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.68
VlB:							
Vly-----------------	80	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.95
						Droughty	0.84
						Gravel content	0.27
VlC:							
Vly-----------------	80	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.95
						Droughty	0.84
						Slope	0.63
						Gravel content	0.27
VlD:							
Vly-----------------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.95
						Droughty	0.84
						Gravel content	0.27

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
VlE:							
Vly-----------------	80	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
						Depth to bedrock	0.95
						Droughty	0.84
						Gravel content	0.27
VoA:							
Volusia-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Droughty	0.73
VoB:							
Volusia-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Droughty	0.73
VoC:							
Volusia-------------	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Droughty	0.73
						Slope	0.63
W:							
Water---------------	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville-----------	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	0.99
						Flooding	0.60
WeA:							
Wassaic-------------	80	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.35
						Depth to saturated zone	0.02
WeB:							
Wassaic-------------	80	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.35
						Depth to saturated zone	0.02
WeC:							
Wassaic-------------	80	Not limited		Not limited		Somewhat limited	
						Slope	0.63
						Depth to bedrock	0.35
						Depth to saturated zone	0.02
WeD:							
Wassaic-------------	80	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.35
						Depth to saturated zone	0.02

Table 13.--Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
Wg:							
Wayland	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
WlB:							
Wellsboro	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Droughty	0.70
						Depth to saturated zone	0.48
WlC:							
Wellsboro	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Droughty	0.70
						Slope	0.63
						Depth to saturated zone	0.48
WlD:							
Wellsboro	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.11	Slope	1.00
		Depth to saturated zone	0.11			Droughty	0.70
						Depth to saturated zone	0.48
WmC:							
Wellsboro	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too Stony	0.53	Too Stony	0.53	Droughty	0.70
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Slope	0.63
						Depth to saturated zone	0.48
Mardin	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Too Stony	0.53	Too Stony	0.53	Depth to saturated zone	0.64
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Slope	0.63
						Droughty	0.55
						Content of large stones	0.03
WpB:							
Willdin	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Depth to saturated zone	0.64
						Droughty	0.52
WpC:							
Willdin	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.27	Depth to saturated zone	0.27	Depth to saturated zone	0.64
						Slope	0.63
						Droughty	0.52

Table 13.--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
WpD:							
Willdin	80	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.50	Depth to saturated zone	0.27	Slope	1.00
		Depth to saturated zone	0.27			Depth to saturated zone	0.64
						Droughty	0.52
WsB:							
Willowemoc	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
WsC:							
Willowemoc	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Slope	0.63
						Depth to saturated zone	0.48

Table 14.--Wildlife Habitat

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Ad:										
Alden	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
At:										
Atherton	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
BfB:										
Bath	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BfC:										
Bath	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BfD:										
Bath	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
BfE:										
Bath	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
BhC:										
Bath	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Lackawanna	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
BhE:										
Bath	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Lackawanna	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Cb:										
Canandaigua	Very poor	Poor	Poor	Poor	Poor	Good	Good	Very poor	Poor	Good
Cc:										
Canandaigua	Very poor	Poor	Poor	Poor	Poor	Good	Good	Very poor	Poor	Good
Cd:										
Carbondale	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Ce:										
Carlisle	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
CfA:										
Castile	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
CfB:										
Castile	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
ChA:										
Chenango	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
ChB:										
Chenango	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
ChC:										
Chenango	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
ChD:										
Chenango	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
ClE:										
Chenango	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Howard	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Tunkhannock	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
CnA:										
Chenango	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
CnB:										
Chenango	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
Cp:										
Chippewa	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
Norwich	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
Cr:										
Chippewa	Very poor	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
Norwich	Very poor	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
CsB:										
Conesus	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
CsC:										
Conesus	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DaB:										
Danley	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
DaB:										
Nunda	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DaC:										
Danley	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Nunda	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DaD:										
Danley	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Nunda	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Fair	Very poor
DeB:										
Darien	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Burdett	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DeC:										
Darien	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Burdett	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Ed:										
Edwards	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
FaB:										
Farmington	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
FeB:										
Farmington	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
FeC:										
Farmington	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
FeD:										
Farmington	Very 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

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
FeF:										
Farmington------	Very 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
Fg:										
Fluvaquents-----	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Very poor	Poor	Good
Udifluvents-----	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Fo:										
Fonda-----------	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
GrB:										
Greene----------	Fair	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
Tuller----------	Very poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor	Very poor	Very poor
Hb:										
Hamplain--------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HdC:										
Hawksnest-------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
HeA:										
Herkimer--------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HeB:										
Herkimer--------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HnB:										
Honeoye---------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HnC:										
Honeoye---------	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
HnD:										
Honeoye---------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
HoE:										
Honeoye---------	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Lansing---------	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
HrB: Howard	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
HrC: Howard	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
HrD: Howard	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
LaB: Lackawanna	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LaC: Lackawanna	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LaD: Lackawanna	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LaE: Lackawanna	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LeB: Lansing	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LeC: Lansing	Fair	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LeD: Lansing	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LfB: Lewbath	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LfC: Lewbath	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LfD: Lewbath	Fair	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LfE: Lewbath	Poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
LhC: Lewbeach	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Open- land wild- life	Wood- land wild- life	Wetland wild- life
LkB:										
Lima	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LkC:										
Lima	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LoB:										
Lordstown	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Arnot	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
LpC:										
Lordstown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Chadakoin	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
LpD:										
Lordstown	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Chadakoin	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
LrE:										
Lordstown	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Chadakoin	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Manlius	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Ly:										
Lyons	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
MaA:										
Manheim	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
MaB:										
Manheim	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MaC:										
Manheim	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
McB:										
Manlius	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
McC:										
Manlius---------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
McD:										
Manlius---------	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
MeB:										
Mardin----------	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
MeC:										
Mardin----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
MeD:										
Mardin----------	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
MmC:										
Mongaup---------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Franklinville---	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
MmD:										
Mongaup---------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Franklinville---	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MnB:										
Mongaup---------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Hawksnest-------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
MnE:										
Mongaup---------	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
Hawksnest-------	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
MoB:										
Morris----------	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
MoC:										
Morris----------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
MpC:										
Morris----------	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
MpC:										
Volusia	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Np:										
Norchip	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
ObB:										
Onteora	Fair	Fair	Good	Fair	Fair	Poor	Very poor	Fair	Fair	Poor
ObC:										
Onteora	Fair	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
OeB:										
Ontusia	Fair	Fair	Fair	Poor	Poor	Poor	Very poor	Fair	Poor	Very poor
OeC:										
Ontusia	Fair	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
OgB:										
Oquaga	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
Arnot	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
OgC:										
Oquaga	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
Arnot	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
OgD:										
Oquaga	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Arnot	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
OgE:										
Oquaga	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Arnot	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
OpB:										
Oquaga	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
Lordstown	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
OpC:										
Oquaga	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
Lordstown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
OpD:										
Oquaga	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Lordstown	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Ot:										
Otego	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Pa:										
Palms	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
PdB:										
Patchin	Very poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Good
Pt:										
Pits, gravel and sand	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Pu:										
Pits, quarry	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Ra:										
Raynham	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair
Re:										
Red Hook	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
RhA:										
Rhinebeck	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
RhB:										
Rhinebeck	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
RlA:										
Riverhead	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
RlB:										
Riverhead	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Sa:										
Saprists	Very poor	Very poor	Poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Sa:										
Aquents	Very poor	Very poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
SbB:										
Scio	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ScA:										
Scio	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
ScB:										
Scio	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ThB:										
Torull	Very poor	Poor	Poor	Very poor	Very poor	Fair	Poor	Poor	Very poor	Fair
Gretor	Fair	Fair	Poor	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
TkB:										
Towerville	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TkC:										
Towerville	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
TkD:										
Towerville	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
TlB:										
Trestle	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
Deposit	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
TpB:										
Tunkhannock	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
TpC:										
Tunkhannock	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Ud:										
Udorthents, refuse substratum.										
Ue:										
Udorthents, smoothed	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
UnA: Unadilla	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
UnB: Unadilla	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
VaB: Valois	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
VaC: Valois	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
VaD: Valois	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
VaE: Valois	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
VaF: Valois	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
VcB: Valois	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
VlB: Vly	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
VlC: Vly	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
VlD: Vly	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
VlE: Vly	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
VoA: Volusia	Fair	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair
VoB: Volusia	Fair	Fair	Fair	Poor	Poor	Poor	Very poor	Fair	Poor	Very poor
VoC: Volusia	Fair	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
W:										
Water.										
Wb:										
Wakeville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
WeA:										
Wassaic	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
WeB:										
Wassaic	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
WeC:										
Wassaic	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
WeD:										
Wassaic	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Wg:										
Wayland	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
WlB:										
Wellsboro	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
WlC:										
Wellsboro	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
WlD:										
Wellsboro	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
WmC:										
Wellsboro	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Mardin	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
WpB:										
Willdin	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
WpC:										
Willdin	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
WpD:										
Willdin	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor

Table 14.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
WsB:										
Willowemoc------	Fair	Good	Good	Fair	Fair	Poor	Very poor	Good	Fair	Very poor
WsC:										
Willowemoc------	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor

Table 15.--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: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Ad:							
Alden	70	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
At:							
Atherton	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BfB:							
Bath	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Slope	0.50
						Depth to saturated zone	0.03
BfC:							
Bath	75	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.03	Slope	0.63	Depth to saturated zone	0.03
BfD:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Depth to saturated zone	0.03
BfE:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Depth to saturated zone	0.03
BhC:							
Bath	50	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.03	Slope	0.63	Depth to saturated zone	0.03
Lackawanna	30	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.24	Slope	0.63	Depth to saturated zone	0.24
BhE:							
Bath	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Depth to saturated zone	0.03

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
BhE:							
Lackawanna----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.24	Depth to saturated zone	1.00	Depth to saturated zone	0.24
Cb:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cc:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cd:							
Carbondale----------	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
Ce:							
Carlisle------------	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
CfA:							
Castile-------------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
CfB:							
Castile-------------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
						Slope	0.50
ChA:							
Chenango------------	85	Not limited		Not limited		Not limited	
ChB:							
Chenango------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
ChC:							
Chenango------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
ChD:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 15.--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
ClE:							
Chenango------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Howard--------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Tunkhannock---------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
CnA:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.35		
CnB:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.35	Slope	0.50
Cp:							
Chippewa------------	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cr:							
Chippewa------------	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Norwich-------------	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CsB:							
Conesus-------------	70	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
						Slope	0.12
CsC:							
Conesus-------------	70	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.77
DaB:							
Danley--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
		Shrink-swell	0.50			Shrink-swell	0.50
						Slope	0.12

Table 15.--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
DaB:							
Nunda	25	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
						Slope	0.12
DaC:							
Danley	60	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.77
		Shrink-swell	0.50			Shrink-swell	0.50
Nunda	25	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.77
DaD:							
Danley	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
		Shrink-swell	0.50			Shrink-swell	0.50
Nunda	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
DeB:							
Darien	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
Burdett	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.12
DeC:							
Darien	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Burdett	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Ed:							
Edwards	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
FaB:							
Farmington	80	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
FeB:							
Farmington	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
FeC:							
Farmington	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
FeD:							
Farmington	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
FeF:							
Farmington	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents	50	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Udifluvents	35	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.61		

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Fo:							
Fonda	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GrB:							
Greene	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
						Slope	0.12
Tuller	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	0.12
Hb:							
Hamplain	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.24		
HdC:							
Hawksnest	75	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
HeA:							
Herkimer, fan	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.35		
HeB:							
Herkimer, fan	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.35	Slope	0.12
HnB:							
Honeoye	70	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Slope	0.50
						Depth to saturated zone	0.03
HnC:							
Honeoye	70	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.03	Slope	0.63	Depth to saturated zone	0.03

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
HnD:							
Honeoye-------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Depth to saturated zone	0.03
HoE:							
Honeoye-------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.03	Depth to saturated zone	1.00	Depth to saturated zone	0.03
Lansing-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
HrB:							
Howard--------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.12
HrC:							
Howard--------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
HrD:							
Howard--------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
LaB:							
Lackawanna----------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.24	Depth to saturated zone	1.00	Slope	0.50
						Depth to saturated zone	0.24
LaC:							
Lackawanna----------	85	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.24	Slope	0.63	Depth to saturated zone	0.24
LaD:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.24	Depth to saturated zone	1.00	Depth to saturated zone	0.24
LaE:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.24	Depth to saturated zone	1.00	Depth to saturated zone	0.24
LeB:							
Lansing-------------	70	Not limited		Not limited		Somewhat limited	
						Slope	0.50
LeC:							
Lansing-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
LeD:							
Lansing	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
LfB:							
Lewbath	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
						Slope	0.50
LfC:							
Lewbath	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.88
LfD:							
Lewbath	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
LfE:							
Lewbath	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
LhC:							
Lewbeach	75	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to saturated zone	0.24	Slope	0.63	Depth to saturated zone	0.24
LkB:							
Lima	70	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
						Slope	0.50
LkC:							
Lima	70	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.77
LoB:							
Lordstown	55	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
						Slope	0.12
Arnot	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	0.12

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
LpC:							
Lordstown	55	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
Chadakoin	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
				Depth to hard bedrock	0.02		
LpD:							
Lordstown	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Chadakoin	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.02		
LrE:							
Lordstown	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Chadakoin	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.02		
Manlius	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Ly:							
Lyons	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MaA:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MaB:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.50
MaC:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
McB:							
Manlius	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
						Slope	0.50
McC:							
Manlius	75	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
McD:							
Manlius	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
MeB:							
Mardin	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Depth to saturated zone	0.93
						Slope	0.50
MeC:							
Mardin	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.93
MeD:							
Mardin	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Depth to saturated zone	0.93
MmC:							
Mongaup	50	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Slope	0.63	Depth to hard bedrock	0.15
Franklinville	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
				Depth to hard bedrock	0.01		
MmD:							
Mongaup	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
Franklinville	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.01		

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
MnB:							
Mongaup	50	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
						Slope	0.12
Hawksnest	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	0.12
MnE:							
Mongaup	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.15	Depth to hard bedrock	1.00	Depth to hard bedrock	0.15
Hawksnest	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
MoB:							
Morris	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.50
MoC:							
Morris	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00
MpC:							
Morris	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
Volusia	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
Np:							
Norchip	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
ObB:							
Onteora	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.12

Table 15.--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
ObC:							
Onteora	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00
OeB:							
Ontusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.12
OeC:							
Ontusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00
OgB:							
Oquaga	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
						Slope	0.12
Arnot	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
						Slope	0.12
OgC:							
Oquaga	60	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
Arnot	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
OgD:							
Oquaga	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Arnot	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
OgE:							
Oquaga	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
OgE:							
Arnot	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
OpB:							
Oquaga	40	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
						Slope	0.12
Lordstown	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
						Slope	0.12
OpC:							
Oquaga	40	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
Lordstown	35	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.64
OpD:							
Oquaga	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Lordstown	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
Ot:							
Otego	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
Pa:							
Palms	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00			Content of organic matter	1.00
PdB:							
Patchin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Depth to soft bedrock	0.29		

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
Pt:							
Pits, gravel and sand	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	
Ra:							
Raynham	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Re:							
Red Hook	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RhA:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RhB:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RlA:							
Riverhead, loamy substratum	75	Not limited		Not limited		Not limited	
RlB:							
Riverhead, loamy substratum	75	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Sa:							
Saprists	45	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Content of organic matter	1.00	Content of organic matter	1.00
Aquents	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SbB:							
Scio	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
ScA:							
Scio	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
ScB:							
Scio	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
ThB:							
Torull	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Gretor	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to hard bedrock	0.54	Depth to hard bedrock	1.00	Depth to hard bedrock	0.54
TkB:							
Towerville	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
		Depth to hard bedrock	0.10	Depth to hard bedrock	1.00	Slope	0.12
						Depth to hard bedrock	0.10
TkC:							
Towerville	75	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Depth to hard bedrock	1.00	Depth to saturated zone	0.77
		Depth to hard bedrock	0.10	Slope	0.63	Depth to hard bedrock	0.10
TkD:							
Towerville	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
		Depth to hard bedrock	0.10	Depth to hard bedrock	1.00	Depth to hard bedrock	0.10
TlB:							
Trestle	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.35		
Deposit	35	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
TpB:							
Tunkhannock----------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
TpC:							
Tunkhannock----------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
Ud:							
Udorthents, refuse substratum---------	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
						Shrink-swell	0.50
Ue:							
Udorthents, smoothed	70	Not limited		Somewhat limited		Very limited	
				Depth to saturated zone	0.35	Slope	1.00
UnA:							
Unadilla------------	80	Not limited		Not limited		Not limited	
UnB:							
Unadilla------------	80	Not limited		Not limited		Not limited	
VaB:							
Valois--------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50
VaC:							
Valois--------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Slope	1.00
VaD:							
Valois--------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
VaE:							
Valois--------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
VaF:							
Valois--------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
VcB:							
Valois--------------	85	Not limited		Not limited		Not limited	
VlB:							
Vly-----------------	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Depth to hard bedrock	0.95
						Slope	0.12
VlC:							
Vly-----------------	80	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	0.95

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
VlD:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Depth to hard bedrock	0.95
VlE:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Depth to hard bedrock	0.95
VoA:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
VoB:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Slope	0.50
VoC:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	1.00
W:							
Water	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WeA:							
Wassaic	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Depth to hard bedrock	0.35
		Depth to saturated zone	0.05	Depth to hard bedrock	1.00	Depth to saturated zone	0.05
WeB:							
Wassaic	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Slope	0.50
		Depth to saturated zone	0.05	Depth to hard bedrock	1.00	Depth to hard bedrock	0.35
						Depth to saturated zone	0.05
WeC:							
Wassaic	80	Somewhat limited		Very limited		Very limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Depth to hard bedrock	1.00	Depth to hard bedrock	0.35
		Depth to saturated zone	0.05	Slope	0.63	Depth to saturated zone	0.05

Table 15.--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
WeD:							
Wassaic	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Depth to hard bedrock	0.35
		Depth to saturated zone	0.05	Depth to hard bedrock	1.00	Depth to saturated zone	0.05
Wg:							
Wayland	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WlB:							
Wellsboro	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
						Slope	0.50
WlC:							
Wellsboro	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.81
WlD:							
Wellsboro	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
WmC:							
Wellsboro	50	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.81
Mardin	30	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.93
WpB:							
Willdin	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Depth to saturated zone	0.93
						Slope	0.50
WpC:							
Willdin	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.93

Table 15.--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
WpD:							
Willdin	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	1.00	Depth to saturated zone	0.93
WsB:							
Willowemoc	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
						Slope	0.50
WsC:							
Willowemoc	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.81

Table 16.--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: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
Ad:							
Alden	70	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
At:							
Atherton	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
BfB:							
Bath	80	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to saturated zone	1.00	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		
BfC:							
Bath	75	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		
BfD:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		
BfE:							
Bath	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		
BhC:							
Bath	50	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
BhC:							
Lackawanna----------	30	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Droughty	0.06
						Gravel content	0.04
						Content of large stones	0.01
BhE:							
Bath----------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Gravel content	0.06
		Depth to saturated zone	0.02	Dense layer	0.50	Depth to saturated zone	0.02
				Cutbanks cave	0.10		
Lackawanna----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Droughty	0.06
						Gravel content	0.04
						Content of large stones	0.01
Cb:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	0.22				
Cc:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
		Low strength	0.22				
Cd:							
Carbondale----------	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
Ce:							
Carlisle------------	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CfA:							
Castile-------------	85	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.63
		Depth to saturated zone	0.43	Cutbanks cave	1.00	Depth to saturated zone	0.43
						Gravel content	0.08
CfB:							
Castile-------------	85	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.63
		Depth to saturated zone	0.43	Cutbanks cave	1.00	Depth to saturated zone	0.43
						Gravel content	0.08
ChA:							
Chenango------------	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
						Gravel content	0.01
ChB:							
Chenango------------	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
						Gravel content	0.01
ChC:							
Chenango------------	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Droughty	0.15
						Gravel content	0.01
ChD:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
						Gravel content	0.01
ClE:							
Chenango------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
						Gravel content	0.01
Howard--------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.12
						Gravel content	0.01
Tunkhannock---------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.08
						Droughty	0.02
CnA:							
Chenango------------	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
		Flooding	0.40	Depth to saturated zone	0.35	Gravel content	0.08

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CnB:							
Chenango	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
		Flooding	0.40	Depth to saturated zone	0.35	Gravel content	0.08
Cp:							
Chippewa	45	Very limited		Very limited		Not rated	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Frost action	1.00	Dense layer	0.50		
				Cutbanks cave	0.10		
Norwich	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Dense layer	0.50	Droughty	0.49
				Cutbanks cave	0.10		
Cr:							
Chippewa	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Dense layer	0.50	Droughty	0.80
				Cutbanks cave	0.10		
Norwich	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Dense layer	0.50	Droughty	0.49
				Cutbanks cave	0.10		
CsB:							
Conesus	70	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	1.00		
				Dense layer	0.50		
CsC:							
Conesus	70	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Slope	0.63		
				Dense layer	0.50		
DaB:							
Danley	60	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Depth to saturated zone	0.43				
Nunda	25	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
DaC:							
Danley--------------	60	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.43
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Depth to saturated zone	0.43				
Nunda---------------	25	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
DaD:							
Danley--------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Depth to saturated zone	0.43				
Nunda---------------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
DeB:							
Darien--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10	Content of large stones	0.03
		Shrink-swell	0.50				
Burdett-------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
DeC:							
Darien--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Cutbanks cave	0.10	Content of large stones	0.03
		Shrink-swell	0.50				
Burdett-------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
Ed:							
Edwards	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
FaB:							
Farmington	80	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.84
FeB:							
Farmington	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.84
Rock outcrop	20	Not rated		Not rated		Not rated	
FeC:							
Farmington	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Droughty	0.84
		Frost action	0.50	Cutbanks cave	0.10	Slope	0.63
Rock outcrop	20	Not rated		Not rated		Not rated	
FeD:							
Farmington	60	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.84
Rock outcrop	20	Not rated		Not rated		Not rated	
FeF:							
Farmington	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.84
Rock outcrop	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents	50	Not rated		Very limited		Very limited	
				Ponding	1.00	Ponding	1.00
				Depth to saturated zone	1.00	Flooding	1.00
				Cutbanks cave	1.00	Depth to saturated zone	1.00
				Flooding	0.80	Content of large stones	0.01

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
Fg:							
Udifluvents	35	Not rated		Very limited		Very limited	
				Cutbanks cave	1.00	Flooding	1.00
				Flooding	0.80	Droughty	0.99
				Depth to saturated zone	0.61	Gravel content	0.22
						Content of large stones	0.01
Fo:							
Fonda	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Too clayey	0.50		
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
GrB:							
Greene	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to hard bedrock	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.54
		Low strength	1.00	Cutbanks cave	1.00		
		Depth to hard bedrock	0.54				
Tuller	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10	Droughty	1.00
						Gravel content	0.01
Hb:							
Hamplain	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Cutbanks cave	1.00	Flooding	0.60
		Flooding	1.00	Flooding	0.60		
				Depth to saturated zone	0.24		
HdC:							
Hawksnest	75	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Droughty	0.89
		Frost action	0.50	Cutbanks cave	0.10	Slope	0.63
HeA:							
Herkimer, fan	80	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.06
		Flooding	0.40	Depth to saturated zone	0.35		
HeB:							
Herkimer, fan	80	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.06
		Flooding	0.40	Depth to saturated zone	0.35		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
HnB:							
Honeoye	70	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	1.00		
HnC:							
Honeoye	70	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Slope	0.63		
HnD:							
Honeoye	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	1.00		
HoE:							
Honeoye	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	1.00		
Lansing	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
HrB:							
Howard	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.12
						Gravel content	0.01
HrC:							
Howard	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Droughty	0.12
						Gravel content	0.01
HrD:							
Howard	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.12
						Gravel content	0.01
LaB:							
Lackawanna	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Gravel content	0.06
						Droughty	0.06

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
LaC:							
Lackawanna----------	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Gravel content	0.06
						Droughty	0.06
LaD:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Gravel content	0.06
						Droughty	0.06
LaE:							
Lackawanna----------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.12
		Depth to saturated zone	0.12	Cutbanks cave	0.10	Gravel content	0.06
						Droughty	0.06
LeB:							
Lansing-------------	70	Somewhat limited		Very limited		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
LeC:							
Lansing-------------	70	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63		
LeD:							
Lansing-------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
LfB:							
Lewbath-------------	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.56	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Frost action	0.50	Dense layer	0.50	Droughty	0.09
				Cutbanks cave	0.10	Gravel content	0.06
LfC:							
Lewbath-------------	80	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Depth to saturated zone	0.56	Slope	0.63	Depth to saturated zone	0.56
		Frost action	0.50	Dense layer	0.50	Droughty	0.09
				Cutbanks cave	0.10	Gravel content	0.06
LfD:							
Lewbath-------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.56	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Frost action	0.50	Dense layer	0.50	Droughty	0.09
				Cutbanks cave	0.10	Gravel content	0.06

Table 16.--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
LfE:							
Lewbath	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.56	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Frost action	0.50	Dense layer	0.50	Droughty	0.09
				Cutbanks cave	0.10	Gravel content	0.06
LhC:							
Lewbeach	75	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Droughty	0.14
		Depth to saturated zone	0.12	Dense layer	0.50	Depth to saturated zone	0.12
				Cutbanks cave	0.10	Content of large stones	0.03
LkB:							
Lima	70	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	1.00	Droughty	0.06
				Dense layer	0.50	Gravel content	0.01
LkC:							
Lima	70	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to saturated zone	1.00	Slope	0.63
		Frost action	0.50	Cutbanks cave	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Slope	0.63	Droughty	0.06
				Dense layer	0.50	Gravel content	0.01
LoB:							
Lordstown	55	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.05
Arnot	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.99
						Gravel content	0.54
						Content of large stones	0.01
LpC:							
Lordstown	55	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.05
Chadakoin	25	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63		
				Depth to hard bedrock	0.02		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
LpD:							
Lordstown	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.05
Chadakoin	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
				Depth to hard bedrock	0.02		
LrE:							
Lordstown	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.05
Chadakoin	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00		
				Depth to hard bedrock	0.02		
Manlius	20	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64	Slope	1.00	Droughty	0.81
		Frost action	0.50	Dense layer	0.50	Depth to bedrock	0.65
				Cutbanks cave	0.10	Gravel content	0.06
Ly:							
Lyons	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	1.00		
MaA:							
Manheim	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	1.00		
				Dense layer	0.50		
MaB:							
Manheim	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	1.00		
				Dense layer	0.50		
MaC:							
Manheim	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	1.00	Slope	0.63
		Slope	0.63	Slope	0.63		
				Dense layer	0.50		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
McB:							
Manlius-------------	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.81
						Depth to bedrock	0.65
		Frost action	0.50	Dense layer	0.50	Gravel content	0.06
				Cutbanks cave	0.10		
McC:							
Manlius-------------	75	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.81
						Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Dense layer	0.50	Gravel content	0.06
				Cutbanks cave	0.10		
McD:							
Manlius-------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Droughty	0.81
				Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Dense layer	0.50	Gravel content	0.06
				Cutbanks cave	0.10		
MeB:							
Mardin--------------	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Frost action	0.50	Dense layer	0.50	Droughty	0.55
				Cutbanks cave	0.10	Content of large stones	0.03
MeC:							
Mardin--------------	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Dense layer	0.50	Droughty	0.55
				Cutbanks cave	0.10	Content of large stones	0.03
MeD:							
Mardin--------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Frost action	0.50	Dense layer	0.50	Droughty	0.55
				Cutbanks cave	0.10	Content of large stones	0.03
MmC:							
Mongaup-------------	50	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	0.63
		Frost action	0.50			Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Slope	0.63	Gravel content	0.01
				Cutbanks cave	0.10		
Franklinville-------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10		
				Depth to hard bedrock	0.01		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MmD:							
Mongaup-------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Cutbanks cave	0.10	Gravel content	0.01
Franklinville-------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10		
				Depth to hard bedrock	0.01		
MnB:							
Mongaup-------------	50	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Cutbanks cave	0.10	Gravel content	0.01
Hawksnest-----------	30	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.83
MnE:							
Mongaup-------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.16
		Depth to hard bedrock	0.15	Cutbanks cave	0.10	Gravel content	0.01
Hawksnest-----------	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	0.83
MoB:							
Morris--------------	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	0.10	Droughty	0.95
						Gravel content	0.01
MoC:							
Morris--------------	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Slope	0.63	Droughty	0.95
		Slope	0.63	Cutbanks cave	0.10	Slope	0.63
						Gravel content	0.01
MpC:							
Morris--------------	50	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	0.10	Droughty	0.95
		Slope	0.04	Slope	0.04	Slope	0.04
						Gravel content	0.01

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MpC:							
Volusia	30	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Dense layer	0.50	Droughty	0.73
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
Np:							
Norchip	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	1.00	Droughty	1.00
				Dense layer	0.50	Gravel content	0.01
ObB:							
Onteora	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	1.00
		Depth to saturated zone	0.99	Dense layer	0.50	Depth to saturated zone	0.99
				Cutbanks cave	0.10	Gravel content	0.01
ObC:							
Onteora	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	1.00
		Depth to saturated zone	0.99	Slope	0.63	Depth to saturated zone	0.99
		Slope	0.63	Dense layer	0.50	Slope	0.63
				Cutbanks cave	0.10	Gravel content	0.01
OeB:							
Ontusia	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	1.00
		Depth to saturated zone	0.99	Dense layer	0.50	Depth to saturated zone	0.99
				Cutbanks cave	0.10	Gravel content	0.01
OeC:							
Ontusia	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	1.00
		Depth to saturated zone	0.99	Slope	0.63	Depth to saturated zone	0.99
		Slope	0.63	Dense layer	0.50	Slope	0.63
				Cutbanks cave	0.10	Gravel content	0.01
OgB:							
Oquaga	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.86
						Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Arnot	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	0.99
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.54
						Content of large stones	0.01

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
OgC:							
Oquaga--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.86
						Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Arnot---------------	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.54
						Content of large stones	0.01
OgD:							
Oquaga--------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Droughty	0.86
				Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Arnot---------------	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.99
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.54
						Content of large stones	0.01
OgE:							
Oquaga--------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Droughty	0.86
				Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Arnot---------------	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.99
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.54
						Content of large stones	0.01
OpB:							
Oquaga--------------	40	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.86
						Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Lordstown-----------	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
						Droughty	0.05
		Frost action	0.50	Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
OpC:							
Oquaga	40	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Droughty	0.86
						Depth to bedrock	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Lordstown	35	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to bedrock	0.65
						Slope	0.63
		Slope	0.63	Slope	0.63	Droughty	0.05
		Frost action	0.50	Cutbanks cave	0.10		
OpD:							
Oquaga	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Droughty	0.86
				Slope	1.00	Depth to bedrock	0.65
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.01
Lordstown	35	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.64			Depth to bedrock	0.65
				Slope	1.00	Droughty	0.05
		Frost action	0.50	Cutbanks cave	0.10		
Ot:							
Otego	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Flooding	1.00			Depth to saturated zone	0.19
		Depth to saturated zone	0.19	Flooding	0.60		
				Cutbanks cave	0.10		
Pa:							
Palms	75	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Subsidence	1.00	Content of organic matter	1.00		
		Frost action	1.00				
				Cutbanks cave	0.10		
PdB:							
Patchin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Depth to soft bedrock	0.29	Depth to bedrock	0.29
		Low strength	0.78				
				Cutbanks cave	0.10		
Pt:							
Pits, gravel and sand	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
Ra:							
Raynham	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	0.50		
Re:							
Red Hook	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Cutbanks cave	1.00		
RhA:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Low strength	1.00	Too clayey	0.50		
		Depth to saturated zone	0.99	Cutbanks cave	0.10		
		Shrink-swell	0.50				
RhB:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Low strength	1.00	Too clayey	0.50		
		Depth to saturated zone	0.99	Cutbanks cave	0.10		
		Shrink-swell	0.50				
RlA:							
Riverhead, loamy substratum	75	Somewhat limited		Very limited		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
RlB:							
Riverhead, loamy substratum	75	Somewhat limited		Very limited		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
Sa:							
Saprists	45	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10		
Aquents	40	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	1.00		
		Shrink-swell	0.50				
SbB:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
ScA:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
ScB:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
ThB:							
Torull	50	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	0.10	Droughty	0.99
Gretor	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to hard bedrock	1.00	Depth to saturated zone	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.54
		Depth to hard bedrock	0.54	Cutbanks cave	0.10		
		Low strength	0.22				
TkB:							
Towerville	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to hard bedrock	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Depth to saturated zone	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.10	Cutbanks cave	0.10		
TkC:							
Towerville	75	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to hard bedrock	1.00	Slope	0.63
		Slope	0.63	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Slope	0.63	Depth to bedrock	0.10
		Depth to hard bedrock	0.10	Cutbanks cave	0.10		
TkD:							
Towerville	75	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	1.00	Slope	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Depth to saturated zone	1.00	Depth to bedrock	0.10
		Depth to hard bedrock	0.10	Cutbanks cave	0.10		
TlB:							
Trestle	50	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Frost action	0.50	Depth to saturated zone	0.35	Droughty	0.10
				Cutbanks cave	0.10	Gravel content	0.08

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
TlB:							
Deposit	35	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Flooding	1.00	Flooding	0.60	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10	Droughty	0.09
						Gravel content	0.06
TpB:							
Tunkhannock	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.08
						Droughty	0.02
TpC:							
Tunkhannock	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Slope	0.63
		Frost action	0.50	Slope	0.63	Gravel content	0.08
						Droughty	0.02
Ud:							
Udorthents, refuse substratum	85	Not rated		Somewhat limited		Very limited	
				Cutbanks cave	0.10	Droughty	1.00
Ue:							
Udorthents, smoothed	70	Not rated		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Gravel content	0.22
				Depth to saturated zone	0.35	Droughty	0.09
						Content of large stones	0.01
UnA:							
Unadilla	80	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Cutbanks cave	0.10		
UnB:							
Unadilla	80	Very limited		Somewhat limited		Not limited	
		Frost action	1.00	Cutbanks cave	0.10		
VaB:							
Valois	85	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
VaC:							
Valois	85	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Gravel content	0.68
		Frost action	0.50	Slope	0.63	Slope	0.63
VaD:							
Valois	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
VaE:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68

Table 16.--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
VaF:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.68
VcB:							
Valois	85	Not rated		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Gravel content	0.68
VlB:							
Vly	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Depth to bedrock	0.95
						Droughty	0.84
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.27
VlC:							
Vly	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.95	Depth to hard bedrock	1.00	Depth to bedrock	0.95
						Droughty	0.84
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.27
VlD:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.95			Depth to bedrock	0.95
				Slope	1.00	Droughty	0.84
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.27
VlE:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.95			Depth to bedrock	0.95
				Slope	1.00	Droughty	0.84
		Frost action	0.50	Cutbanks cave	0.10	Gravel content	0.27
VoA:							
Volusia	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Dense layer	0.50	Droughty	0.73
				Cutbanks cave	0.10		
VoB:							
Volusia	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Dense layer	0.50	Droughty	0.73
				Cutbanks cave	0.10		
VoC:							
Volusia	80	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	0.99	Slope	0.63	Droughty	0.73
		Slope	0.63	Dense layer	0.50	Slope	0.63
				Cutbanks cave	0.10		
W:							
Water	100	Not rated		Not rated		Not rated	

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
Wb:							
Wakeville-----------	75	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Depth to saturated zone	0.99	Cutbanks cave	0.10		
WeA:							
Wassaic-------------	80	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Depth to bedrock	0.35
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	0.10		
WeB:							
Wassaic-------------	80	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	1.00	Depth to bedrock	0.35
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	0.10		
WeC:							
Wassaic-------------	80	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Depth to hard bedrock	1.00	Slope	0.63
		Frost action	0.50	Depth to saturated zone	1.00	Depth to bedrock saturated zone	0.35
		Depth to hard bedrock	0.35	Slope	0.63		
		Depth to saturated zone	0.02	Cutbanks cave	0.10		
WeD:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Frost action	0.50	Slope	1.00	Depth to bedrock	0.35
		Depth to hard bedrock	0.35	Depth to saturated zone	1.00	Depth to saturated zone	0.02
		Depth to saturated zone	0.02	Cutbanks cave	0.10		
Wg:							
Wayland-------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
		Flooding	1.00	Cutbanks cave	0.10		
		Low strength	0.78				
WlB:							
Wellsboro-----------	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.70
		Depth to saturated zone	0.48	Dense layer	0.50	Depth to saturated zone	0.48
				Cutbanks cave	0.10		

Table 16.--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
WlC:							
Wellsboro	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.70
		Slope	0.63	Slope	0.63	Slope	0.63
		Depth to saturated zone	0.48	Dense layer	0.50	Depth to saturated zone	0.48
				Cutbanks cave	0.10		
WlD:							
Wellsboro	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.70
		Depth to saturated zone	0.48	Dense layer	0.50	Depth to saturated zone	0.48
				Cutbanks cave	0.10		
WmC:							
Wellsboro	50	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Droughty	0.70
		Slope	0.63	Slope	0.63	Slope	0.63
		Depth to saturated zone	0.48	Dense layer	0.50	Depth to saturated zone	0.48
				Cutbanks cave	0.10		
Mardin	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Dense layer	0.50	Droughty	0.55
				Cutbanks cave	0.10	Content of large stones	0.03
WpB:							
Willdin	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Frost action	0.50	Dense layer	0.50	Droughty	0.52
				Cutbanks cave	0.10		
WpC:							
Willdin	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Slope	0.63	Slope	0.63
		Frost action	0.50	Dense layer	0.50	Droughty	0.52
				Cutbanks cave	0.10		
WpD:							
Willdin	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.64	Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Frost action	0.50	Dense layer	0.50	Droughty	0.52
				Cutbanks cave	0.10		

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
WsB:							
Willowemoc----------	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.48
		Depth to saturated zone	0.48	Dense layer	0.50		
				Cutbanks cave	0.10		
WsC:							
Willowemoc----------	80	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Slope	0.63
		Slope	0.63	Slope	0.63	Depth to saturated zone	0.48
		Depth to saturated zone	0.48	Dense layer	0.50		
				Cutbanks cave	0.10		

Table 17.--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: Rating class and limiting features	Septic tank absorption fields: Value	Sewage lagoons: Rating class and limiting features	Sewage lagoons: Value
Ad:					
Alden	70	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00	Content of organic matter	1.00
At:					
Atherton	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
BfB:					
Bath	80	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.92
				Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	0.36
BfC:					
Bath	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	0.36
		Slope	0.63		
BfD:					
Bath	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	0.36
		Slope	1.00		
BfE:					
Bath	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	0.36
		Slope	1.00		

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
BhC:					
Bath----------------	50	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Slope	0.63	Depth to saturated zone	0.36
Lackawanna----------	30	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Seepage	0.50
BhE:					
Bath----------------	50	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Slope	1.00	Depth to saturated zone	0.36
Lackawanna----------	30	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	1.00	Seepage	0.50
Cb:					
Canandaigua---------	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00		
Cc:					
Canandaigua---------	85	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	1.00		
Cd:					
Carbondale----------	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Ce:					
Carlisle------------	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Depth to saturated zone	1.00
		Seepage	1.00		
CfA:					
Castile-------------	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00
CfB:					
Castile-------------	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00
				Slope	0.92
ChA:					
Chenango------------	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
ChB:					
Chenango------------	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
				Slope	0.92
ChC:					
Chenango------------	85	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
ChD:					
Chenango------------	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
ClE:					
Chenango------------	50	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
Howard--------------	15	Very limited		Very limited	
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
		Seepage	1.00		
Tunkhannock---------	15	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CnA:					
Chenango------------	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Flooding	0.40
		Flooding	0.40	Depth to saturated zone	0.17
CnB:					
Chenango------------	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Slope	0.92
		Flooding	0.40	Flooding	0.40
				Depth to saturated zone	0.17
Cp:					
Chippewa------------	45	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
				Seepage	0.50
Norwich-------------	35	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50
Cr:					
Chippewa------------	45	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
				Seepage	0.50
Norwich-------------	35	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50
CsB:					
Conesus-------------	70	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50
CsC:					
Conesus-------------	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.92
		Slope	0.63	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
DaB:					
Danley	60	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
Nunda	25	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50
DaC:					
Danley	60	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63		
Nunda	25	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
DaD:					
Danley	60	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	1.00		
Nunda	25	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	1.00	Seepage	0.50
DeB:					
Darien	60	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
Burdett	25	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
DeC:					
Darien	60	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63		
Burdett	25	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
Ed:					
Edwards	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.82	Seepage	0.18
FaB:					
Farmington	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Seepage	0.50
				Slope	0.32
FeB:					
Farmington	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Seepage	0.50
				Slope	0.32
Rock outcrop	20	Not rated		Not rated	
FeC:					
Farmington	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
				Seepage	0.50
Rock outcrop	20	Not rated		Not rated	
FeD:					
Farmington	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
Rock outcrop	20	Not rated		Not rated	

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
FeF:					
Farmington	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
Rock outcrop	25	Not rated		Not rated	
Fg:					
Fluvaquents	50	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Ponding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
Udifluvents	35	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.71
Fo:					
Fonda	90	Very limited		Very limited	
		Restricted permeability	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
GrB:					
Greene	50	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.27
Tuller	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Slope	0.68
				Seepage	0.27
Hb:					
Hamplain	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Depth to saturated zone	0.65	Depth to saturated zone	0.02
		Restricted permeability	0.50		

Table 17.--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
HdC:					
Hawksnest-----------	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
				Content of organic matter	1.00
HeA:					
Herkimer, fan-------	80	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.84	Seepage	0.50
		Restricted permeability	0.50	Flooding	0.40
		Flooding	0.40	Depth to saturated zone	0.17
HeB:					
Herkimer, fan-------	80	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.84	Slope	0.68
		Restricted permeability	0.50	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Depth to saturated zone	0.17
HnB:					
Honeoye-------------	70	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.92
		Depth to saturated zone	1.00	Seepage	0.50
				Depth to saturated zone	0.36
HnC:					
Honeoye-------------	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Slope	0.63	Depth to saturated zone	0.36
HnD:					
Honeoye-------------	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Slope	1.00	Depth to saturated zone	0.36
HoE:					
Honeoye-------------	45	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Seepage	0.50
		Slope	1.00	Depth to saturated zone	0.36
Lansing-------------	35	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
HrB:					
Howard--------------	85	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage	1.00	Slope	0.68
HrC:					
Howard--------------	85	Very limited		Very limited	
		Filtering capacity	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Slope	0.63		
HrD:					
Howard--------------	85	Very limited		Very limited	
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
		Seepage	1.00		
LaB:					
Lackawanna----------	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.92
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
				Seepage	0.50
LaC:					
Lackawanna----------	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Seepage	0.50
LaD:					
Lackawanna----------	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	1.00	Seepage	0.50
LaE:					
Lackawanna----------	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	1.00	Seepage	0.50
LeB:					
Lansing-------------	70	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.92
				Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
LeC:					
Lansing	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.63	Seepage	0.50
LeD:					
Lansing	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Seepage	0.50
LfB:					
Lewbath	75	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.96
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
LfC:					
Lewbath	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.96
		Slope	0.63	Seepage	0.50
LfD:					
Lewbath	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.96
		Slope	1.00	Seepage	0.50
LfE:					
Lewbath	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.96
		Slope	1.00	Seepage	0.50
LhC:					
Lewbeach	75	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.64
		Slope	0.63	Seepage	0.27
LkB:					
Lima	70	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.92
		Depth to saturated zone	1.00	Depth to saturated zone	0.92
				Seepage	0.50

Table 17.--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
LkC:					
Lima----------------	70	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.92
		Slope	0.63	Seepage	0.50
LoB:					
Lordstown-----------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Slope	0.68
				Seepage	0.50
Arnot---------------	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.68
				Seepage	0.50
LpC:					
Lordstown-----------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Chadakoin-----------	25	Somewhat limited		Very limited	
		Restricted permeability	0.72	Slope	1.00
		Slope	0.63	Seepage	0.50
		Depth to bedrock	0.41	Depth to hard bedrock	0.02
LpD:					
Lordstown-----------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Chadakoin-----------	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	0.72	Seepage	0.50
		Depth to bedrock	0.41	Depth to hard bedrock	0.02
LrE:					
Lordstown-----------	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Chadakoin-----------	25	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	0.72	Seepage	0.50
		Depth to bedrock	0.41	Depth to hard bedrock	0.02

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
LrE:					
Manlius	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Ly:					
Lyons	85	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.27
MaA:					
Manheim	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
MaB:					
Manheim	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.92
MaC:					
Manheim	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63		
McB:					
Manlius	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Slope	0.92
				Seepage	0.50
McC:					
Manlius	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
McD:					
Manlius	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MeB:					
Mardin	80	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.98
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
MeC:					
Mardin	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	0.63	Seepage	0.50
MeD:					
Mardin	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	1.00	Seepage	0.50
MmC:					
Mongaup	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Franklinville	30	Somewhat limited		Very limited	
		Restricted permeability	0.72	Slope	1.00
		Slope	0.63	Content of organic matter	1.00
		Depth to bedrock	0.36	Seepage	0.50
				Depth to hard bedrock	0.01
MmD:					
Mongaup	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Franklinville	30	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	0.72	Content of organic matter	1.00
		Depth to bedrock	0.36	Seepage	0.50
				Depth to hard bedrock	0.01
MnB:					
Mongaup	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Slope	0.68
				Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MnB:					
Hawksnest-----------	30	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Seepage	1.00	Seepage	1.00
				Content of organic matter	1.00
				Slope	0.68
MnE:					
Mongaup-------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Hawksnest-----------	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
				Content of organic matter	1.00
MoB:					
Morris--------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
MoC:					
Morris--------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
MpC:					
Morris--------------	50	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.04	Seepage	0.50
Volusia-------------	30	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	0.04	Seepage	0.50
Np:					
Norchip-------------	85	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50

Table 17.--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
ObB:					
Onteora-------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50
ObC:					
Onteora-------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
OeB:					
Ontusia-------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.68
				Seepage	0.50
OeC:					
Ontusia-------------	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
OgB:					
Oquaga--------------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Slope	0.68
				Seepage	0.50
Arnot---------------	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.68
				Seepage	0.50
OgC:					
Oquaga--------------	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Seepage	0.50
Arnot---------------	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
				Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
OgD:					
Oquaga	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Seepage	0.50
Arnot	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
OgE:					
Oquaga	60	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Seepage	0.50
Arnot	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
OpB:					
Oquaga	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Slope	0.68
				Seepage	0.50
Lordstown	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Restricted permeability	0.50	Slope	0.68
				Seepage	0.50
OpC:					
Oquaga	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Seepage	0.50
Lordstown	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
OpD:					
Oquaga	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Content of organic matter	1.00
				Seepage	0.50
Lordstown	35	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Seepage	0.50
Ot:					
Otego	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	0.50
		Restricted permeability	0.50		
Pa:					
Palms	75	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Subsidence	1.00	Seepage	1.00
		Restricted permeability	0.72	Content of organic matter	1.00
PdB:					
Patchin	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.08
Pt:					
Pits, gravel and sand	80	Not rated		Not rated	
Pu:					
Pits, quarry	75	Not rated		Not rated	
Ra:					
Raynham	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.27

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Re:					
Red Hook	80	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.72	Seepage	0.50
RhA:					
Rhinebeck	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
RhB:					
Rhinebeck	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.32
RlA:					
Riverhead, loamy substratum	75	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage	1.00		
RlB:					
Riverhead, loamy substratum	75	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.92
		Seepage	1.00		
Sa:					
Saprists	45	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Subsidence	1.00	Depth to saturated zone	1.00
		Seepage	1.00		
Aquents	40	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00
SbB:					
Scio	80	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.32

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
ScA:					
Scio	80	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
ScB:					
Scio	80	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
				Slope	0.32
ThB:					
Torull	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Slope	0.08
Gretor	30	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50
				Slope	0.32
TkB:					
Towerville	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.92
		Restricted permeability	1.00	Slope	0.68
				Seepage	0.50
TkC:					
Towerville	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Slope	0.63	Seepage	0.50
TkD:					
Towerville	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.92
		Restricted permeability	1.00	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
TlB:					
Trestle	50	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.17
				Slope	0.08
Deposit	35	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00
				Slope	0.08
TpB:					
Tunkhannock	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
				Slope	0.92
TpC:					
Tunkhannock	85	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
Ud:					
Udorthents, refuse substratum	85	Not limited		Very limited	
				Slope	1.00
Ue:					
Udorthents, smoothed	70	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Depth to saturated zone	0.84	Seepage	1.00
				Depth to saturated zone	0.17
UnA:					
Unadilla	80	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
UnB:					
Unadilla	80	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50	Slope	0.32
VaB:					
Valois	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50	Slope	0.92

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
VaC:					
Valois	85	Very limited		Very limited	
		Seepage	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
		Restricted permeability	0.50		
VaD:					
Valois	85	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
VaE:					
Valois	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
VaF:					
Valois	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50		
VcB:					
Valois	85	Very limited		Very limited	
		Seepage	1.00	Seepage	1.00
		Restricted permeability	0.50	Slope	0.32
VlB:					
Vly	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.68
				Seepage	0.50
VlC:					
Vly	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
				Seepage	0.50
VlD:					
Vly	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
VlE:					
Vly	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	0.50
VoA:					
Volusia	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.50
VoB:					
Volusia	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
VoC:					
Volusia	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
W:					
Water	100	Not rated		Not rated	
Wb:					
Wakeville	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.50	Seepage	0.50
WeA:					
Wassaic	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.72	Seepage	0.27
WeB:					
Wassaic	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.72	Slope	0.92
				Seepage	0.27

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
WeC:					
Wassaic-------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Restricted permeability	0.72	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.27
WeD:					
Wassaic-------------	80	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.72	Seepage	0.27
Wg:					
Wayland-------------	75	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00		
WlB:					
Wellsboro-----------	80	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
WlC:					
Wellsboro-----------	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Slope	0.63	Seepage	0.50
WlD:					
Wellsboro-----------	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Slope	1.00	Seepage	0.50
WmC:					
Wellsboro-----------	50	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Slope	0.63	Seepage	0.50

Table 17.--Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
WmC:					
Mardin	30	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.98
		Slope	0.63	Seepage	0.50
WpB:					
Willdin	80	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slope	0.92
				Seepage	0.50
WpC:					
Willdin	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Seepage	0.50
WpD:					
Willdin	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	1.00	Seepage	0.50
WsB:					
Willowemoc	80	Very limited		Very limited	
		Restricted permeability	1.00	Content of organic matter	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.94
				Slope	0.92
				Seepage	0.50
WsC:					
Willowemoc	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Content of organic matter	1.00
		Slope	0.63	Depth to saturated zone	0.94
				Seepage	0.50

Table 18.--Landfills

[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	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
Ad:							
Alden---------------	70	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
At:							
Atherton------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	0.32
						Seepage	0.21
BfB:							
Bath----------------	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
BfC:							
Bath----------------	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.93	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
BfD:							
Bath----------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
BfE:							
Bath----------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
BhC:							
Bath----------------	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.93	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
Lackawanna----------	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.42

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhE:							
Bath----------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.40
Lackawanna----------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
						Gravel content	0.42
Cb:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cc:							
Canandaigua---------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Cd:							
Carbondale----------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Seepage	1.00	Content of organic matter	1.00
		Seepage	1.00			Seepage	0.21
Ce:							
Carlisle------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Seepage	1.00	Content of organic matter	1.00
		Seepage	1.00			Seepage	0.15
CfA:							
Castile-------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
						Depth to saturated zone	0.95
CfB:							
Castile-------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
						Depth to saturated zone	0.95

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ChA:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	0.50			Gravel content	1.00
						Too Sandy	0.50
ChB:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	0.50			Gravel content	1.00
						Too Sandy	0.50
ChC:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Too Sandy	0.50			Slope	0.63
						Too Sandy	0.50
ChD:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	0.50			Gravel content	1.00
						Too Sandy	0.50
ClE:							
Chenango------------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too Sandy	0.50			Gravel content	1.00
						Too Sandy	0.50
Howard--------------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
						Gravel content	0.74
						Too clayey	0.50
Tunkhannock---------	15	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	1.00
CnA:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
		Too Sandy	0.50	Flooding	0.40	Too Sandy	0.50
		Flooding	0.40				
CnB:							
Chenango------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
		Too Sandy	0.50	Flooding	0.40	Too Sandy	0.50
		Flooding	0.40				

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cp:							
Chippewa	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.01
Norwich	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.01
Cr:							
Chippewa	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.01
Norwich	35	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.01
CsB:							
Conesus	70	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
						Gravel content	0.02
CsC:							
Conesus	70	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.02
DaB:							
Danley	60	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Too clayey	0.50			Too clayey	0.50
Nunda	25	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Too clayey	0.50			Too clayey	0.50
DaC:							
Danley	60	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
Nunda	25	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
DaD:							
Danley--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Too clayey	0.50			Too clayey	0.50
Nunda---------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
		Too clayey	0.50			Too clayey	0.50
DeB:							
Darien--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
						Gravel content	0.08
Burdett-------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50			Too clayey	0.50
DeC:							
Darien--------------	60	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
						Gravel content	0.08
Burdett-------------	25	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
		Too clayey	0.50			Too clayey	0.50
Ed:							
Edwards-------------	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Seepage	1.00	Content of organic matter	1.00
						Seepage	0.15
FaB:							
Farmington----------	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
FeB:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Rock outcrop--------	20	Not rated		Not rated		Not rated	

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
FeC:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeD:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
Rock outcrop--------	20	Not rated		Not rated		Not rated	
FeF:							
Farmington----------	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
Rock outcrop--------	25	Not rated		Not rated		Not rated	
Fg:							
Fluvaquents---------	50	Not rated		Very limited		Not rated	
				Flooding	1.00		
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Seepage	1.00		
Udifluvents---------	35	Not rated		Very limited		Not rated	
				Flooding	1.00		
				Depth to saturated zone	1.00		
				Seepage	1.00		
Fo:							
Fonda---------------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
GrB:							
Greene--------------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
Tuller--------------	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
						Gravel content	0.11

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Hb:							
Hamplain------------	75	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.21
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00	Seepage	1.00		
		Too Sandy	0.50				
HdC:							
Hawksnest-----------	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00	Slope	0.63	Slope	0.63
		Slope	0.63			Seepage	0.21
						Gravel content	0.06
HeA:							
Herkimer, fan-------	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	0.03
		Flooding	0.40	Flooding	0.40		
HeB:							
Herkimer, fan-------	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	0.03
		Flooding	0.40	Flooding	0.40		
HnB:							
Honeoye-------------	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.24
HnC:							
Honeoye-------------	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.93	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.24
HnD:							
Honeoye-------------	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.24
HoE:							
Honeoye-------------	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.93	Depth to saturated zone	0.36	Depth to saturated zone	0.62
						Gravel content	0.24
Lansing-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.06

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
HrB:							
Howard	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
						Gravel content	0.74
						Too clayey	0.50
HrC:							
Howard	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00	Slope	0.63	Seepage	1.00
		Slope	0.63			Gravel content	0.74
						Slope	0.63
						Too clayey	0.50
HrD:							
Howard	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Too Sandy	1.00
		Too Sandy	1.00			Seepage	1.00
						Gravel content	0.74
						Too clayey	0.50
LaB:							
Lackawanna	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
						Gravel content	0.42
LaC:							
Lackawanna	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.42
LaD:							
Lackawanna	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
						Gravel content	0.42
LaE:							
Lackawanna	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
						Gravel content	0.42
LeB:							
Lansing	70	Not limited		Not limited		Somewhat limited	
						Gravel content	0.06
LeC:							
Lansing	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.06

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
LeD:							
Lansing	70	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.06
LfB:							
Lewbath	75	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.96	Depth to saturated zone	0.98
						Gravel content	0.36
LfC:							
Lewbath	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.96	Depth to saturated zone	0.98
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.36
LfD:							
Lewbath	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.96	Depth to saturated zone	0.98
						Gravel content	0.36
LfE:							
Lewbath	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.96	Depth to saturated zone	0.98
						Gravel content	0.36
LhC:							
Lewbeach	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.64	Depth to saturated zone	0.80
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.15
LkB:							
Lima	70	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
						Gravel content	0.07
LkC:							
Lima	70	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.07
LoB:							
Lordstown	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.27
Arnot	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.88

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
LpC:							
Lordstown	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.27
Chadakoin	25	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to bedrock	0.02	Gravel content	0.04
						Depth to bedrock	0.02
LpD:							
Lordstown	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.27
Chadakoin	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.02	Gravel content	0.04
						Depth to bedrock	0.02
LrE:							
Lordstown	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.27
Chadakoin	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.02	Gravel content	0.04
						Depth to bedrock	0.02
Manlius	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.98
Ly:							
Lyons	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.01
MaA:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.15
MaB:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.15

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MaC:							
Manheim	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.15
McB:							
Manlius	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.98
McC:							
Manlius	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.98
						Slope	0.63
McD:							
Manlius	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.98
MeB:							
Mardin	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
						Gravel content	0.32
MeC:							
Mardin	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.32
MeD:							
Mardin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
						Gravel content	0.32
MmC:							
Mongaup	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.80
						Slope	0.63
Franklinville	30	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Slope	0.63	Slope	0.63
		Slope	0.63	Depth to bedrock	0.01	Gravel content	0.32
						Depth to bedrock	0.01
MmD:							
Mongaup	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.80

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MmD:							
Franklinville-------	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.01	Gravel content	0.32
						Depth to bedrock	0.01
MnB:							
Mongaup-------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.80
Hawksnest-----------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Seepage	1.00			Seepage	0.21
						Gravel content	0.06
MnE:							
Mongaup-------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.80
Hawksnest-----------	25	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Seepage	0.21
						Gravel content	0.06
MoB:							
Morris--------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.03
MoC:							
Morris--------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.03
MpC:							
Morris--------------	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.04	Slope	0.04	Slope	0.04
						Gravel content	0.03
Volusia-------------	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.04	Slope	0.04	Gravel content	0.21
						Slope	0.04
Np:							
Norchip-------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.22

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
ObB:							
Onteora-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.11
ObC:							
Onteora-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.11
OeB:							
Ontusia-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.45
OeC:							
Ontusia-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.45
OgB:							
Oquaga--------------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.99
Arnot---------------	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.88
OgC:							
Oquaga--------------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.99
						Slope	0.63
Arnot---------------	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.88
						Slope	0.63
OgD:							
Oquaga--------------	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Arnot---------------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.88

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
OgE:							
Oquaga	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Arnot	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.88
OpB:							
Oquaga	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.99
Lordstown	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.27
OpC:							
Oquaga	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.99
						Slope	0.63
Lordstown	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.27
OpD:							
Oquaga	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
Lordstown	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.27
Ot:							
Otego	75	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00				
Pa:							
Palms	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Seepage	1.00	Content of organic matter	1.00
						Seepage	0.15

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PdB:							
Patchin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
Pt:							
Pits, gravel and sand	80	Not rated		Not rated		Not rated	
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	
Ra:							
Raynham	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Re:							
Red Hook	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too Sandy	0.50			Too Sandy	0.50
						Gravel content	0.42
RhA:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
RhB:							
Rhinebeck	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
RlA:							
Riverhead, loamy substratum	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Seepage	0.50
RlB:							
Riverhead, loamy substratum	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Seepage	1.00	Seepage	0.50
Sa:							
Saprists	45	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Content of organic matter	1.00	Seepage	1.00	Content of organic matter	1.00
		Seepage	1.00			Seepage	1.00

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
Sa:							
Aquents	40	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
SbB:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
ScA:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
ScB:							
Scio	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.95
ThB:							
Torull	50	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
Gretor	30	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
TkB:							
Towerville	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
TkC:							
Towerville	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Slope	0.63	Slope	0.63	Slope	0.63
TkD:							
Towerville	75	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00	Depth to bedrock	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
TlB:							
Trestle	50	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	0.60
		Seepage	1.00	Seepage	1.00		

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TlB:							
Deposit	35	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.95
TpB:							
Tunkhannock	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
						Seepage	1.00
TpC:							
Tunkhannock	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Seepage	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Seepage	1.00
						Slope	0.63
Ud:							
Udorthents, refuse substratum	85	Not rated		Not limited		Not rated	
Ue:							
Udorthents, smoothed	70	Not rated		Very limited		Not rated	
				Depth to saturated zone	1.00		
				Seepage	1.00		
UnA:							
Unadilla	80	Very limited		Not limited		Somewhat limited	
		Seepage	1.00			Seepage	0.50
UnB:							
Unadilla	80	Very limited		Not limited		Somewhat limited	
		Seepage	1.00			Seepage	0.50
VaB:							
Valois	85	Very limited		Not limited		Very limited	
		Seepage	1.00			Gravel content	0.99
						Seepage	0.21
VaC:							
Valois	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slope	0.63	Gravel content	0.99
		Slope	0.63			Slope	0.63
						Seepage	0.21
VaD:							
Valois	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.99
						Seepage	0.21
VaE:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.99
						Seepage	0.21

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
VaF:							
Valois	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.99
						Seepage	0.21
VcB:							
Valois	85	Not rated		Not limited		Not rated	
VlB:							
Vly	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.99
VlC:							
Vly	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.63	Slope	0.63	Gravel content	0.99
						Slope	0.63
VlD:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
VlE:							
Vly	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.99
VoA:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.21
VoB:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Gravel content	0.21
VoC:							
Volusia	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.21
W:							
Water	100	Not rated		Not rated		Not rated	
Wb:							
Wakeville	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WeA:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.65
WeB:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.65
WeC:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.65
		Slope	0.63	Slope	0.63	Slope	0.63
WeD:							
Wassaic-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.65
Wg:							
Wayland-------------	75	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Too clayey	0.50				
WlB:							
Wellsboro-----------	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
						Gravel content	0.84
WlC:							
Wellsboro-----------	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
		Slope	0.63	Slope	0.63	Gravel content	0.84
						Slope	0.63
WlD:							
Wellsboro-----------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
						Gravel content	0.84
WmC:							
Wellsboro-----------	50	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
		Slope	0.63	Slope	0.63	Gravel content	0.84
						Slope	0.63

Table 18.--Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WmC:							
Mardin--------------	30	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.98	Depth to saturated zone	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.32
WpB:							
Willdin-------------	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
						Gravel content	0.19
WpC:							
Willdin-------------	80	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.19
WpD:							
Willdin-------------	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
						Gravel content	0.19
WsB:							
Willowemoc----------	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
						Gravel content	0.20
WsC:							
Willowemoc----------	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.20

Table 19.--Construction Materials

[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: Rating class	Potential source of gravel: Value	Potential source of sand: Rating class	Potential source of sand: Value
Ad:					
Alden	70	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
At:					
Atherton	85	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BfB, BfC, BfD, BfE:					
Bath	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BhC, BhE:					
Bath	50	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Lackawanna	30	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Cb, Cc:					
Canandaigua	85	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cd:					
Carbondale	75	Not Rated		Not Rated	
Ce:					
Carlisle	75	Not Rated		Not Rated	
CfA, CfB:					
Castile	85	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.03
ChA, ChB, ChC, ChD:					
Chenango	85	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.07
ClE:					
Chenango	50	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.07

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
ClE:					
Howard--------------	15	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.14
Tunkhannock---------	15	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.03
CnA, CnB:					
Chenango, fan-------	85	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.07
Cp:					
Chippewa------------	45	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Norwich-------------	35	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Cr:					
Chippewa------------	45	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Norwich-------------	35	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CsB, CsC:					
Conesus-------------	70	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DaB, DaC, DaD:					
Danley--------------	60	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Nunda---------------	25	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DeB, DeC:					
Darien--------------	60	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Burdett-------------	25	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ed:					
Edwards-------------	75	Not Rated		Not Rated	

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
FaB:					
Farmington----------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FeB, FeC, FeD, FeF:					
Farmington----------	60	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop--------	20	Not Rated		Not Rated	
Fg:					
Fluvaquents---------	50	Improbable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
Udifluvents---------	35	Improbable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.04
Fo:					
Fonda---------------	90	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GrB:					
Greene--------------	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Tuller--------------	30	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hb:					
Hamplain------------	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HdC:					
Hawksnest-----------	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HeA, HeB:					
Herkimer, fan-------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HnB, HnC, HnD:					
Honeoye-------------	70	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
HoE:					
Honeoye-------------	45	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Lansing-------------	35	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
HrB, HrC, HrD:					
Howard--------------	85	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.12	Bottom layer	0.14
LaB, LaC, LaD, LaE:					
Lackawanna----------	85	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LeB, LeC, LeD:					
Lansing-------------	70	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LfB, LfC, LfD, LfE:					
Lewbath-------------	75	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LhC:					
Lewbeach------------	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LkB, LkC:					
Lima----------------	70	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LoB:					
Lordstown-----------	55	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Arnot---------------	25	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LpC, LpD:					
Lordstown-----------	55	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Chadakoin-----------	25	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
LrE:					
Lordstown-----------	40	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
LrE:					
Chadakoin-----------	25	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Manlius-------------	20	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Ly:					
Lyons---------------	85	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
MaA, MaB, MaC:					
Manheim-------------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
McB, McC, McD:					
Manlius-------------	75	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
MeB, MeC, MeD:					
Mardin--------------	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
MmC, MmD:					
Mongaup-------------	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Franklinville-------	30	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
MnB, MnE:					
Mongaup-------------	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Hawksnest-----------	30	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MoB, MoC:					
Morris--------------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MpC:					
Morris--------------	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Volusia-------------	30	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
Np:					
Norchip	85	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ObB, ObC:					
Onteora	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
OeB, OeC:					
Ontusia	80	Improbable		Improbable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.00
OgB, OgC, OgD, OgE:					
Oquaga	60	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Arnot	20	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
OpB, OpC, OpD:					
Oquaga	40	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Lordstown	35	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ot:					
Otego	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pa:					
Palms	75	Not Rated		Not Rated	
PdB:					
Patchin	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pt:					
Pits, gravel	50	Probable		Probable	
		Bottom layer	0.44	Bottom layer	0.58
		Thickest layer	0.63	Thickest layer	0.63
Pits, sand	30	Improbable		Probable	
		Bottom layer	0.00	Bottom layer	0.58
		Thickest layer	0.00	Thickest layer	0.93
Pu:					
Pits, quarry	75	Not Rated		Not Rated	

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Ra:					
Raynham	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Re:					
Red Hook	80	Improbable		Probable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.03
RhA, RhB:					
Rhinebeck	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RlA, RlB:					
Riverhead, loamy substratum	75	Improbable		Probable	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.03
Sa:					
Saprists	45	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Aquents	40	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SbB:					
Scio	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ScA, ScB:					
Scio	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
ThB:					
Torull	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Gretor	30	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TkB, TkC, TkD:					
Towerville	75	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
TlB:					
Trestle	50	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.03	Bottom layer	0.03

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
TlB:					
Deposit-------------	35	Probable		Probable	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.12	Thickest layer	0.03
TpB, TpC:					
Tunkhannock---------	85	Probable		Probable	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.25	Bottom layer	0.03
Ud:					
Udorthents, refuse substratum---------	85	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ue:					
Udorthents, smoothed	70	Improbable		Probable	
		Thickest layer	0.00	Bottom layer	0.03
		Bottom layer	0.00	Thickest layer	0.04
UnA, UnB:					
Unadilla------------	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
VaB, VaC, VaD, VaE, VaF:					
Valois--------------	85	Probable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.12	Thickest layer	0.00
VcB:					
Valois--------------	85	Probable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.12	Thickest layer	0.00
VlB, VlC, VlD, VlE:					
Vly-----------------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
VoA, VoB, VoC:					
Volusia-------------	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
W:					
Water---------------	100	Not Rated		Not Rated	
Wb:					
Wakeville-----------	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WeA, WeB, WeC, WeD:					
Wassaic-------------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 19.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
Wg:					
Wayland-------------	75	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WlB, WlC, WlD:					
Wellsboro-----------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WmC:					
Wellsboro-----------	50	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Mardin--------------	30	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
WpB, WpC, WpD:					
Willdin-------------	80	Improbable		Improbable	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
WsB, WsC:					
Willowemoc----------	80	Improbable		Improbable	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 20.--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: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
Ad:							
Alden	70	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Ponding	1.00	Slow refill	0.30
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	1.00		
At:							
Atherton	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
BfB:							
Bath	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
BfC:							
Bath	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.01				
BfD:							
Bath	75	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.12				
BfE:							
Bath	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.72	Depth to saturated zone	0.93	No ground water	1.00
		Seepage	0.70				
BhC:							
Bath	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.01				
Lackawanna	30	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.01				
BhE:							
Bath	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.28				
Lackawanna	30	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.28				

Table 20.--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
Cb:							
Canandaigua	85	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
Cc:							
Canandaigua	85	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Ponding	1.00	Slow refill	0.30
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	1.00		
Cd:							
Carbondale	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Piping	1.00		
Ce:							
Carlisle	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Piping	1.00		
CfA:							
Castile	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.12		
CfB:							
Castile	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.12		
ChA:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
ChB:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
ChC:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
		Slope	0.01				
ChD:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
		Slope	0.12				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
ClE:							
Chenango	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
		Slope	0.82				
Howard	15	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.86	No ground water	1.00
		Slope	0.82				
Tunkhannock	15	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
		Slope	0.82				
CnA:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	Cutbanks cave	1.00
						Depth to water	0.96
CnB:							
Chenango	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	Cutbanks cave	1.00
						Depth to water	0.96
Cp:							
Chippewa	45	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
Norwich	35	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
Cr:							
Chippewa	45	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
Norwich	35	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
CsB:							
Conesus	70	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
CsC:							
Conesus	70	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
DaB:							
Danley	60	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
				Piping	1.00		

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
DaB:							
Nunda---------------	25	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
				Piping	1.00		
DaC:							
Danley--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
		Slope	0.01			Cutbanks cave	0.10
				Piping	1.00		
Nunda---------------	25	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
		Slope	0.01			Cutbanks cave	0.10
				Piping	1.00		
DaD:							
Danley--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.12	Depth to saturated zone	1.00	Slow refill	0.97
		Seepage	0.03			Cutbanks cave	0.10
				Piping	1.00		
Nunda---------------	25	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.12	Depth to saturated zone	1.00	Slow refill	0.97
		Seepage	0.03			Cutbanks cave	0.10
				Piping	1.00		
DeB:							
Darien--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
				Piping	1.00		
Burdett-------------	25	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Slow refill	0.30
						Cutbanks cave	0.10
				Piping	1.00		
DeC:							
Darien--------------	60	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
		Slope	0.01			Cutbanks cave	0.10
				Piping	1.00		
Burdett-------------	25	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.01	Depth to saturated zone	1.00	Slow refill	0.30
						Cutbanks cave	0.10
				Piping	1.00		
Ed:							
Edwards-------------	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Piping	1.00		

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
FaB:							
Farmington----------	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
				Piping	1.00		
FeB:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
				Piping	1.00		
Rock outcrop--------	20	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
FeC:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.01	Piping	1.00		
Rock outcrop--------	20	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.01				
FeD:							
Farmington----------	60	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.28	Piping	1.00		
Rock outcrop--------	20	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.28				
FeF:							
Farmington----------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.99	Piping	1.00		
Rock outcrop--------	25	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.99				
Fg:							
Fluvaquents---------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	0.04		
Udifluvents---------	35	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.04	Cutbanks cave	1.00
						Depth to water	0.81
Fo:							
Fonda---------------	90	Not limited		Very limited		Somewhat limited	
				Ponding	1.00	Slow refill	0.30
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.19		

Table 20.--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
GrB:							
Greene--------------	50	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
		Seepage	0.53	Thin layer	0.88	Cutbanks cave	1.00
				Piping	0.64	Slow refill	0.47
Tuller--------------	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
				Thin layer	1.00	Slow refill	0.30
				Piping	0.99	Cutbanks cave	0.10
Hb:							
Hamplain------------	75	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
						Depth to water	0.99
HdC:							
Hawksnest-----------	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.01	Piping	1.00		
HeA:							
Herkimer, fan-------	80	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Cutbanks cave	1.00
						Depth to water	0.96
						Slow refill	0.30
HeB:							
Herkimer, fan-------	80	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Cutbanks cave	1.00
						Depth to water	0.96
						Slow refill	0.30
HnB:							
Honeoye-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
HnC:							
Honeoye-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.01				
HnD:							
Honeoye-------------	70	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.93	No ground water	1.00
		Slope	0.12				
HoE:							
Honeoye-------------	45	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.82	Depth to saturated zone	0.93	No ground water	1.00
		Seepage	0.70				
Lansing-------------	35	Somewhat limited		Not limited		Very limited	
		Slope	0.82			No ground water	1.00
		Seepage	0.70				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
HrB:							
Howard	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.86	No ground water	1.00
HrC:							
Howard	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.86	No ground water	1.00
		Slope	0.01				
HrD:							
Howard	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.86	No ground water	1.00
		Slope	0.12				
LaB:							
Lackawanna	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
LaC:							
Lackawanna	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.01				
LaD:							
Lackawanna	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.12				
LaE:							
Lackawanna	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.50				
LeB:							
Lansing	70	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			No ground water	1.00
LeC:							
Lansing	70	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			No ground water	1.00
		Slope	0.01				
LeD:							
Lansing	70	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			No ground water	1.00
		Slope	0.12				
LfB:							
Lewbath	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
LfC:							
Lewbath	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
LfD:							
Lewbath-------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.12				
LfE:							
Lewbath-------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.50				
LhC:							
Lewbeach------------	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.53	Depth to saturated zone	0.99	No ground water	1.00
		Slope	0.01				
LkB:							
Lima----------------	70	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
LkC:							
Lima----------------	70	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
LoB:							
Lordstown-----------	55	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
Arnot---------------	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
LpC:							
Lordstown-----------	55	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
		Slope	0.01				
Chadakoin-----------	25	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.53	Thin layer	0.01	No ground water	1.00
		Slope	0.01				
		Depth to bedrock	0.01				
LpD:							
Lordstown-----------	55	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
		Slope	0.12				
Chadakoin-----------	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.53	Thin layer	0.01	No ground water	1.00
		Slope	0.12				
		Depth to bedrock	0.01				
LrE:							
Lordstown-----------	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Slope	0.82				
		Seepage	0.70				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
LrE:							
Chadakoin-----------	25	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.82	Thin layer	0.01	No ground water	1.00
		Seepage	0.53				
		Depth to bedrock	0.01				
Manlius-------------	20	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Slope	0.82	Seepage	0.12		
		Seepage	0.70				
Ly:							
Lyons---------------	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.53	Depth to saturated zone	1.00	Cutbanks cave	1.00
						Slow refill	0.47
				Piping	1.00		
MaA:							
Manheim-------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.02	Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
MaB:							
Manheim-------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.02	Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
MaC:							
Manheim-------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.02	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
				Piping	1.00		
McB:							
Manlius-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
McC:							
Manlius-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.01				
McD:							
Manlius-------------	75	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.12				
MeB:							
Mardin--------------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00

Table 20.--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
MeC:							
Mardin	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
MeD:							
Mardin	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.12				
MmC:							
Mongaup	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.74	Thin layer	0.74	No ground water	1.00
		Seepage	0.70				
		Slope	0.01				
Franklinville	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.01	No ground water	1.00
		Slope	0.01				
		Depth to bedrock	0.01				
MmD:							
Mongaup	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.74	Thin layer	0.74	No ground water	1.00
		Seepage	0.70				
		Slope	0.12				
Franklinville	30	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.01	No ground water	1.00
		Slope	0.12				
		Depth to bedrock	0.01				
MnB:							
Mongaup	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.74	Thin layer	0.74	No ground water	1.00
		Seepage	0.70				
Hawksnest	30	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
				Piping	1.00		
MnE:							
Mongaup	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.82	Thin layer	0.74	No ground water	1.00
		Depth to bedrock	0.74				
		Seepage	0.70				
Hawksnest	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.82	Piping	1.00		
MoB:							
Morris	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
MoC:							
Morris	80	Somewhat limited		Very limited		Very limited	
		Slope	0.01	Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
MpC:							
Morris	50	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
Volusia	30	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
Np:							
Norchip	85	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Piping	1.00		
ObB:							
Onteora	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
ObC:							
Onteora	80	Somewhat limited		Very limited		Very limited	
		Slope	0.01	Depth to saturated zone	1.00	No ground water	1.00
OeB:							
Ontusia	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
				Seepage	0.01		
OeC:							
Ontusia	80	Somewhat limited		Very limited		Very limited	
		Slope	0.01	Depth to saturated zone	1.00	No ground water	1.00
				Seepage	0.01		
OgB:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
OgC:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.01				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
OgC:							
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.01				
OgD:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.12				
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.12				
OgE:							
Oquaga	60	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Slope	0.72	Seepage	0.12		
		Seepage	0.70				
Arnot	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	No ground water	1.00
		Slope	0.72				
OpB:							
Oquaga	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
Lordstown	35	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
OpC:							
Oquaga	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.01				
Lordstown	35	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
		Slope	0.01				
OpD:							
Oquaga	40	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70	Seepage	0.12		
		Slope	0.12				
Lordstown	35	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.91	Thin layer	0.91	No ground water	1.00
		Seepage	0.70				
		Slope	0.12				

Table 20.--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
Ot:							
Otego	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	0.10
				Depth to saturated zone	0.99	Depth to water	0.01
Pa:							
Palms	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Seepage	1.00		
				Piping	1.00		
PdB:							
Patchin	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to bedrock	0.08	Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
				Piping	0.99		
				Thin layer	0.81		
Pt:							
Pits, gravel and sand	80	Not rated		Somewhat limited		Very limited	
				Seepage	0.93	No ground water	1.00
Pu:							
Pits, quarry	75	Not rated		Not rated		Not rated	
Ra:							
Raynham	80	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.53	Depth to saturated zone	1.00	Cutbanks cave	0.50
						Slow refill	0.47
				Piping	1.00		
Re:							
Red Hook	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
						Slow refill	0.30
				Seepage	0.03		
RhA:							
Rhinebeck	80	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
RhB:							
Rhinebeck	80	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Slow refill	0.97
						Cutbanks cave	0.10
RlA:							
Riverhead, loamy substratum	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.03	No ground water	1.00

Table 20.--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
RlB:							
Riverhead, loamy substratum---------	75	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.03	No ground water	1.00
Sa:							
Saprists------------	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Content of organic matter	1.00	Cutbanks cave	0.10
				Ponding	1.00		
				Depth to saturated zone	1.00		
				Piping	1.00		
Aquents-------------	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Piping	0.63		
SbB:							
Scio----------------	80	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
						Cutbanks cave	0.10
				Piping	1.00		
ScA:							
Scio----------------	80	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
						Cutbanks cave	0.10
				Piping	1.00		
ScB:							
Scio----------------	80	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
						Cutbanks cave	0.10
				Piping	1.00		
ThB:							
Torull--------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
				Thin layer	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
Gretor--------------	30	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.88	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
		Seepage	0.70				
				Piping	0.89	Slow refill	0.30
				Thin layer	0.88	Cutbanks cave	0.10
TkB:							
Towerville----------	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Depth to bedrock	0.69				
				Piping	0.88		
				Thin layer	0.70		

Table 20.--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
TkC:							
Towerville----------	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Depth to bedrock	0.69	Piping	0.88		
		Slope	0.01	Thin layer	0.70		
TkD:							
Towerville----------	75	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Depth to bedrock	0.69	Piping	0.88		
		Slope	0.12	Thin layer	0.70		
TlB:							
Trestle-------------	50	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Seepage	0.03	Depth to water	0.96
						Cutbanks cave	0.10
Deposit-------------	35	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
				Seepage	0.12		
TpB:							
Tunkhannock---------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
TpC:							
Tunkhannock---------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.25	No ground water	1.00
		Slope	0.01				
Ud:							
Udorthents, refuse substratum---------	85	Not limited		Not limited		Very limited	
						No ground water	1.00
Ue:							
Udorthents, smoothed	70	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
				Seepage	0.04	Depth to water	0.96
UnA:							
Unadilla------------	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
UnB:							
Unadilla------------	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	No ground water	1.00
VaB:							
Valois--------------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
VaC:							
Valois--------------	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
		Slope	0.01				

Table 20.--Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
VaD:							
Valois	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
		Slope	0.12				
VaE:							
Valois	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
		Slope	0.50				
VaF:							
Valois	80	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
		Slope	0.97				
VcB:							
Valois	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.12	No ground water	1.00
VlB:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.99	Thin layer	0.99	No ground water	1.00
		Seepage	0.70				
VlC:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.99	Thin layer	0.99	No ground water	1.00
		Seepage	0.70				
		Slope	0.01				
VlD:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.99	Thin layer	0.99	No ground water	1.00
		Seepage	0.70				
		Slope	0.12				
VlE:							
Vly	80	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.99	Thin layer	0.99	No ground water	1.00
		Slope	0.72				
		Seepage	0.70				
VoA:							
Volusia	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
VoB:							
Volusia	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	No ground water	1.00
VoC:							
Volusia	80	Somewhat limited		Very limited		Very limited	
		Slope	0.01	Depth to saturated zone	1.00	No ground water	1.00
W:							
Water	100	Not rated		Not rated		Not rated	

Table 20.--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
Wb:							
Wakeville-----------	75	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
WeA:							
Wassaic-------------	80	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.83	Piping	1.00	Depth to hard bedrock	1.00
		Seepage	0.53	Depth to saturated zone	0.94	Slow refill	0.47
				Thin layer	0.83	Cutbanks cave	0.10
						Depth to water	0.02
WeB:							
Wassaic-------------	80	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.83	Piping	1.00	Depth to hard bedrock	1.00
		Seepage	0.53	Depth to saturated zone	0.94	Slow refill	0.47
				Thin layer	0.83	Cutbanks cave	0.10
						Depth to water	0.02
WeC:							
Wassaic-------------	80	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.83	Piping	1.00	Depth to hard bedrock	1.00
		Seepage	0.53	Depth to saturated zone	0.94	Slow refill	0.47
		Slope	0.01	Thin layer	0.83	Cutbanks cave	0.10
						Depth to water	0.02
WeD:							
Wassaic-------------	80	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.83	Piping	1.00	Depth to hard bedrock	1.00
		Seepage	0.53	Depth to saturated zone	0.94	Slow refill	0.47
		Slope	0.12	Thin layer	0.83	Cutbanks cave	0.10
						Depth to water	0.02
Wg:							
Wayland-------------	75	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Slow refill	0.47
				Piping	1.00	Cutbanks cave	0.10
WlB:							
Wellsboro-----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
WlC:							
Wellsboro-----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
WlD:							
Wellsboro-----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.12				

Table 20.--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
WmC:							
Wellsboro-----------	50	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
Mardin--------------	30	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				
WpB:							
Willdin-------------	80	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
				Piping	1.00		
WpC:							
Willdin-------------	80	Somewhat limited		Very limited		Very limited	
		Slope	0.01	Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
				Piping	1.00		
WpD:							
Willdin-------------	80	Somewhat limited		Very limited		Very limited	
		Slope	0.12	Depth to saturated zone	1.00	Slow refill	1.00
						Cutbanks cave	0.10
				Piping	1.00		
WsB:							
Willowemoc----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
WsC:							
Willowemoc----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	No ground water	1.00
		Slope	0.01				

Table 21.--Engineering Index Properties

[Absence of an entry indicates that the data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
Ad:												
Alden-----------	0-8	Mucky silt loam	OL, ML	A-5, A-7	0	0	85-100	75-100	50-100	30-90	40-50	5-15
	8-25	Silt loam, silty clay loam, very fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	60-100	35-95	20-35	5-15
	25-36	Loam, gravelly fine sandy loam, silty clay loam, gravelly silt loam	CL, CL-ML, GC, SC	A-4, A-2, A-6	0-2	0-5	65-95	50-92	35-90	20-85	20-35	5-15
	36-72	Gravelly loam, gravelly fine sandy loam, silty clay loam, silt loam	CL, CL-ML, GC, SC	A-4, A-2, A-6	0-1	0-5	65-95	50-92	35-90	20-85	20-35	5-15
At:												
Atherton--------	0-3	Silt loam	ML, OL	A-4, A-7	0	0-5	85-100	75-100	60-100	40-95	30-45	5-15
	3-24	Silt loam, silty clay loam, gravelly loam	CL, CL-ML, GC-GM, SC	A-6, A-4	0	0-8	75-100	65-100	50-100	35-90	25-40	5-20
	24-72	Stratified very gravelly loam to silty clay loam, very gravelly loam, very gravelly silt loam	GM, GC-GM, CL-ML, ML	A-2, A-4, A-1	0	0-25	45-92	30-85	25-80	20-75	5-15	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				*Pct*	*Pct*					*Pct*	
BfB, BfC, BfD, BfE:												
Bath------------	0-9	Channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-10	65-90	50-75	40-70	30-65	30-40	5-10
	9-30	Channery silt loam, gravelly loam, silt loam, channery loam	ML, GM, SM	A-4, A-2	0-1	0-10	55-98	45-96	35-90	25-80	20-35	NP-7
	30-40	Channery loam, gravelly sandy loam, very channery silt loam	GM, GC-GM, ML, SM	A-4, A-2, A-1	0-5	0-15	45-90	25-75	15-70	10-65	15-25	NP-6
	40-72	Flaggy loam, channery silt loam, very channery loam	GM, CL-ML, SC-SM	A-2, A-4, A-1	0-5	0-15	45-90	25-75	15-70	10-65	15-25	NP-6
BhC, BhE:												
Bath------------	0-9	Channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-10	65-90	50-75	40-70	30-65	30-40	5-10
	9-30	Channery silt loam, gravelly loam, silt loam, channery loam	ML, GM, SM	A-4, A-2	0-1	0-10	55-98	45-96	35-90	25-80	20-35	NP-7
	30-40	Channery loam, gravelly sandy loam, very channery silt loam	GM, GC-GM, ML, SM	A-4, A-2, A-1	0-5	0-15	45-90	25-75	15-70	10-65	15-25	NP-6
	40-72	Flaggy loam, channery silt loam, very channery loam	GM, CL-ML, SC-SM	A-2, A-4, A-1	0-5	0-15	45-90	25-75	15-70	10-65	15-25	NP-6

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
BhC, BhE:												
Lackawanna------	0-6	Channery silt loam	ML, GM, SM	A-4, A-2	1-5	0-10	65-90	50-75	35-70	20-65	30-40	5-10
	6-26	Channery silt loam, silt loam, flaggy loam	CL, GM, ML, SM	A-4, A-2, A-6	0-3	0-15	65-92	45-85	30-80	20-70	20-35	1-14
	26-70	Channery loam, very channery silt loam, very flaggy loam	SC-SM, CL, GM, ML, SM	A-4, A-2, A-6	0-5	0-20	45-90	25-75	10-70	5-65	15-35	1-12
Cb:												
Canandaigua-----	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	70-100	40-90	20-40	5-15
	8-32	Silt loam, very fine sandy loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	75-100	45-95	20-40	5-15
	32-75	Silt loam, very fine sandy loam, silty clay	CL-ML, CL, ML	A-4	0	0	90-100	85-100	60-100	25-95	20-30	3-10
Cc:												
Canandaigua-----	0-8	Mucky silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	70-100	40-90	20-40	5-15
	8-32	Silt loam, very fine sandy loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	75-100	45-95	20-40	5-15
	32-75	Silt loam, very fine sandy loam, silty clay	CL-ML, CL, ML	A-4	0	0	90-100	85-100	60-100	25-95	20-30	3-10
Cd:												
Carbondale------	0-11	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	11-38	Muck	PT	A-8	---	---	---	---	---	---	0	NP
	38-100	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
Ce:												
Carlisle--------	0-72	Muck	PT	A-8	---	---	---	---	---	---	0	NP

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
CfA, CfB:												
Castile---------	0-9	Channery silt loam	CL-ML, GM, ML, SM	A-4, A-2	0	0-5	65-90	55-75	30-70	15-65	15-30	NP-10
	9-24	Very gravelly loam, very channery silt loam, very gravelly sandy loam, channery silt loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0	0-10	45-85	30-70	15-65	10-60	15-30	NP-10
	24-72	Very gravelly sand, very gravelly loam, extremely gravelly sandy loam	GW-GM, GP, GW, SW-SM	A-1, A-2, A-4	0	0-15	40-70	20-50	10-45	0-40	15-30	NP
ChA, ChB, ChC, ChD:												
Chenango--------	0-7	Gravelly silt loam	CL-ML, GM, ML, SM	A-4, A-2, A-1	0	0-10	65-90	55-75	30-70	15-65	15-35	NP-10
	7-27	Gravelly silt loam, gravelly fine sandy loam, very gravelly loam	SM, ML, GM	A-1, A-2, A-4	0	0-10	45-90	30-75	20-70	10-65	15-40	NP-10
	27-72	Very gravelly loamy coarse sand, very gravelly sand, stratified extremely gravelly loamy sand	GP, GM, GW, SM, SW	A-1	0	0-10	40-70	20-55	10-40	0-15	5-15	NP

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
ClE:												
Chenango--------	0-7	Gravelly silt loam	CL-ML, GM, ML, SM	A-4, A-2, A-1	0	0-10	65-90	55-75	30-70	15-65	15-35	NP-10
	7-27	Gravelly silt loam, gravelly fine sandy loam, very gravelly loam	SM, ML, GM	A-1, A-2, A-4	0	0-10	45-90	30-75	20-70	10-65	15-40	NP-10
	27-72	Very gravelly loamy coarse sand, very gravelly sand, stratified extremely gravelly loamy sand	GP, GM, GW, SM, SW	A-1	0	0-10	40-70	20-55	10-40	0-15	5-15	NP
Howard----------	0-5	Gravelly silt loam	CL, GC-GM, GM, ML, SM	A-4, A-2, A-1	0	0-5	65-95	50-92	30-85	20-75	25-35	5-10
	5-9	Gravelly loam, very gravelly sandy loam, silt loam	CL, CL-ML, GC, GC-GM, SC	A-4, A-2, A-1	0	0-5	45-92	30-85	20-80	10-70	15-25	5-10
	9-40	Very gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, GC-GM, GW-GC	A-2, A-4	0	0-10	40-70	30-50	25-50	10-40	25-30	5-10
	40-85	Stratified extremely gravelly sand	SW, GW, GW-GM	A-1	0	0-30	40-65	20-40	10-30	0-15	15-20	NP-5
Tunkhannock-----	0-7	Gravelly loam	SM, GM	A-4, A-2, A-1	0	0-10	65-90	50-75	30-70	15-65	15-25	NP-5
	7-33	Gravelly silt loam, very gravelly loam, very gravelly sandy loam	SM, GP-GM, GM, SP-SM	A-1, A-2, A-4	0	0-15	45-90	30-75	15-70	10-65	15-25	NP-3
	33-72	Extremely gravelly sandy loam, very gravelly loamy sand, very gravelly sand	GW-GM, GM, SM, SP-SM	A-1	0-1	0-25	35-65	15-45	10-30	0-15	15-20	NP-2

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CnA, CnB:												
Chenango, fan---	0-7	Channery loam	SC-SM, GM, ML, SM	A-4, A-2, A-1	0	0-10	65-90	55-75	30-70	15-65	15-35	NP-10
	7-27	Channery silt loam, gravelly fine sandy loam, very channery loam	SM, ML, GM	A-1, A-2, A-4	0	0-10	45-90	30-75	20-70	10-65	15-40	NP-10
	27-72	Very gravelly loamy coarse sand, very gravelly sand, stratified extremely gravelly loamy sand	GP, GM, GW, SM, SW	A-1	0	0-10	40-70	20-55	10-40	0-15	5-15	NP
Cp:												
Chippewa--------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-8	Mucky silt loam	OL, ML	A-5, A-7	0	0-5	85-100	75-100	60-100	40-90	40-50	5-15
	8-17	Channery silt loam, loam, channery silty clay loam, flaggy silt loam	GC, CL-ML, GM, ML, SC-SM	A-4	0-1	0-10	65-100	55-100	40-100	30-90	25-35	5-10
	17-47	Channery silt loam, channery loam, channery silty clay loam	CL, CL-ML, GC, SC	A-4, A-2	0-2	0-15	50-85	35-70	20-70	10-65	15-25	5-10
	47-72	Very channery loam, channery silt loam, channery silty clay loam	CL, CL-ML, GM, ML, SM	A-4, A-2	0-2	0-15	50-85	35-70	20-70	10-65	25-35	5-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
Cp:												
Norwich---------	0-8	Silt loam	ML, OL	A-5, A-7	0-1	0-5	85-100	75-100	60-100	40-85	40-50	5-15
	8-23	Channery silt loam, channery loam, silt loam	CL, CL-ML, GC-GM, GM, ML	A-4	0-2	0-15	65-100	50-100	40-100	30-85	25-35	5-10
	23-72	Channery silt loam, channery loam, very channery sandy loam	SC, GC, CL-ML, CL	A-4, A-2	0-5	0-20	55-90	40-75	25-70	10-65	15-25	5-10
Cr:												
Chippewa--------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-8	Mucky silt loam	OL, ML	A-5, A-7	0	0-5	85-100	75-100	60-100	40-90	40-50	5-15
	8-17	Channery silt loam, loam, channery silty clay loam, flaggy silt loam	GC, CL-ML, GM, ML, SC-SM	A-4	0-1	0-10	65-100	55-100	40-100	30-90	25-35	5-10
	17-47	Channery silt loam, channery loam, channery silty clay loam	CL, CL-ML, GC, SC	A-4, A-2	0-2	0-15	50-85	35-70	20-70	10-65	15-25	5-10
	47-72	Very channery loam, channery silt loam, channery silty clay loam	CL, CL-ML, GM, ML, SM	A-4, A-2	0-2	0-15	50-85	35-70	20-70	10-65	25-35	5-10
Norwich---------	0-8	Silt loam	ML, OL	A-5, A-7	0-1	0-5	85-100	75-100	60-100	40-85	40-50	5-15
	8-23	Channery silt loam, channery loam, silt loam	CL, CL-ML, GC-GM, GM, ML	A-4	0-2	0-15	65-100	50-100	40-100	30-85	25-35	5-10
	23-72	Channery silt loam, channery loam, very channery sandy loam	SC, GC, CL-ML, CL	A-4, A-2	0-5	0-20	55-90	40-75	25-70	10-65	15-25	5-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
CsB, CsC:												
Conesus---------	0-9	Silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-5	70-95	55-92	40-90	30-80	25-35	5-15
	9-37	Channery silt loam, loam, gravelly loam, silt loam, gravelly silt loam	CL, CL-ML, GC, SC	A-4, A-6	0-2	0-10	65-95	55-92	45-85	30-80	20-30	5-15
	37-72	Gravelly loam, silt loam, very gravelly loam	GC, CL-ML, CL, SC	A-4, A-2, A-6	0-3	0-15	50-92	35-85	25-80	20-70	20-30	5-15
DaB, DaC, DaD:												
Danley----------	0-8	Silt loam	ML, SM	A-4, A-7	0	0-5	85-98	75-96	60-95	40-85	35-45	5-15
	8-15	Silty clay loam, clay loam, channery clay loam	CL, CL-ML, GC, SC	A-4, A-6	0	0-8	65-98	50-96	45-90	35-85	20-35	5-15
	15-30	Channery silty clay loam, clay loam, channery clay loam	CL, CL-ML, GC, SC	A-4, A-6	0-2	0-8	65-98	50-96	45-90	35-85	20-35	5-15
	30-37	Channery silty clay loam, clay loam, channery clay loam	CL, CL-ML, GC, SC	A-4, A-6	0-2	0-8	65-98	50-96	45-90	35-85	20-35	5-15
	37-72	Channery silty clay loam, loam, channery clay loam	CL, CL-ML, GC, SC	A-4, A-2, A-1, A-6	0-5	0-15	45-92	30-85	25-80	20-75	20-35	5-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
DaB, DaC, DaD:												
Nunda-----------	0-6	Silt loam	ML, SM	A-4, A-7	0	0-8	85-100	75-100	60-100	35-90	35-45	5-15
	6-13	Silt loam, gravelly loam, very fine sandy loam	CL-ML, CL, ML, SC-SM	A-4, A-2	0-1	0-8	75-100	65-100	50-100	30-90	20-30	2-10
	13-48	Channery silty clay loam, silty clay loam, gravelly silty clay loam, clay loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0-1	0-10	65-95	55-92	40-90	30-85	20-30	5-15
	48-72	Channery silty clay loam, channery silt loam, loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0-5	0-15	65-95	55-92	40-90	30-85	20-30	5-15
DeB, DeC:												
Darien----------	0-12	Channery silt loam	ML, GM, SM	A-4, A-7	0	0-8	65-90	50-75	40-70	30-65	35-45	5-15
	12-42	Clay loam, channery silt loam, channery silty clay loam	CL, CL-ML, GC-GM, SC	A-4, A-6	0-1	0-8	65-98	50-96	45-90	35-85	25-35	5-15
	42-72	Channery clay loam, very channery silty clay loam, silty clay loam	CL, CL-ML, GC-GM, SC	A-4, A-2, A-6	0-5	0-15	45-92	30-85	25-80	20-75	25-35	5-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
DeB, DeC:												
Burdett---------	0-8	Silt loam	ML	A-4, A-7	0	0-5	85-95	75-92	60-90	35-80	35-45	5-15
	8-15	Silt loam, very fine sandy loam, channery silt loam	CL-ML, CL, ML, SC, SM	A-4	0-1	0-5	70-95	55-92	40-90	25-80	20-30	2-10
	15-44	Channery clay loam, silty clay loam, channery silty clay loam, channery loam	CL, CL-ML, GC-GM, SC	A-4, A-6	0-3	0-10	65-92	50-85	40-80	30-75	20-30	5-15
	44-72	Channery loam, clay loam, channery silty clay loam	CL, CL-ML, GC, SC	A-4, A-6	0-5	0-10	65-92	50-85	40-80	20-75	20-35	5-15
Ed:												
Edwards---------	0-50	Muck	PT	A-8	---	---	---	---	---	---	0	NP
	50-72	Marl			0	0	100	100	100	70-95	0-17	NP-3
FaB:												
Farmington------	0-9	Silt loam	CL, ML, SC, SM	A-4, A-2, A-6	0	0-5	85-95	75-92	50-90	30-80	20-35	3-15
	9-18	Gravelly silt loam, loam, gravelly fine sandy loam	CL, GC, GM, ML	A-4, A-2, A-1, A-6	0	0-5	65-95	50-92	35-90	20-80	20-35	3-15
	18-22	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
FeB, FeC, FeD, FeF:												
Farmington------	0-9	Silt loam	CL, ML, SC, SM	A-4, A-2, A-6	0	0-5	85-95	75-92	50-90	30-80	20-35	3-15
	9-18	Gravelly silt loam, loam, gravelly fine sandy loam	CL, GC, GM, ML	A-4, A-2, A-1, A-6	0	0-5	65-95	50-92	35-90	20-80	20-35	3-15
	18-22	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Fg:												
Fluvaquents-----	0-11	Gravelly silt loam	SC, CL, GM, ML, SM	A-4, A-2, A-1	0	0-10	60-100	55-100	30-100	10-90	15-25	NP-15
	11-72	Very gravelly sandy loam, gravelly silt loam, silt loam	GC, CL, GM, ML, SC-SM	A-4, A-1, A-2, A-6	0	0-15	35-100	30-100	15-100	5-90	15-30	NP-20
Udifluvents-----	0-11	Gravelly silt loam	SC, CL, GM, ML, SM	A-4, A-2, A-1	0	0-10	60-80	55-75	30-75	10-65	15-25	NP-20
	11-72	Very gravelly sandy loam, gravelly loam, gravelly silt loam	GC, CL, GM, ML	A-4, A-2, A-1, A-6	0	0-15	35-100	30-100	15-100	5-90	15-30	NP-20
Fo:												
Fonda-----------	0-2	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	2-10	Mucky silt loam	CL, CL-ML	A-6, A-4, A-7	0	0	95-100	95-100	80-100	70-95	23-43	7-18
	10-18	Silty clay, silty clay loam, clay	CL	A-6	0	0	95-100	95-100	85-100	75-95	25-40	11-25
	18-28	Silty clay, silty clay loam, clay	CL	A-6	0	0	95-100	95-100	85-100	75-95	25-40	11-25
	28-74	Silty clay, stratified silty clay to clay	CL	A-6	0	0	95-100	95-100	85-100	75-95	25-40	11-25
GrB:												
Greene----------	0-8	Silt loam	ML, MH	A-7	0	0-10	85-100	75-92	60-90	40-85	40-55	10-20
	8-27	Silt loam, channery loam, channery silty clay loam	ML, MH, SM	A-7	0	0-15	65-95	50-92	40-90	30-85	40-55	10-20
	27-39	Loam, channery silt loam, gravelly loam, silty clay loam	SC-SM, ML, CL-ML, SM	A-4	0	0-15	65-95	50-92	40-90	30-85	20-30	1-7
	39-43	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
GrB:												
Tuller----------	0-8	Channery silt loam	ML, MH, GM, SM	A-7, A-2	0	0-10	65-90	50-75	40-70	30-65	40-55	10-20
	8-14	Channery silt loam, channery loam, fine sandy loam	SC-SM, GM, GC-GM, SM	A-4, A-2	0	0-15	65-92	50-75	40-70	25-65	20-30	2-7
	14-18	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Hb:												
Hamplain--------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	92-100	80-100	45-90	15-35	2-15
	9-38	Silt loam, very fine sandy loam	CL, CL-ML, ML	A-4, A-6	0	0	100	92-100	80-100	45-90	15-35	2-15
	38-78	Silt loam, very fine sandy loam, loamy very fine sand	ML, SM	A-4, A-2-4	0	0	85-100	75-100	60-100	30-90	15-20	NP-5
HdC:												
Hawksnest-------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-7	Silt loam	ML, SM	A-4, A-2	0	0-5	85-95	75-92	50-90	30-80	15-20	NP-5
	7-19	Channery silt loam, loam, channery sandy loam	GM, ML, SM	A-4, A-2	0-1	0-10	65-95	50-92	40-90	30-80	15-20	NP-5
	19-23	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
HeA, HeB:												
Herkimer, fan---	0-9	Gravelly silt loam	ML, GM, SM	A-6, A-7	0	0-10	65-90	50-75	40-70	30-65	35-45	10-15
	9-19	Gravelly silt loam, gravelly fine sandy loam, loam	GC, GC-GM, GM, ML, SM	A-4, A-2	0	0-10	65-96	50-96	35-90	20-80	25-35	5-10
	19-33	Channery loam, gravelly silt loam, very channery fine sandy loam	CL, GC, GC-GM, SC, SC-SM	A-4, A-2, A-1	0	0-10	45-96	25-75	20-70	10-65	25-35	5-10
	33-72	Channery loam, gravelly loam, very channery fine sandy loam	SC, GC-GM, GC, SC-SM	A-4, A-2, A-1	0	0-15	45-96	25-75	20-70	10-65	15-25	5-10
HnB, HnC, HnD:												
Honeoye---------	0-8	Silt loam	CL, CL-ML, ML, SM	A-4, A-2	0	0-5	65-95	50-92	35-90	20-80	25-35	5-10
	8-29	Gravelly silt loam, silt loam, clay loam	CL, GC, ML, SC	A-4	0-1	0-10	65-95	50-92	40-90	30-80	25-35	5-10
	29-72	Gravelly loam, gravelly silt loam, very gravelly fine sandy loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-2	0-10	45-90	25-75	15-70	10-65	15-25	5-10
HoE:												
Honeoye---------	0-8	Silt loam	CL, CL-ML, ML, SM	A-4, A-2	0	0-5	65-95	50-92	35-90	20-80	25-35	5-10
	8-29	Gravelly silt loam, silt loam, clay loam	CL, GC, ML, SC	A-4	0-1	0-10	65-95	50-92	40-90	30-80	25-35	5-10
	29-72	Gravelly loam, gravelly silt loam, very gravelly fine sandy loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-2	0-10	45-90	25-75	15-70	10-65	15-25	5-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
HoE:												
Lansing---------	0-9	Silt loam	ML, SM	A-4	0-1	0-5	50-98	40-96	35-90	20-80	25-45	1-15
	9-26	Gravelly loam, loam, very gravelly very fine sandy loam	SC-SM, CL-ML, GM, ML, SM	A-4, A-2, A-1	0-1	0-5	50-98	40-96	35-90	20-80	20-35	1-10
	26-49	Silty clay loam, gravelly silt loam, very gravelly loam	GC-GM, CL, GC, ML, SC-SM	A-4, A-2	0-2	0-5	50-98	40-96	35-90	25-85	20-30	2-10
	49-72	Gravelly silt loam, cobbly loam, very gravelly loam	SC-SM, CL, GC, GM, ML	A-4, A-2, A-1	0-3	0-15	45-85	35-70	25-70	20-65	15-25	2-10
HrB, HrC, HrD:												
Howard----------	0-5	Gravelly silt loam	CL, GC-GM, GM, ML, SM	A-4, A-2, A-1	0	0-5	65-95	50-92	30-85	20-75	25-35	5-10
	5-9	Gravelly loam, very gravelly sandy loam, silt loam	CL, CL-ML, GC, GC-GM, SC	A-4, A-2, A-1	0	0-5	45-92	30-85	20-80	10-70	15-25	5-10
	9-40	Very gravelly clay loam, gravelly loam, very gravelly sandy loam	GC, GC-GM, GW-GC	A-2, A-4	0	0-10	40-70	30-50	25-50	10-40	25-30	5-10
	40-85	Stratified extremely gravelly sand	SW, GW, GW-GM	A-1	0	0-30	40-65	20-40	10-30	0-15	15-20	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
LaB, LaC, LaD, LaE:												
Lackawanna------	0-6	Channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-10	65-90	50-75	35-70	20-65	30-40	5-10
	6-26	Channery silt loam, silt loam, flaggy loam	CL, GM, ML, SM	A-4, A-2, A-6	0-3	0-15	65-92	45-85	30-80	20-70	20-35	1-14
	26-70	Channery loam, very channery silt loam, very flaggy loam	SC-SM, CL, GM, ML, SM	A-4, A-2, A-6	0-5	0-20	45-90	25-75	10-70	5-65	15-35	1-12
LeB, LeC, LeD:												
Lansing---------	0-9	Silt loam	ML, SM	A-4	0-1	0-5	50-98	40-96	35-90	20-80	25-45	1-15
	9-26	Gravelly loam, loam, very gravelly very fine sandy loam	SC-SM, CL-ML, GM, ML, SM	A-4, A-2, A-1	0-1	0-5	50-98	40-96	35-90	20-80	20-35	1-10
	26-49	Silty clay loam, gravelly silt loam, very gravelly loam	GC-GM, CL, GC, ML, SC-SM	A-4, A-2	0-2	0-5	50-98	40-96	35-90	25-85	20-30	2-10
	49-72	Gravelly silt loam, cobbly loam, very gravelly loam	SC-SM, CL, GC, GM, ML	A-4, A-2, A-1	0-3	0-15	45-85	35-70	25-70	20-65	15-25	2-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
LfB, LfC, LfD, LfE:												
Lewbath---------	0-8	Channery silt loam	ML, GM, SM	A-5, A-4	0	0-15	65-90	50-75	40-70	30-65	35-50	2-10
	8-21	Silt loam, channery silt loam, flaggy fine sandy loam	GM, ML, SM	A-4, A-2-4	0-1	0-15	65-95	50-92	35-90	20-80	15-30	NP-6
	21-52	Very channery loam, channery silt loam, flaggy loam, very gravelly loam	GM, CL-ML, ML, SM	A-2, A-2-4, A-4	0-3	0-25	45-90	35-75	25-70	20-65	15-25	NP-5
	52-72	Flaggy loam, very channery silt loam, very flaggy loam	SM, ML, GM, CL-ML	A-2, A-2-4, A-4	0-5	0-35	45-90	30-75	25-70	20-65	15-25	NP-5
LhC:												
Lewbeach--------	0-9	Channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-8	65-95	50-92	35-90	20-80	15-25	NP-5
	9-27	Gravelly loam, channery silt loam, gravelly fine sandy loam, gravelly sandy loam	SM, ML, GM	A-4, A-2	0-1	0-8	65-95	50-92	30-90	15-80	15-25	NP-5
	27-72	Gravelly sandy loam, gravelly silt loam, channery loam	SM, ML, GW-GM	A-4, A-2, A-1	0-5	0-20	50-90	35-75	15-70	10-65	15-25	NP-5

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
LkB, LkC:												
Lima------------	0-12	Gravelly silt loam, loam	CL, GM, ML, SM	A-6, A-2, A-7	0-1	0-10	70-95	55-92	40-90	20-80	35-45	10-20
	12-28	Loam, gravelly silt loam, clay loam	CL, GC, SC	A-6	0-1	0-10	70-95	55-92	40-90	30-80	30-40	10-20
	28-72	Gravelly loam, gravelly silt loam, very gravelly fine sandy loam, very channery silt loam	SC, GC, CL-ML, CL	A-4, A-2, A-1	0-5	0-15	50-85	35-70	20-65	10-65	15-25	5-10
LoB:												
Lordstown-------	0-8	Channery silt loam	ML, GM, SM	A-4	0-1	0-10	65-90	50-75	40-70	30-65	15-30	NP-4
	8-26	Channery silt loam, channery loam	GM, ML, SM	A-4	0-3	0-10	45-85	30-70	25-65	20-65	15-30	NP-4
	26-28	Very channery loam, channery silt loam, channery loam	GM, ML, SM	A-4, A-2, A-1	0-3	0-15	45-85	30-70	20-65	10-65	15-30	NP-4
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
LoB:												
Arnot-----------	0-5	Channery silt loam	GM, ML, SM	A-4, A-2, A-5	0	0-10	65-90	50-75	40-70	30-65	35-45	1-9
	5-19	Very channery silt loam, channery silt loam, very channery loam, very flaggy silt loam	GM	A-4, A-2, A-1	0	0-30	40-70	20-50	15-50	10-45	20-35	1-9
	19-23	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
LpC, LpD:												
Lordstown-------	0-8	Channery silt loam	ML, GM, SM	A-4	0-1	0-10	65-90	50-75	40-70	30-65	15-30	NP-4
	8-26	Channery silt loam, channery loam	GM, ML, SM	A-4	0-3	0-10	45-85	30-70	25-65	20-65	15-30	NP-4
	26-28	Very channery loam, channery silt loam, channery loam	GM, ML, SM	A-4, A-2, A-1	0-3	0-15	45-85	30-70	20-65	10-65	15-30	NP-4
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Chadakoin-------	0-9	Silt loam	ML, CL-ML, SC-SM, SM	A-4, A-6	0	0-5	85-95	75-92	60-90	40-80	20-40	1-12
	9-19	Silt loam, gravelly silt loam, gravelly fine sandy loam	ML, GM, GC-GM, SM	A-4, A-2	0-5	0-25	70-95	55-92	35-90	20-80	15-25	NP-5
	19-46	Very flaggy sandy loam, gravelly loam, very gravelly silt loam	GM, GC-GM, ML, SM	A-4, A-2	0-5	0-40	55-90	45-75	25-70	15-65	15-25	NP-5
	46-57	Very flaggy silt loam, gravelly loam, very channery sandy loam	ML, GM, GC-GM, SM	A-4, A-2	0-8	0-45	45-85	30-70	15-70	10-65	15-25	NP-5
	57-61	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
LrE:												
Lordstown-------	0-8	Channery silt loam	ML, GM, SM	A-4	0-1	0-10	65-90	50-75	40-70	30-65	15-30	NP-4
	8-26	Channery silt loam, channery loam	GM, ML, SM	A-4	0-3	0-10	45-85	30-70	25-65	20-65	15-30	NP-4
	26-28	Very channery loam, channery silt loam, channery loam	GM, ML, SM	A-4, A-2, A-1	0-3	0-15	45-85	30-70	20-65	10-65	15-30	NP-4
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
LrE:												
Chadakoin-------	0-9	Silt loam	ML, CL-ML, SC-SM, SM	A-4, A-6	0	0-5	85-95	75-92	60-90	40-80	20-40	1-12
	9-19	Silt loam, gravelly silt loam, gravelly fine sandy loam	ML, GM, GC-GM, SM	A-4, A-2	0-5	0-25	70-95	55-92	35-90	20-80	15-25	NP-5
	19-46	Very flaggy sandy loam, gravelly loam, very gravelly silt loam	GM, GC-GM, ML, SM	A-4, A-2	0-5	0-40	55-90	45-75	25-70	15-65	15-25	NP-5
	46-57	Very flaggy silt loam, gravelly loam, very channery sandy loam	ML, GM, GC-GM, SM	A-4, A-2	0-8	0-45	45-85	30-70	15-70	10-65	15-25	NP-5
	57-61	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
LrE:												
Manlius---------	0-6	Channery silt loam	ML, GM, CL-ML, SM	A-4, A-2	0	0-25	65-90	50-75	40-70	30-65	25-35	4-10
	6-17	Very channery silt loam, channery silt loam, very channery loam	GM, GC-GM	A-4, A-2, A-1	0	0-25	45-75	30-60	25-60	20-55	25-35	4-10
	17-28	Extremely channery silt loam, channery loam	GM, GC-GM, GW-GM	A-2, A-1, A-4	0-2	0-25	40-70	20-55	15-50	10-45	25-35	4-10
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
Ly:												
Lyons-----------	0-9	Silt loam	ML	A-4, A-7	0	0-3	85-95	75-92	50-90	30-85	35-45	5-15
	9-35	Loam, gravelly silt loam, channery silt loam	ML, SM	A-4, A-7	0	0-15	70-95	55-92	35-90	20-80	35-45	5-15
	35-72	Very channery silt loam, gravelly loam, fine sandy loam	SC, CL, CL-ML, GC, GC-GM	A-4, A-2, A-6	0-2	0-25	45-92	30-85	20-80	10-70	20-35	5-15
MaA, MaB, MaC:												
Manheim---------	0-9	Silt loam	ML, OL	A-6, A-7	0	0-5	65-96	50-92	40-90	30-85	35-45	10-15
	9-41	Channery silt loam, silty clay loam, gravelly loam	CL, GC, SC	A-4, A-6	0	0-5	65-96	50-92	40-90	30-85	20-30	5-15
	41-72	Gravelly silty clay loam, very gravelly loam, silty clay loam	GC, CL, SC	A-4, A-2, A-6	0	0-10	50-95	30-92	25-90	20-85	20-30	5-12
McB, McC, McD:												
Manlius---------	0-6	Channery silt loam	ML, GM, CL-ML, SM	A-4, A-2	0	0-25	65-90	50-75	40-70	30-65	25-35	4-10
	6-17	Very channery silt loam, channery silt loam, very channery loam	GM, GC-GM	A-4, A-2, A-1	0	0-25	45-75	30-60	25-60	20-55	25-35	4-10
	17-28	Extremely channery silt loam, channery loam	GM, GC-GM, GW-GM	A-2, A-1, A-4	0-2	0-25	40-70	20-55	15-50	10-45	25-35	4-10
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				*Pct*	*Pct*					*Pct*	
MeB, MeC, MeD:												
Mardin----------	0-12	Channery silt loam	CL, GC, GM, ML	A-4	0-1	0-15	65-90	50-75	40-70	30-65	25-35	5-10
	12-21	Channery silt loam, loam, gravelly loam	CL, CL-ML, GC, SC-SM	A-4	0-1	0-15	65-95	50-92	40-90	30-80	15-25	5-10
	21-38	Channery loam, channery silt loam, very channery loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-5	0-20	45-90	30-75	25-70	20-65	20-30	5-10
	38-72	Channery loam, channery silt loam, very channery silt loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-5	0-25	45-90	30-75	25-70	20-65	20-30	5-10
MmC, MmD:												
Mongaup---------	0-4	Channery silt loam	ML, GM, CL-ML, SM	A-4, A-2, A-1	0	0-5	65-90	50-75	30-70	20-65	15-20	NP-5
	4-29	Channery silt loam, loam, gravelly sandy loam	GM, CL-ML, ML, SM	A-4, A-2, A-1	0	0-5	65-95	50-92	30-90	20-80	15-20	NP-5
	29-34	Channery silt loam, loam, gravelly sandy loam	GM, CL-ML, ML, SM	A-2, A-1, A-4	0	0-5	60-95	50-92	30-90	20-80	15-20	NP-5
	34-38	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
MmC, MmD:												
Franklinville---	0-2	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	2-7	Silt loam	ML, CL-ML, SC-SM, SM	A-4, A-6	0	0-5	85-95	75-92	60-90	40-80	20-40	1-12
	7-40	Silt loam, channery silt loam, gravelly fine sandy loam	SM, ML, GM, GC-GM	A-4, A-2	0	0-8	65-95	50-92	35-90	20-80	15-25	NP-5
	40-58	Very channery silt loam, channery loam, very channery fine sandy loam, flaggy sandy loam	GM, GC-GM, SC-SM, SM	A-2, A-1-b, A-4	0-1	0-25	45-85	30-70	15-65	10-65	15-25	NP-5
	58-62	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
MnB, MnE:												
Mongaup---------	0-4	Channery silt loam	ML, GM, CL-ML, SM	A-4, A-2, A-1	0	0-5	65-90	50-75	30-70	20-65	15-20	NP-5
	4-29	Channery silt loam, loam, gravelly sandy loam	GM, CL-ML, ML, SM	A-4, A-2, A-1	0	0-5	65-95	50-92	30-90	20-80	15-20	NP-5
	29-34	Channery silt loam, loam, gravelly sandy loam	GM, CL-ML, ML, SM	A-2, A-1, A-4	0	0-5	60-95	50-92	30-90	20-80	15-20	NP-5
	34-38	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Hawksnest-------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-7	Silt loam	ML, SM	A-4, A-2	0	0-5	85-95	75-92	50-90	30-80	15-20	NP-5
	7-19	Channery silt loam, loam, channery sandy loam	GM, ML, SM	A-4, A-2	0-1	0-10	65-95	50-92	40-90	30-80	15-20	NP-5
	19-23	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
MoB, MoC:												
Morris----------	0-5	Channery silt loam	CL-ML, CL, GM, ML, SM	A-4, A-2	0-1	0-15	65-90	50-75	40-70	30-65	20-30	1-10
	5-18	Channery silt loam, silt loam, gravelly loam	CL-ML, CL, GM, ML, SM	A-4, A-2	0-1	0-15	55-92	45-85	35-80	25-70	20-30	1-10
	18-72	Channery silt loam, gravelly silt loam, very channery loam, channery silty clay loam	CL-ML, CL, GM, SM	A-4, A-2	0-5	0-20	50-90	35-75	25-70	20-65	15-25	NP-9
MpC:												
Morris----------	0-5	Channery silt loam	CL-ML, CL, GM, ML, SM	A-4, A-2	0-1	0-15	65-90	50-75	40-70	30-65	20-30	1-10
	5-18	Channery silt loam, silt loam, gravelly loam	CL-ML, CL, GM, ML, SM	A-4, A-2	0-1	0-15	55-92	45-85	35-80	25-70	20-30	1-10
	18-72	Channery silt loam, gravelly silt loam, very channery loam, channery silty clay loam	CL-ML, CL, GM, SM	A-4, A-2	0-5	0-20	50-90	35-75	25-70	20-65	15-25	NP-9

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
MpC:												
Volusia---------	0-6	Silt loam	CL, CL-ML, GC, SC	A-4	1-5	0-10	85-95	75-92	60-90	40-80	15-25	5-10
	6-19	Channery silt loam, channery loam, silt loam	CL, CL-ML, GC-GM, SC	A-4	0-1	0-10	70-95	55-92	40-90	30-80	15-25	5-10
	19-42	Channery silt loam, channery loam, very channery silt loam, silty clay loam	CL, CL-ML, SC, SC-SM	A-4	0-1	0-20	50-95	35-92	25-90	20-80	20-30	5-10
	42-85	Very channery loam, channery loam, silt loam	GC, CL, CL-ML, GC-GM, SC	A-2, A-1, A-4	0-5	0-25	45-95	30-85	25-80	20-70	20-30	5-10
Np:												
Norchip---------	0-5	Channery silt loam	ML, OL, SM	A-5, A-7	0-1	0-10	75-90	70-75	60-70	40-65	40-50	5-15
	5-13	Channery silt loam, loam	ML, OL, SM	A-5, A-7	0-1	0-10	75-100	70-100	60-100	40-90	40-50	5-15
	13-32	Gravelly silt loam, channery loam, very gravelly fine sandy loam	CL, CL-ML, GC, GC-GM, SC	A-4, A-2-4, A-2, A-1-b	0-5	0-15	50-90	35-75	20-70	10-65	15-25	5-10
	32-72	Gravelly silt loam, channery loam, very gravelly fine sandy loam	GC, CL, CL-ML, GC-GM, SC	A-4, A-2-4, A-2, A-1-b	0-5	0-20	50-90	35-75	20-70	10-65	15-25	5-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				*Pct*	*Pct*					*Pct*	
ObB, ObC:												
Onteora---------	0-8	Channery silt loam	ML, GM, CL-ML, SM	A-4, A-2	0-1	0-5	65-90	50-75	35-70	20-65	15-25	NP-5
	8-14	Channery loam, channery silt loam, sandy loam	ML, GM, CL-ML, SM	A-4, A-2, A-1	0-1	0-5	65-95	50-92	35-90	20-80	15-25	NP-5
	14-60	Gravelly silt loam, channery silt loam, very channery sandy loam	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	0-15	50-90	35-75	15-70	10-65	15-25	NP-5
OeB, OeC:												
Ontusia---------	0-5	Channery silt loam	CL, CL-ML	A-4, A-6	0-1	0-10	65-90	50-75	40-70	30-65	25-40	5-15
	5-14	Silt loam, channery silt loam, flaggy loam	CL-ML, GM, ML, SM	A-4	0-1	0-10	60-95	50-92	40-90	30-80	20-35	1-10
	14-42	Channery silt loam, channery loam, gravelly fine sandy loam	SC-SM, GM, ML, SM	A-4, A-2-4, A-1-b	0-5	0-20	50-90	35-75	20-70	10-65	15-30	1-7
	42-72	Channery silt loam, very channery loam, very channery fine sandy loam	SC-SM, GM, ML, SM	A-1, A-1-b, A-2-4, A-4	0-5	0-20	45-90	30-75	20-70	10-65	10-30	1-7

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
OgB, OgC, OgD, OgE:												
Oquaga----------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-5	Channery silt loam	ML, GM, SM	A-4, A-2, A-5	0	0-15	65-90	50-75	30-70	15-65	35-45	2-7
	5-13	Very channery loam, channery silt loam, extremely channery silt loam	SC-SM, GC-GM, GM, ML, SM	A-4, A-2, A-1	0-1	0-25	45-80	25-65	15-60	10-55	20-30	2-7
	13-28	Extremely channery silt loam, very channery silt loam, very channery loam, very channery sandy loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0-1	0-25	35-80	10-65	10-60	5-55	20-30	2-7
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Arnot-----------	0-5	Channery silt loam	GM, ML, SM	A-4, A-2, A-5	0	0-10	65-90	50-75	40-70	30-65	35-45	1-9
	5-19	Very channery silt loam, channery silt loam, very channery loam, very flaggy silt loam	GM	A-4, A-2, A-1	0	0-30	40-70	20-50	15-50	10-45	20-35	1-9
	19-23	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
OpB, OpC, OpD:												
Oquaga----------	0-1	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	1-5	Channery silt loam	ML, GM, SM	A-4, A-2, A-5	0	0-15	65-90	50-75	30-70	15-65	35-45	2-7
	5-13	Very channery loam, channery silt loam, extremely channery silt loam	SC-SM, GC-GM, GM, ML, SM	A-4, A-2, A-1	0-1	0-25	45-80	25-65	15-60	10-55	20-30	2-7
	13-28	Extremely channery silt loam, very channery silt loam, very channery loam, very channery sandy loam	GC-GM, GM, ML, SM	A-1, A-2, A-4	0-1	0-25	35-80	10-65	10-60	5-55	20-30	2-7
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Lordstown-------	0-8	Channery silt loam	ML, GM, SM	A-4	0-1	0-10	65-90	50-75	40-70	30-65	15-30	NP-4
	8-26	Channery silt loam, channery loam	GM, ML, SM	A-4	0-3	0-10	45-85	30-70	25-65	20-65	15-30	NP-4
	26-28	Very channery loam, channery silt loam, channery loam	GM, ML, SM	A-4, A-2, A-1	0-3	0-15	45-85	30-70	20-65	10-65	15-30	NP-4
	28-32	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
Ot:												
Otego-----------	0-13	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	92-100	75-100	50-90	15-35	2-15
	13-35	Silt loam, very fine sandy loam	CL, CL-ML, ML	A-4, A-6	0	0	100	92-100	75-100	50-90	15-35	2-15
	35-60	Silt loam, very fine sandy loam	ML, CL-ML, SC-SM, SM	A-4	0	0	85-100	75-100	60-100	35-90	15-20	NP-5
	60-80	Stratified loam to very gravelly sandy loam	SM, ML, GM	A-1, A-2-4, A-4	0	0-5	50-100	35-100	15-95	5-75	5-15	NP
Pa:												
Palms-----------	0-8	Muck	PT	A-8	---	---	---	---	---	---	0	NP
	8-46	Muck, mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	46-72	Clay loam, silty clay loam, gravelly sandy loam	CL, CL-ML, SC, SC-SM	A-6, A-4, A-2, A-7	0	0	70-100	60-100	30-100	10-95	20-45	5-20
PdB:												
Patchin---------	0-7	Silt loam	ML, OL	A-4, A-6, A-7	0	0	92-100	85-100	70-100	60-95	30-48	6-15
	7-32	Silt loam, silty clay loam, channery silt loam	CL, CL-ML, ML	A-4, A-6	0	0-10	75-100	60-100	55-100	40-95	23-40	6-14
	32-36	Weathered bedrock			0	0	---	---	---	---	---	---
Pt:												
Pits, gravel----	0-6	Very gravelly sand	GW-GM, GW	A-1	0	0-25	10-25	5-25	0-15	0-5	0	NP
	6-72	Extremely gravelly sand, extremely gravelly coarse sand, very gravelly coarse sand	GP, GW, SP, SW	A-1	0	0-25	10-55	5-50	0-15	0-5	0	NP

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
Pt:												
Pits, sand------	0-10	Sand	SW, SP	A-1, A-3	0	0	100	80-100	30-60	0-5	0	NP
	10-72	Coarse sand, sand, gravelly coarse sand	SW, SP	A-1, A-3	0	0	80-100	50-100	20-60	0-5	0	NP
Pu:												
Pits, quarry----	0-60	Unweathered bedrock	---	---	0	0	---	---	---	---	0	NP
Ra:												
Raynham---------	0-9	Silt loam	ML, CL-ML	A-4	0	0	100	96-100	80-100	50-95	15-25	NP-5
	9-24	Silt loam, loam, silt, very fine sandy loam	ML, CL-ML	A-4	0	0	100	96-100	70-100	30-95	15-25	NP-5
	24-72	Silt loam, silt, very fine sandy loam	ML, CL-ML	A-4	0	0	100	96-100	70-100	30-95	15-25	NP-5
Re:												
Red Hook--------	0-12	Silt loam	CL, CL-ML, ML, SC-SM, SM	A-4, A-2, A-6	0	0-5	85-95	75-92	50-90	30-80	15-40	1-15
	12-31	Silt loam, loam, gravelly sandy loam	SC, GM, ML, SC-SM, SM	A-2, A-1, A-4, A-6	0	0-5	45-92	30-85	15-80	10-70	15-30	1-15
	31-72	Gravelly loam, gravelly silt loam, gravelly sandy loam, stratified very channery loam to gravelly loamy sand to gravelly silty clay loam	GC, GM, ML, SC-SM, SM	A-2, A-1, A-4, A-6	0	0-10	45-90	25-75	10-70	5-65	15-30	1-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				*Pct*	*Pct*					*Pct*	
RhA, RhB:												
Rhinebeck-------	0-14	Silty clay loam	CL, CH, MH, ML	A-7, A-6	0	0	85-100	75-100	60-100	35-95	30-55	10-25
	14-34	Silty clay loam, silty clay	CL, CH	A-7, A-6	0	0	92-100	85-100	70-100	60-95	30-55	15-30
	34-72	Silty clay loam, clay, silt loam	CL, CH	A-7, A-6	0	0	92-100	85-100	70-100	60-95	30-55	15-30
RlA, RlB:												
Riverhead, loamy substratum-----	0-13	Sandy loam	SM, ML	A-2, A-4	0	0-5	85-100	75-100	40-95	20-75	14-18	1-3
	13-39	Sandy loam, fine sandy loam, gravelly sandy loam, coarse sandy loam	SM, GM	A-2, A-1, A-4	0	0-5	65-100	50-100	30-85	15-55	14-18	1-3
	39-60	Loamy fine sand, gravelly loamy sand, fine sandy loam	SM, GP-GM, GM, SP-SM	A-2, A-1	0	0-5	55-95	45-92	20-70	0-35	5-15	NP
	60-72	Fine sandy loam, sandy loam, very gravelly sandy loam	SM, GM	A-2, A-1, A-4	0-1	0-10	45-95	30-92	15-75	10-50	10-14	NP-3
Sa:												
Saprists--------	0-72	Muck	PT	A-8	0	0	100	100	100	50-100	0	NP
Aquents---------	0-10	Mucky silt loam	CL, CL-ML	A-4, A-6	0	0-5	90-100	85-100	75-100	50-90	20-35	5-15
	10-72	Gravelly loamy sand, gravelly silt loam, silty clay	CL, ML, SM	A-6, A-4, A-2	0	0-10	60-100	55-100	30-100	15-90	10-50	NP-30

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SbB:												
Scio------------	0-9	Fine sandy loam	SM, ML	A-4	0	0	95-100	92-100	65-100	40-90	15-20	NP-4
	9-27	Silt loam, very fine sandy loam	ML	A-4	0	0	95-100	92-100	75-100	45-90	15-20	NP-4
	27-72	Silt loam, very fine sandy loam, stratified very gravelly sand	ML	A-4	0	0-6	45-100	25-100	15-100	2-90	15-20	NP-4
ScA, ScB:												
Scio------------	0-9	Silt loam	ML, SM	A-4	0	0	95-100	92-100	75-100	45-90	15-20	NP-4
	9-27	Silt loam, very fine sandy loam	ML	A-4	0	0	95-100	92-100	75-100	45-90	15-20	NP-4
	27-72	Silt loam, very fine sandy loam, stratified very gravelly sand	ML	A-4	0	0-6	45-100	25-100	15-100	2-90	15-20	NP-4
ThB:												
Torull----------	0-7	Silt loam	ML	A-7, A-6	0	0	85-100	75-100	60-100	40-90	35-50	10-20
	7-15	Loam, channery fine sandy loam, silt loam	CL-ML, ML, SC-SM, SM	A-4, A-2	0-1	0-15	65-100	50-100	35-95	20-75	20-30	2-7
	15-19	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Gretor----------	0-9	Silt loam	ML, MH	A-7, A-6	0	0-5	85-95	75-92	60-90	40-85	35-55	10-20
	9-22	Silty clay loam, channery silt loam, channery loam	ML, GM, SM	A-7, A-6	0-1	0-10	65-95	50-92	40-90	30-85	35-50	10-20
	22-29	Clay loam, channery silt loam, channery loam	SC-SM, ML, CL-ML, SM	A-4	0-1	0-15	65-95	50-92	40-90	30-80	20-30	1-7
	29-33	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
TkB, TkC, TkD:												
Towerville------	0-6	Silt loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0-1	0-5	85-95	75-92	60-90	40-80	25-40	5-20
	6-28	Silt loam, channery loam, channery silty clay loam, channery silt loam	CL, CL-ML, GC, SC	A-6, A-4	0-1	0-15	65-95	50-92	40-90	30-80	25-40	5-20
	28-35	Very channery silt loam, loam, channery silty clay loam	GC, CL-ML, CL, SC	A-6, A-4	0-3	0-15	45-92	30-85	25-80	20-75	25-40	5-20
	35-39	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
TlB:												
Trestle---------	0-9	Gravelly silt loam	ML, GM, SM	A-4	0	0-2	70-90	60-75	50-70	35-65	25-40	2-10
	9-16	Gravelly silt loam, gravelly loam, very gravelly loam	GM, ML, SM	A-1, A-1-b, A-2, A-4	0	0-5	50-90	40-75	25-70	10-65	25-40	2-10
	16-72	Very gravelly coarse sandy loam, very channery loam, very channery sandy loam, very gravelly sandy loam	SP-SC, GC, GC-GM, GM, GW-GM	A-1, A-1-a, A-1-b, A-2	0	0-30	40-70	20-45	10-40	5-30	15-20	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
TlB:												
Deposit---------	0-9	Gravelly loam	SC-SM, GM, ML, SM	A-4, A-2	0	0-5	70-92	55-85	40-80	30-70	15-30	NP-10
	9-19	Very gravelly sandy loam, gravelly loam, very gravelly silt loam	SC-SM, GC-GM, GM, ML, SM	A-1, A-2, A-4	0	0-10	45-90	30-75	15-70	10-60	15-30	NP-10
	19-72	Stratified extremely gravelly sandy loam, very gravelly loamy sand, very gravelly loam	GP-GM, GM, GW-GM, SW-SM	A-1, A-2, A-4	0	0-10	40-70	20-50	10-45	1-40	10-20	NP
TpB, TpC:												
Tunkhannock-----	0-7	Gravelly loam	SM, GM	A-4, A-2, A-1	0	0-10	65-90	50-75	30-70	15-65	15-25	NP-5
	7-33	Gravelly silt loam, very gravelly loam, very gravelly sandy loam	SM, GP-GM, GM, SP-SM	A-1, A-2, A-4	0	0-15	45-90	30-75	15-70	10-65	15-25	NP-3
	33-72	Extremely gravelly sandy loam, very gravelly loamy sand, very gravelly sand	GW-GM, GM, SM, SP-SM	A-1	0-1	0-25	35-65	15-45	10-30	0-15	15-20	NP-2
Ud:												
Udorthents, refuse substratum-----	0-10	Gravelly loam	CL, CL-ML	A-6, A-4, A-7	0	0-5	60-100	55-100	55-100	50-95	15-45	5-25
	10-72	Variable			0	0	---	---	---	---	15-45	5-25
Ue:												
Udorthents, smoothed-------	0-4	Gravelly sandy loam	GC, CL, GM, SM	A-4, A-2, A-6	0	0-10	60-80	55-75	35-75	20-70	15-45	NP-15
	4-72	Very gravelly sandy loam, channery loam, silty clay loam	CL, GM, ML, SC	A-4, A-2, A-1, A-6	0	0-10	35-100	30-100	20-100	10-95	15-45	NP-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
UnA, UnB:												
Unadilla--------	0-12	Silt loam	CL-ML, ML	A-4	0	0	95-100	92-100	75-100	45-90	15-35	NP-10
	12-41	Silt loam, very fine sandy loam	CL-ML, ML	A-4	0	0	95-100	92-100	75-100	45-90	15-25	NP-10
	41-72	Silt loam, very fine sandy loam	CL-ML, ML	A-4	0	0	45-100	25-100	15-100	5-90	15-25	NP-10
VaB, VaC, VaD, VaE, VaF:												
Valois----------	0-10	Gravelly loam, gravelly silt loam	SM, ML, GM, GC-GM	A-4, A-2, A-1	0	0-5	65-90	50-75	35-70	20-65	20-40	1-12
	10-41	Loam, gravelly silt loam, gravelly sandy loam	GM, GC-GM, ML, SM	A-4, A-2, A-1	0	0-10	65-95	50-92	35-90	20-80	15-25	NP-5
	41-72	Very gravelly fine sandy loam, very gravelly sandy loam, very gravelly loam	GM, GC-GM, GW, GW-GM	A-1, A-2, A-4	0-1	0-15	40-70	20-50	15-50	4-40	15-25	NP-7
VcB:												
Valois----------	0-10	Fine gravelly silt loam	ML, SM, GM, GC-GM	A-4, A-2, A-1	0	0-5	65-90	50-75	35-70	20-65	20-40	1-12
	10-41	Loam, gravelly silt loam, gravelly sandy loam	GM, GC-GM, ML, SM	A-4, A-2, A-1	0	0-10	65-95	50-92	35-90	20-80	15-25	NP-5
	41-72	Very gravelly fine sandy loam, very gravelly sandy loam, very gravelly loam	GM, GC-GM, GW, GW-GM	A-1, A-2, A-4	0-1	0-15	40-70	20-50	15-50	4-40	15-25	NP-7

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
VlB, VlC, VlD, VlE:												
Vly-------------	0-5	Channery silt loam	GM, SM	A-4, A-2, A-5	0	0-15	65-85	50-70	40-70	30-65	35-45	1-9
	5-23	Very channery silt loam, very gravelly silt loam, extremely channery loam	GC-GM, GM, SM	A-2, A-1, A-4	0-1	1-25	45-70	30-50	25-50	20-45	20-30	1-9
	23-27	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
VoA, VoB, VoC:												
Volusia---------	0-6	Silt loam	CL, CL-ML, GC, SC	A-4	0-1	0-10	85-95	75-92	60-90	40-80	15-25	5-10
	6-19	Channery silt loam, channery loam, silt loam	CL, CL-ML, GC-GM, SC	A-4	0-1	0-10	70-95	55-92	40-90	30-80	15-25	5-10
	19-42	Channery silt loam, channery loam, very channery silt loam, silty clay loam	CL, CL-ML, SC, SC-SM	A-4	0-1	0-20	50-95	35-92	25-90	20-80	20-30	5-10
	42-85	Very channery loam, channery loam, silt loam	GC, CL, CL-ML, GC-GM, SC	A-2, A-1, A-4	0-5	0-25	45-95	30-85	25-80	20-70	20-30	5-10
W:												
Water.												
Wb:												
Wakeville-------	0-7	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	92-100	75-100	50-90	15-35	2-15
	7-29	Silt loam, very fine sandy loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	92-100	75-100	50-90	15-35	2-15
	29-72	Silt loam, fine sandy loam, gravelly very fine sandy loam	CL, ML, SC-SM, SM	A-4, A-2, A-6	0	0-5	75-100	70-100	50-100	30-90	15-25	NP-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
WeA, WeB, WeC, WeD:												
Wassaic---------	0-10	Silt loam	ML, SM	A-4	0	0-5	85-100	75-100	45-100	25-90	25-35	2-10
	10-21	Loam, gravelly silt loam, silt loam	CL-ML, CL, GC, GM, SM	A-4, A-2	0-1	0-10	85-100	75-100	50-100	30-90	15-25	2-10
	21-31	Cobbly silt loam, cobbly loam, silty clay loam, fine sandy loam	SC-SM, CL, GC, GM, SM	A-4, A-2	0-1	0-15	65-96	50-95	35-90	25-80	15-35	2-10
	31-35	Unweathered bedrock	---	---	0	0	---	---	---	---	---	---
Wg:												
Wayland---------	0-9	Silt loam	ML, OL	A-5, A-7	0	0	95-100	92-100	90-100	70-95	40-50	5-15
	9-36	Silt loam, silty clay loam	ML, CL-ML, CL	A-4, A-6, A-7	0	0	95-100	92-100	90-100	70-95	25-45	5-15
	36-72	Stratified silty clay loam	CL, CL-ML, GC, SC	A-4, A-2	0	0	65-100	55-100	35-100	25-95	16-25	5-10
WlB, WlC, WlD:												
Wellsboro-------	0-5	Channery silt loam	ML, SM	A-4, A-2	0-1	0-10	65-90	50-75	40-70	30-65	25-35	5-10
	5-23	Loam, channery silt loam, gravelly loam	CL-ML, GC-GM, ML, SM	A-4, A-2	0-1	0-15	55-95	45-92	35-90	25-80	15-30	NP-10
	23-70	Very channery loam, channery loam, loam, gravelly silt loam	GC-GM, CL, GM, ML, SM	A-1, A-2, A-4	0-5	0-20	50-90	40-75	25-70	15-65	15-30	NP-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
WmC:												
Wellsboro-------	0-5	Channery silt loam	ML, SM	A-4, A-2	0-1	0-10	65-90	50-75	40-70	30-65	25-35	5-10
	5-23	Loam, channery silt loam, gravelly loam	CL-ML, GC-GM, ML, SM	A-4, A-2	0-1	0-15	55-95	45-92	35-90	25-80	15-30	NP-10
	23-70	Loam, gravelly silt loam, very channery loam	GC-GM, CL, GM, ML, SM	A-1, A-2, A-4	0-5	0-20	50-90	40-75	25-70	15-65	15-30	NP-10
Mardin----------	0-12	Channery silt loam	CL, GC, GM, ML	A-4	0-1	0-15	65-90	50-75	40-70	30-65	25-35	5-10
	12-21	Channery silt loam, loam, gravelly loam	CL, CL-ML, GC, SC-SM	A-4	0-1	0-15	65-95	50-92	40-90	30-80	15-25	5-10
	21-38	Channery loam, channery silt loam, very channery loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-5	0-20	45-90	30-75	25-70	20-65	20-30	5-10
	38-72	Channery loam, channery silt loam, very channery silt loam	GC, CL-ML, CL, SC	A-4, A-2, A-1	0-5	0-25	45-90	30-75	25-70	20-65	20-30	5-10
WpB, WpC, WpD:												
Willdin---------	0-7	Channery silt loam	ML, GM, SM	A-4, A-5	0-1	0-10	65-90	50-75	40-70	30-65	25-45	3-10
	7-17	Silt loam, channery loam, channery silt loam	GC-GM, CL-ML, GM, SM	A-4, A-2-4	0-1	0-15	65-95	50-92	35-90	20-80	15-30	NP-10
	17-44	Channery silt loam, channery loam, very channery silt loam	GM, CL-ML, ML, SM	A-4, A-2-4, A-1	0-2	0-20	50-90	35-75	25-70	20-65	15-30	NP-7
	44-80	Channery silt loam, channery loam, very channery silt loam	GM, CL-ML, ML, SM	A-4, A-2-4, A-1	0-5	0-25	45-90	30-75	25-70	20-65	15-30	NP-7

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	Percentage passing sieve number--: 10	Percentage passing sieve number--: 40	Percentage passing sieve number--: 200	Liquid limit	Plasticity index
	In				*Pct*	*Pct*					*Pct*	
WsB, WsC:												
Willowemoc------	0-2	Mucky peat	PT	A-8	---	---	---	---	---	---	0	NP
	2-7	Channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-10	65-90	50-75	35-70	20-65	15-25	NP-5
	7-17	Silt loam, channery loam, channery silt loam	ML, GM, SM	A-4, A-2	0-1	0-10	65-95	50-92	35-90	20-80	15-25	NP-5
	17-25	Gravelly silt loam, gravelly fine sandy loam, channery loam	SM, ML, GM	A-4, A-2	0-1	0-15	65-95	50-92	35-90	20-80	15-25	NP-5
	25-72	Gravelly sandy loam, channery silt loam, channery loam	SM, ML, GM	A-4, A-2, A-1	0-5	0-25	50-90	35-75	20-70	10-60	15-25	NP-5

Table 22.--Physical Soil Properties

[Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" 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	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group
										Kw	Kf	T	
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
Ad:													
Alden---------------	0-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.16-0.22	0.0-2.9	10-20	.24	.28	4	5
	8-25	15-85	0-80	18-35	1.20-1.50	0.2-0.6	0.14-0.20	0.0-2.9	0.0-1.0	.37	.43		
	25-36	15-85	0-80	18-35	1.50-1.80	0.06-0.6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.32		
	36-72	15-85	0-80	18-35	1.50-1.80	0.06-0.6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.32		
At:													
Atherton------------	0-3	15-32	50-80	0-22	1.10-1.40	0.6-2	0.16-0.21	0.0-2.9	4.0-10	.28	.32	4	6
	3-24	15-52	28-80	18-35	1.25-1.55	0.6-2	0.10-0.19	0.0-2.9	0.0-2.0	.28	.37		
	24-72	15-62	28-73	18-35	1.45-1.65	0.6-6	0.05-0.12	0.0-2.9	0.0-1.0	.28	.55		
BfB, BfC, BfD, BfE:													
Bath----------------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.10-0.20	0.0-2.9	3.0-6.0	.24	.32	3	5
	9-30	15-52	28-80	0-17	1.20-1.50	0.6-2	0.08-0.18	0.0-2.9	0.0-1.0	.24	.43		
	30-40	15-85	0-80	0-17	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
	40-72	15-52	28-80	0-17	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
BhC, BhE:													
Bath----------------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.10-0.20	0.0-2.9	3.0-6.0	.24	.32	3	8
	9-30	15-52	28-80	0-17	1.20-1.50	0.6-2	0.08-0.18	0.0-2.9	0.0-1.0	.24	.43		
	30-40	15-85	0-80	0-17	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
	40-72	15-52	28-80	0-17	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
Lackawanna----------	0-6	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.16	0.0-2.9	3.0-6.0	.24	.32	3	8
	6-26	15-52	28-80	0-17	1.40-1.60	0.6-2	0.10-0.16	0.0-2.9	0.0-0.5	.20	.49		
	26-70	15-52	28-80	0-17	1.60-1.90	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.5	.20	---		
Cb:													
Canandaigua---------	0-8	0-32	50-80	0-27	1.20-1.40	0.6-2	0.19-0.20	0.0-2.9	2.0-8.0	.49	.49	4	6
	8-32	0-82	0-80	18-35	1.20-1.40	0.2-0.6	0.19-0.20	0.0-2.9	0.0-2.0	.49	.49		
	32-75	0-82	0-80	18-60	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	0.0-1.0	.64	.64		
Cc:													
Canandaigua---------	0-8	0-32	50-80	0-27	1.20-1.40	0.6-2	0.19-0.20	0.0-2.9	4.0-10	.49	.49	4	5
	8-32	0-82	0-80	18-35	1.20-1.40	0.2-0.6	0.19-0.20	0.0-2.9	0.0-3.0	.49	.49		
	32-75	0-82	0-80	18-60	1.15-1.40	0.2-0.6	0.19-0.21	0.0-2.9	0.0-1.0	.64	.64		
Cd:													
Carbondale----------	0-11	---	---	---	0.30-0.40	0.6-6	0.45-0.55	0.0-3.0	60-85	---	---	3	5
	11-38	---	---	---	0.13-0.23	0.2-6	0.35-0.45	0.0-3.0	60-85	---	---		
	38-100	---	---	---	0.10-0.17	0.6-6	0.45-0.55	0.0-3.0	60-85	---	---		

Table 22.--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 Kw	Kf	T	Wind erodibility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
Ce:													
Carlisle------------	0-72	---	---	---	0.13-0.23	0.2-6	0.35-0.45	0.0-3.0	60-80	---	---	3	2
CfA, CfB:													
Castile-------------	0-9	0-50	50-80	0-27	1.10-1.40	0.6-6	0.09-0.16	0.0-2.9	4.0-10	.24	.32	4	8
	9-24	0-85	0-80	0-27	1.25-1.55	2-6	0.05-0.13	0.0-2.9	0.0-1.0	.17	.43		
	24-72	24-100	0-50	0-27	1.45-1.65	6-20	0.01-0.02	0.0-2.9	0.0-1.0	.17	.49		
ChA, ChB, ChC, ChD:													
Chenango------------	0-7	0-50	50-80	0-27	1.20-1.50	0.6-6	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	7-27	0-85	0-80	0-27	1.25-1.55	0.6-6	0.07-0.15	0.0-2.9	0.0-1.0	.17	.43		
	27-72	70-100	0-29	0-15	1.45-1.65	6-20	0.01-0.05	0.0-2.9	0.0-1.0	.17	.64		
ClE:													
Chenango------------	0-7	0-50	50-80	0-27	1.20-1.50	0.6-6	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	7-27	0-85	0-80	0-27	1.25-1.55	0.6-6	0.07-0.15	0.0-2.9	0.0-1.0	.17	.43		
	27-72	70-100	0-29	0-15	1.45-1.65	6-20	0.01-0.05	0.0-2.9	0.0-1.0	.17	.64		
Howard--------------	0-5	0-50	50-80	0-27	1.10-1.40	0.6-6	0.10-0.15	0.0-2.9	2.0-6.0	.24	.32	3	8
	5-9	0-85	0-80	0-27	1.25-1.55	0.6-6	0.08-0.12	0.0-2.9	0.0-1.0	.17	.37		
	9-40	20-85	0-50	2-34	1.25-1.55	0.6-6	0.05-0.11	0.0-2.9	0.0-1.0	.17	.55		
	40-85	86-100	0-14	0-10	1.45-1.65	20-100	0.01-0.02	0.0-2.9	0.0-1.0	.17	.64		
Tunkhannock---------	0-7	24-52	28-50	7-27	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	6
	7-33	0-85	0-80	0-27	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.55		
	33-72	44-100	0-49	0-20	1.40-1.60	2-20	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64		
CnA, CnB:													
Chenango, fan-------	0-7	24-52	28-50	7-27	1.20-1.50	0.6-6	0.08-0.16	0.0-2.9	2.0-6.0	.20	.28	3	5
	7-27	0-85	0-80	0-27	1.25-1.55	0.6-6	0.07-0.15	0.0-2.9	0.0-1.0	.17	.55		
	27-72	70-100	0-29	0-15	1.45-1.65	6-20	0.01-0.05	0.0-2.9	0.0-1.0	.17	.64		
Cp:													
Chippewa------------	0-1	---	---	---	0.30-0.40	0.6-2	0.14-0.20	0.0-3.0	65-85	---	---	2	5
	1-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.14-0.20	0.0-2.9	10-15	.24	.28		
	8-17	15-52	28-80	18-35	1.20-1.50	0.6-2	0.10-0.17	0.0-2.9	0.0-2.0	.32	.32		
	17-47	15-52	28-80	18-35	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.32		
	47-72	15-52	28-80	18-35	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.32		
Norwich-------------	0-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.14-0.20	0.0-2.9	3.0-10	.28	.32	2	5
	8-23	15-52	28-80	18-27	1.20-1.50	0.6-2	0.11-0.18	0.0-2.9	0.0-2.0	.24	.37		
	23-72	15-82	0-80	18-27	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		

Table 22.--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 Kw	Kf	T	Wind erodi- bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
Cr:													
Chippewa------------	0-1	---	---	---	0.30-0.40	0.6-2	0.14-0.20	0.0-3.0	65-85	---	---	2	8
	1-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.14-0.20	0.0-2.9	10-15	.24	.28		
	8-17	15-52	28-80	18-35	1.20-1.50	0.6-2	0.10-0.17	0.0-2.9	0.0-2.0	.32	.32		
	17-47	15-52	28-80	18-35	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.32		
	47-72	15-52	28-80	18-35	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.32		
Norwich-------------	0-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.14-0.20	0.0-2.9	3.0-10	.28	.32	2	8
	8-23	15-52	28-80	18-27	1.20-1.50	0.6-2	0.11-0.18	0.0-2.9	0.0-2.0	.24	.37		
	23-72	15-82	0-80	18-27	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
CsB, CsC:													
Conesus-------------	0-9	15-32	50-80	0-27	1.10-1.40	0.6-2	0.15-0.20	0.0-2.9	2.0-6.0	.28	.32	3	5
	9-37	15-52	28-80	18-27	1.60-1.85	0.6-2	0.09-0.19	0.0-2.9	0.0-2.0	.28	.32		
	37-72	15-52	28-80	0-27	1.70-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.28	.32		
DaB, DaC, DaD:													
Danley--------------	0-8	15-32	50-80	0-27	1.10-1.40	0.6-2	0.15-0.20	0.0-2.9	3.0-8.0	.28	.32	3	6
	8-15	15-45	20-73	27-35	1.20-1.50	0.2-0.6	0.09-0.16	0.0-2.9	0.0-2.0	.37	.55		
	15-30	15-45	20-73	27-35	1.20-1.50	0.2-0.6	0.09-0.16	3.0-5.9	0.0-1.0	.28	.43		
	30-37	15-45	20-73	27-35	1.20-1.50	0.2-0.6	0.09-0.16	3.0-5.9	0.0-1.0	.28	.43		
	37-72	15-52	20-73	0-35	1.60-1.80	0.06-0.2	0.08-0.12	0.0-2.9	0.0-1.0	.28	.64		
Nunda---------------	0-6	15-32	50-80	0-27	1.10-1.40	0.6-2	0.15-0.20	0.0-2.9	3.0-7.0	.28	.32	4	5
	6-13	15-82	0-80	0-27	1.20-1.50	0.6-2	0.13-0.18	0.0-2.9	0.0-2.0	.32	.49		
	13-48	15-45	20-73	27-35	1.45-1.65	0.2-0.6	0.08-0.14	0.0-2.9	0.0-1.0	.28	.32		
	48-72	15-52	28-80	0-35	1.55-1.85	0.00-0.2	0.08-0.14	0.0-2.9	0.0-0.5	.28	.32		
DeB, DeC:													
Darien--------------	0-12	15-32	50-80	0-27	1.10-1.40	0.6-2	0.11-0.16	0.0-2.9	3.0-8.0	.24	.32	3	8
	12-42	15-45	20-80	18-35	1.50-1.75	0.2-0.6	0.09-0.16	3.0-5.9	0.0-1.0	.24	.37		
	42-72	15-45	20-73	27-35	1.50-1.85	0.06-0.2	0.05-0.14	0.0-2.9	0.0-1.0	.24	.49		
Burdett-------------	0-8	15-32	50-80	0-27	1.20-1.50	0.6-2	0.15-0.20	0.0-2.9	3.0-6.0	.28	.32	3	5
	8-15	15-82	0-80	0-27	1.20-1.50	0.6-2	0.13-0.18	0.0-2.9	0.0-2.0	.37	.49		
	15-44	15-52	20-73	18-35	1.40-1.70	0.06-0.2	0.09-0.14	0.0-2.9	0.0-1.0	.28	.37		
	44-72	15-52	20-73	7-35	1.60-1.85	0.06-0.2	0.08-0.14	0.0-2.9	0.0-1.0	.28	.37		
Ed:													
Edwards-------------	0-50	---	---	---	0.30-0.55	0.2-6	0.35-0.45	0.0-3.0	60-80	---	---	2	2
	50-72	0-50	50-80	0-27	---	0.00-2	---	---	0.0-1.0	---	---		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
FaB:													
Farmington----------	0-9	0-50	50-80	10-27	1.10-1.40	0.6-2	0.11-0.19	0.0-2.9	2.0-6.0	.28	.32	2	5
	9-18	0-85	0-80	10-27	1.20-1.50	0.6-2	0.07-0.18	0.0-2.9	0.0-1.0	.32	.49		
	18-22	---	---	---	---	0.00-0.06	---	---	0.0-0.0	---	---		
FeB, FeC, FeD, FeF:													
Farmington----------	0-9	0-50	50-80	10-27	1.10-1.40	0.6-2	0.11-0.19	0.0-2.9	2.0-6.0	.28	.32	2	5
	9-18	0-85	0-80	10-27	1.20-1.50	0.6-2	0.07-0.18	0.0-2.9	0.0-1.0	.32	.49		
	18-22	---	---	---	---	0.00-0.06	---	---	0.0-0.0	---	---		
Rock outcrop--------	0-60	---	---	---	---	0.00-0.06	---	---	0.0-0.0	---	---	---	---
Fg:													
Fluvaquents---------	0-11	15-50	50-80	0-27	1.10-1.50	0.2-20	0.06-0.18	0.0-2.9	0.0-5.0	.32	.32	---	3
	11-72	0-85	0-80	0-27	1.20-1.60	0.06-20	0.03-0.16	0.0-2.9	0.0-1.0	.28	---		
Udifluvents---------	0-11	15-50	50-80	0-27	1.10-1.50	0.2-20	0.03-0.15	0.0-2.9	0.0-3.0	.24	.32	---	3
	11-72	---	---	0-27	1.20-1.70	0.06-20	0.03-0.16	0.0-2.9	0.0-1.0	---	---		
Fo:													
Fonda---------------	0-2	---	---	---	0.30-0.40	0.6-2	0.16-0.23	0.0-3.0	65-85	---	---	3	4
	2-10	0-50	50-80	0-27	1.00-1.25	0.6-2	0.16-0.23	0.0-2.9	10-20	.43	.43		
	10-18	0-45	0-65	35-60	1.20-1.40	0.00-0.2	0.12-0.17	3.0-5.9	2.0-6.0	.28	.28		
	18-28	0-45	0-65	35-60	1.20-1.40	0.00-0.2	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28		
	28-74	0-45	0-60	40-60	1.15-1.40	0.00-0.2	0.12-0.17	3.0-5.9	0.0-2.0	.28	.28		
GrB:													
Greene--------------	0-8	15-32	50-80	0-27	1.00-1.30	0.6-2	0.13-0.19	0.0-2.9	3.0-9.0	.28	.32	3	5
	8-27	15-52	28-80	18-35	1.30-1.60	0.06-0.2	0.12-0.17	0.0-2.9	0.0-1.0	.24	.28		
	27-39	15-52	28-80	18-30	1.30-1.60	0.06-0.2	0.12-0.17	0.0-2.9	0.0-1.0	.24	.28		
	39-43	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
Tuller--------------	0-8	0-50	50-80	0-27	1.10-1.40	0.6-2	0.09-0.15	0.0-2.9	4.0-9.0	.24	.32	2	8
	8-14	0-85	0-80	0-27	1.20-1.50	0.06-0.6	0.06-0.10	0.0-2.9	0.0-1.0	.17	---		
	14-18	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
Hb:													
Hamplain------------	0-9	0-50	50-80	0-17	1.15-1.40	0.6-2	0.18-0.21	0.0-2.9	2.0-8.0	.43	.43	5	5
	9-38	0-85	0-80	0-17	1.15-1.45	0.6-2	0.17-0.19	0.0-2.9	0.0-4.0	.49	.49		
	38-78	0-91	0-80	0-17	1.10-1.50	0.6-6	0.10-0.19	0.0-2.9	0.0-4.0	.32	.37		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
HdC:													
Hawksnest-----------	0-1	---	---	---	0.30-0.40	0.6-2	0.14-0.18	0.0-3.0	65-85	---	---	2	5
	1-7	0-50	50-80	0-27	1.10-1.40	0.6-2	0.14-0.18	0.0-2.9	3.0-7.0	.28	.32		
	7-19	0-85	0-80	0-27	1.10-1.40	0.6-6	0.08-0.16	0.0-2.9	0.0-1.0	.24	.28		
	19-23	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
HeA, HeB:													
Herkimer, fan-------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.10-0.16	0.0-2.9	3.0-7.0	.24	.32	4	5
	9-19	15-85	0-80	0-17	1.25-1.55	0.6-2	0.09-0.20	0.0-2.9	0.0-1.0	.24	.37		
	19-33	15-85	0-80	0-17	1.25-1.55	0.6-2	0.09-0.20	0.0-2.9	0.0-1.0	.20	.55		
	33-72	32-85	0-50	0-17	1.45-1.65	0.6-2	0.09-0.20	0.0-2.9	0.0-1.0	.20	.55		
HnB, HnC, HnD:													
Honeoye-------------	0-8	15-32	50-80	0-27	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	3.0-6.0	.28	.32	3	5
	8-29	15-45	20-80	18-35	1.35-1.65	0.6-2	0.08-0.18	0.0-2.9	0.0-1.0	.32	.49		
	29-72	15-82	0-80	0-27	1.65-1.85	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.0	.24	.24		
HoE:													
Honeoye-------------	0-8	15-32	50-80	0-27	1.20-1.50	0.6-2	0.12-0.20	0.0-2.9	3.0-6.0	.28	.32	3	5
	8-29	15-45	20-80	18-35	1.35-1.65	0.6-2	0.08-0.18	0.0-2.9	0.0-1.0	.32	.49		
	29-72	15-82	0-80	0-27	1.65-1.85	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.0	.24	.24		
Lansing-------------	0-9	15-32	50-80	0-27	1.20-1.50	0.6-2	0.15-0.20	0.0-2.9	3.0-6.0	.28	.32	4	5
	9-26	24-82	0-50	0-27	1.35-1.65	0.6-2	0.09-0.19	0.0-2.9	0.0-1.0	.32	.49		
	26-49	15-52	28-80	18-35	1.35-1.65	0.6-2	0.08-0.16	0.0-2.9	0.0-1.0	.32	.49		
	49-72	15-52	28-80	0-27	1.65-1.85	0.06-0.2	0.06-0.15	0.0-2.9	0.0-0.0	.24	.24		
HrB, HrC, HrD:													
Howard--------------	0-5	0-50	50-80	0-27	1.10-1.40	0.6-6	0.10-0.15	0.0-2.9	2.0-6.0	.24	.32	3	8
	5-9	0-85	0-80	0-27	1.25-1.55	0.6-6	0.08-0.12	0.0-2.9	0.0-1.0	.17	.37		
	9-40	20-85	0-50	2-34	1.25-1.55	0.6-6	0.05-0.11	0.0-2.9	0.0-1.0	.17	.55		
	40-85	86-100	0-14	0-10	1.45-1.65	20-100	0.01-0.02	0.0-2.9	0.0-1.0	.17	.64		
LaB, LaC, LaD, LaE:													
Lackawanna----------	0-6	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.16	0.0-2.9	3.0-6.0	.24	.32	3	6
	6-26	15-52	28-80	0-17	1.40-1.60	0.6-2	0.10-0.16	0.0-2.9	0.0-0.5	.20	.49		
	26-70	15-52	28-80	0-17	1.60-1.90	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.5	.20	---		
LeB, LeC, LeD:													
Lansing-------------	0-9	15-32	50-80	0-27	1.20-1.50	0.6-2	0.15-0.20	0.0-2.9	3.0-6.0	.28	.32	4	5
	9-26	24-82	0-50	0-27	1.35-1.65	0.6-2	0.09-0.19	0.0-2.9	0.0-1.0	.32	.49		
	26-49	15-52	28-80	18-35	1.35-1.65	0.6-2	0.08-0.16	0.0-2.9	0.0-1.0	.32	.49		
	49-72	15-52	28-80	0-27	1.65-1.85	0.06-0.2	0.06-0.15	0.0-2.9	0.0-0.0	.24	.24		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
LfB, LfC, LfD, LfE:													
Lewbath-------------	0-8	15-50	50-80	0-17	1.00-1.40	0.6-2	0.12-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5
	8-21	15-85	0-80	0-17	1.00-1.50	0.6-2	0.10-0.17	0.0-2.9	1.0-4.0	.28	.32		
	21-52	32-52	28-80	7-17	1.65-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-2.0	.24	.32		
	52-72	15-52	28-80	0-17	1.60-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	---		
LhC:													
Lewbeach------------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	9-27	15-85	0-80	0-17	1.20-1.50	0.2-2	0.07-0.14	0.0-2.9	0.0-2.0	.24	.32		
	27-72	15-85	0-80	0-17	1.65-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	---		
LkB, LkC:													
Lima----------------	0-12	15-52	28-80	0-27	1.10-1.40	0.6-2	0.09-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	12-28	15-52	20-80	18-35	1.60-1.85	0.6-2	0.07-0.18	0.0-2.9	0.0-2.0	.32	.49		
	28-72	15-82	0-80	0-27	1.70-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.32		
LoB:													
Lordstown-----------	0-8	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5
	8-26	15-52	28-80	0-17	1.20-1.50	0.6-2	0.10-0.16	0.0-2.9	0.0-1.0	.28	.55		
	26-28	15-52	28-80	0-17	1.20-1.50	0.6-2	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Arnot---------------	0-5	0-50	50-80	0-27	1.10-1.40	0.6-2	0.10-0.15	0.0-2.9	3.0-6.0	.24	.32	2	5
	5-19	0-52	28-80	0-27	1.20-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64		
	19-23	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
LpC, LpD:													
Lordstown-----------	0-8	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5
	8-26	15-52	28-80	0-17	1.20-1.50	0.6-2	0.10-0.16	0.0-2.9	0.0-1.0	.28	.55		
	26-28	15-52	28-80	0-17	1.20-1.50	0.6-2	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Chadakoin-----------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.12-0.21	0.0-2.9	2.0-6.0	.28	.32	4	5
	9-19	15-85	0-80	0-17	1.20-1.50	0.6-2	0.08-0.16	0.0-2.9	0.0-2.0	.24	.37		
	19-46	15-85	0-80	0-17	1.40-1.60	0.2-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.55		
	46-57	15-85	0-80	0-17	1.40-1.70	0.2-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.64		
	57-61	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
LrE:													
Lordstown-----------	0-8	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5
	8-26	15-52	28-80	0-17	1.20-1.50	0.6-2	0.10-0.16	0.0-2.9	0.0-1.0	.28	.55		
	26-28	15-52	28-80	0-17	1.20-1.50	0.6-2	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		

Table 22.--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
										Kw	Kf	T	
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct				
LrE:													
Chadakoin-----------	0-9	15-50	50-80	0-17	1.10-1.40	0.6-2	0.12-0.21	0.0-2.9	2.0-6.0	.28	.32	4	5
	9-19	15-85	0-80	0-17	1.20-1.50	0.6-2	0.08-0.16	0.0-2.9	0.0-2.0	.24	.37		
	19-46	15-85	0-80	0-17	1.40-1.60	0.2-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.55		
	46-57	15-85	0-80	0-17	1.40-1.70	0.2-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.64		
	57-61	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
Manlius-------------	0-6	0-50	50-80	0-27	1.10-1.40	0.6-2	0.10-0.18	0.0-2.9	1.0-5.0	.24	.32	3	8
	6-17	0-52	28-80	0-27	1.20-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.20	.32		
	17-28	0-52	28-80	0-27	1.70-1.95	0.6-2	0.03-0.09	0.0-2.9	0.0-0.0	.20	.32		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Ly:													
Lyons---------------	0-9	15-32	50-80	0-27	1.10-1.40	0.2-2	0.15-0.23	0.0-2.9	3.0-15	.28	.32	3	6
	9-35	15-52	28-80	18-27	1.10-1.40	0.2-2	0.12-0.19	0.0-2.9	0.0-2.0	.28	.32		
	35-72	15-82	0-80	18-27	1.20-1.50	0.00-0.2	0.08-0.18	0.0-2.9	0.0-1.0	.37	.55		
MaA, MaB, MaC:													
Manheim-------------	0-9	15-32	50-80	0-27	1.10-1.40	0.6-2	0.16-0.21	0.0-2.9	3.0-6.0	.28	.32	3	5
	9-41	15-52	28-80	18-35	1.60-1.85	0.06-0.6	0.10-0.19	0.0-2.9	0.0-1.0	.37	.55		
	41-72	15-52	28-73	7-35	1.70-1.95	0.06-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.28	.37		
McB, McC, McD:													
Manlius-------------	0-6	0-50	50-80	0-27	1.10-1.40	0.6-2	0.10-0.18	0.0-2.9	1.0-5.0	.24	.32	3	8
	6-17	0-52	28-80	0-27	1.20-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-1.0	.20	.32		
	17-28	0-52	28-80	0-27	1.70-1.95	0.6-2	0.03-0.09	0.0-2.9	0.0-1.0	.20	.32		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
MeB, MeC, MeD:													
Mardin--------------	0-12	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	5
	12-21	15-52	28-80	0-17	1.20-1.50	0.6-2	0.09-0.16	0.0-2.9	0.0-1.0	.24	.37		
	21-38	15-52	28-80	0-17	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
	38-72	15-52	28-80	0-17	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
MmC, MmD:													
Mongaup-------------	0-4	15-50	0-80	0-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	4-29	15-85	0-80	0-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	0.0-2.0	.24	.28		
	29-34	15-85	0-80	0-17	1.20-1.60	0.6-2	0.08-0.16	0.0-2.9	0.0-1.0	.24	.28		
	34-38	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
Franklinville-------	0-2	---	---	---	0.30-0.40	0.6-2	0.12-0.21	0.0-3.0	65-85	---	---	4	5
	2-7	15-50	50-80	0-17	1.10-1.40	0.6-2	0.12-0.21	0.0-2.9	2.0-6.0	.28	.32		
	7-40	15-85	0-80	0-17	1.20-1.50	0.6-2	0.08-0.16	0.0-2.9	0.0-1.0	.24	.37		
	40-58	15-85	0-80	0-17	1.40-1.70	0.2-2	0.05-0.10	0.0-2.9	0.0-1.0	.20	.55		
	58-62	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct				
MnB, MnE:													
Mongaup-------------	0-4	15-50	0-80	0-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	2.0-6.0	.24	.32	3	5
	4-29	15-85	0-80	0-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	0.0-2.0	.24	.28		
	29-34	15-85	0-80	0-17	1.20-1.60	0.6-2	0.08-0.16	0.0-2.9	0.0-1.0	.24	.28		
	34-38	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
Hawksnest-----------	0-1	---	---	---	0.30-0.40	0.6-2	0.14-0.18	0.0-3.0	65-85	---	---	2	5
	1-7	0-50	50-80	0-27	1.10-1.40	0.6-2	0.14-0.18	0.0-2.9	3.0-7.0	.28	.32		
	7-19	0-85	0-80	0-27	1.10-1.40	0.6-6	0.08-0.16	0.0-2.9	0.0-1.0	.24	.28		
	19-23	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
MoB, MoC:													
Morris--------------	0-5	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24	.32	2	6
	5-18	15-52	28-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-1.0	.24	.32		
	18-72	15-52	28-80	0-40	1.30-1.70	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.49		
MpC:													
Morris--------------	0-5	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.24	.32	2	8
	5-18	15-52	28-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-1.0	.24	.32		
	18-72	15-52	28-80	0-40	1.30-1.70	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.49		
Volusia-------------	0-6	15-32	50-80	0-27	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-7.0	.24	.32	2	8
	6-19	15-52	28-80	18-27	1.30-1.60	0.6-2	0.09-0.16	0.0-2.9	0.0-1.0	.24	.37		
	19-42	15-52	28-80	18-35	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.43		
	42-85	15-52	28-80	18-27	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
Np:													
Norchip-------------	0-5	15-32	50-80	0-27	1.10-1.40	0.6-2	0.12-0.18	0.0-2.9	3.0-10	.24	.32	2	5
	5-13	15-52	28-80	18-27	1.10-1.40	0.6-2	0.12-0.18	0.0-2.9	0.0-1.0	.24	.32		
	13-32	15-82	0-80	18-27	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
	32-72	15-82	0-80	18-27	1.50-1.85	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
ObB, ObC:													
Onteora-------------	0-8	15-50	50-80	0-17	1.10-1.40	0.6-2	0.09-0.17	0.0-2.9	4.0-12	.24	.32	2	5
	8-14	15-85	0-80	0-17	1.10-1.40	0.6-2	0.07-0.15	0.0-2.9	0.0-1.0	.20	.37		
	14-60	15-85	0-80	0-17	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.20	.49		
OeB, OeC:													
Ontusia-------------	0-5	15-32	50-80	0-30	1.10-1.40	0.6-2	0.11-0.19	0.0-2.9	3.0-10	.24	.32	2	6
	5-14	15-52	28-80	18-30	1.10-1.50	0.6-2	0.08-0.18	0.0-2.9	2.0-6.0	.24	.37		
	14-42	15-82	0-80	18-27	1.65-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
	42-72	15-82	0-80	18-27	1.60-1.90	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		

Table 22.--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 Kw	Kf	T	Wind erodi- bility group
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct				
OgB, OgC, OgD, OgE:													
Oquaga--------------	0-1	---	---	---	0.30-0.40	0.6-2	0.08-0.17	0.0-3.0	65-85	---	---	3	5
	1-5	0-50	50-80	0-27	1.10-1.40	0.6-2	0.08-0.17	0.0-2.9	2.0-6.0	.24	.32		
	5-13	0-52	28-80	0-27	1.20-1.50	0.6-2	0.04-0.12	0.0-2.9	0.0-1.0	.24	.32		
	13-28	0-85	0-80	0-27	1.20-1.50	0.6-2	0.04-0.12	0.0-2.9	0.0-1.0	.24	.32		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Arnot---------------	0-5	0-50	50-80	0-27	1.10-1.40	0.6-2	0.10-0.15	0.0-2.9	3.0-6.0	.24	.32	2	5
	5-19	0-52	28-80	0-27	1.20-1.50	0.6-2	0.08-0.12	0.0-2.9	0.0-2.0	.17	.64		
	19-23	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
OpB, OpC, OpD:													
Oquaga--------------	0-1	---	---	---	0.30-0.40	0.6-2	0.08-0.17	0.0-3.0	65-85	---	---	3	5
	1-5	0-50	50-80	0-27	1.10-1.40	0.6-2	0.08-0.17	0.0-2.9	2.0-6.0	.24	.32		
	5-13	0-52	28-80	0-27	1.20-1.50	0.6-2	0.04-0.12	0.0-2.9	0.0-1.0	.24	.32		
	13-28	0-85	0-80	0-27	1.20-1.50	0.6-2	0.04-0.12	0.0-2.9	0.0-1.0	.24	.32		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Lordstown-----------	0-8	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-6.0	.24	.32	3	5
	8-26	15-52	28-80	0-17	1.20-1.50	0.6-2	0.10-0.16	0.0-2.9	0.0-1.0	.28	.55		
	26-28	15-52	28-80	0-17	1.20-1.50	0.6-2	0.05-0.14	0.0-2.9	0.0-1.0	.28	.64		
	28-32	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Ot:													
Otego---------------	0-13	0-50	50-80	0-17	1.15-1.40	0.6-2	0.18-0.21	0.0-2.9	2.0-8.0	.43	.43	5	5
	13-35	0-85	0-80	0-17	1.15-1.40	0.6-2	0.17-0.19	0.0-2.9	0.0-1.0	.49	.49		
	35-60	0-85	0-80	0-17	1.25-1.50	0.6-2	0.16-0.19	0.0-2.9	0.0-1.0	.17	.20		
	60-80	24-85	0-50	0-17	1.25-1.65	0.6-6	0.05-0.11	0.0-2.9	0.0-1.0	.15	---		
Pa:													
Palms---------------	0-8	---	---	---	0.15-0.40	0.2-6	0.35-0.45	0.0-3.0	60-80	---	---	2	2
	8-46	---	---	---	0.15-0.40	0.2-6	0.35-0.45	0.0-3.0	60-80	---	---		
	46-72	0-85	0-73	0-34	1.45-1.75	0.2-2	0.14-0.22	0.0-2.9	0.0-1.0	.37	.37		
PdB:													
Patchin-------------	0-7	15-32	50-80	0-27	1.20-1.50	0.2-0.6	0.15-0.21	0.0-2.9	3.0-8.0	.28	.32	3	6
	7-32	15-32	45-80	18-35	1.40-1.70	0.06-0.2	0.14-0.20	0.0-2.9	0.0-1.0	.37	.49		
	32-36	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
Pt:													
Pits, gravel--------	0-6	86-100	0-14	0-10	---	6-20	0.01-0.02	0.0-2.9	0.0-0.1	.02	.10	---	8
	6-72	86-100	0-14	0-10	---	6-20	0.01-0.02	0.0-2.9	0.0-0.1	.02	---		
Pits, sand----------	0-10	86-100	0-14	0-10	---	6-20	0.03-0.05	0.0-2.9	0.0-0.1	.05	.05	---	2
	10-72	86-100	0-14	0-10	---	6-20	0.02-0.05	0.0-2.9	0.0-0.1	.15	---		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
Pu:													
Pits, quarry--------	0-60	---	---	---	---	---	---	---	---	---	---	---	---
Ra:													
Raynham-------------	0-9	0-50	50-80	0-17	1.20-1.50	0.2-2	0.18-0.24	0.0-2.9	3.0-10	.49	.49	4	5
	9-24	0-85	0-100	0-17	1.20-1.50	0.2-2	0.18-0.22	0.0-2.9	0.0-8.0	.64	.64		
	24-72	0-85	0-100	0-17	1.20-1.60	0.06-0.2	0.17-0.21	0.0-2.9	0.0-8.0	.64	.64		
Re:													
Red Hook------------	0-12	15-50	50-80	0-17	1.10-1.40	0.6-2	0.14-0.19	0.0-2.9	3.0-12	.28	.32	4	5
	12-31	15-85	0-80	0-17	1.25-1.55	0.6-2	0.04-0.17	0.0-2.9	0.0-2.0	.24	.55		
	31-72	15-91	0-80	0-40	1.45-1.65	0.2-2	0.04-0.11	0.0-2.9	0.0-2.0	.17	.43		
RhA, RhB:													
Rhinebeck-----------	0-14	0-20	40-65	27-40	1.00-1.25	0.2-0.6	0.16-0.21	3.0-5.9	3.0-7.0	.49	.49	3	6
	14-34	0-20	40-65	35-60	1.20-1.40	0.06-0.2	0.12-0.14	3.0-5.9	1.0-3.0	.28	.28		
	34-72	0-50	0-80	0-60	1.15-1.40	0.06-0.2	0.12-0.14	3.0-5.9	0.0-1.0	.28	.28		
RlA, RlB:													
Riverhead, loamy substratum---------	0-13	44-85	0-49	0-17	1.10-1.40	2-6	0.14-0.20	0.0-2.9	2.0-4.0	.17	.20	3	3
	13-39	44-85	0-49	0-17	1.25-1.55	2-6	0.09-0.13	0.0-2.9	0.0-1.0	.28	.28		
	39-60	44-91	0-49	0-17	1.25-1.55	20-100	0.04-0.13	0.0-2.9	0.0-1.0	.17	.20		
	60-72	44-85	0-49	0-17	1.30-1.60	6-20	0.07-0.12	0.0-2.9	0.0-1.0	.28	.49		
Sa:													
Saprists------------	0-72	0-50	50-90	0-27	0.30-0.60	0.2-20	0.35-0.45	0.0-3.0	50-95	---	---	---	2
Aquents-------------	0-10	0-50	50-80	0-27	1.10-1.35	0.2-2	0.14-0.24	3.0-5.9	2.0-20	.28	.28	---	8
	10-72	0-91	0-80	0-60	1.10-1.70	0.06-20	0.03-0.21	3.0-5.9	0.0-5.0	.32	---		
SbB:													
Scio----------------	0-9	44-85	0-49	0-17	1.20-1.50	0.6-2	0.13-0.17	0.0-2.9	2.0-8.0	.32	.32	4	3
	9-27	0-85	0-80	0-17	1.20-1.50	0.6-2	0.17-0.20	0.0-2.9	0.0-1.0	.24	.24		
	27-72	0-100	0-80	0-17	1.20-1.50	0.6-2	0.17-0.20	0.0-2.9	0.0-1.0	.24	.24		
ScA, ScB:													
Scio----------------	0-9	0-50	50-80	0-17	1.20-1.50	0.6-2	0.13-0.17	0.0-2.9	2.0-8.0	.49	.49	4	3
	9-27	0-85	0-80	0-17	1.20-1.50	0.6-2	0.17-0.20	0.0-2.9	0.0-1.0	.24	.24		
	27-72	0-100	0-80	0-17	1.20-1.50	0.6-2	0.17-0.20	0.0-2.9	0.0-1.0	.24	.24		
ThB:													
Torull--------------	0-7	0-50	50-80	0-27	1.10-1.40	0.6-2	0.14-0.18	0.0-2.9	4.0-9.0	.28	.32	2	5
	7-15	0-85	0-80	0-27	1.20-1.50	0.06-0.6	0.08-0.16	0.0-2.9	0.0-1.0	.20	.28		
	15-19	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		

Table 22.--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 Kw	Kf	T	Wind erodi- bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
ThB:													
Gretor	0-9	15-32	50-80	0-27	1.00-1.30	0.6-2	0.14-0.19	0.0-2.9	3.0-9.0	.28	.32	3	5
	9-22	15-52	28-80	18-35	1.10-1.40	0.6-2	0.12-0.16	0.0-2.9	0.0-1.0	.28	.43		
	22-29	15-52	20-80	18-35	1.30-1.65	0.00-0.2	0.08-0.14	0.0-2.9	0.0-1.0	.28	.32		
	29-33	---	---	---	---	0.2-2	---	---	0.0-0.0	---	---		
TkB, TkC, TkD:													
Towerville	0-6	15-32	50-80	0-27	1.10-1.40	0.6-2	0.12-0.19	0.0-2.9	3.0-8.0	.28	.32	3	5
	6-28	15-52	28-80	18-35	1.20-1.50	0.6-2	0.11-0.18	0.0-2.9	0.0-1.0	.28	.43		
	28-35	15-52	28-80	18-35	1.60-1.80	0.06-0.6	0.09-0.18	0.0-2.9	0.0-1.0	.28	.49		
	35-39	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
TlB:													
Trestle	0-9	0-50	50-80	0-27	1.35-1.45	0.6-6	0.12-0.17	0.0-2.9	4.0-7.0	.24	.32	4	5
	9-16	0-52	28-80	0-27	1.45-1.55	0.6-6	0.06-0.15	0.0-2.9	0.0-1.0	.20	.43		
	16-72	24-85	0-50	0-27	1.45-1.55	6-20	0.02-0.09	0.0-2.9	0.0-1.0	.17	.64		
Deposit	0-9	24-52	28-50	7-27	1.10-1.40	0.6-6	0.09-0.16	0.0-2.9	4.0-10	.20	.28	4	5
	9-19	0-85	0-80	0-27	1.25-1.55	2-6	0.05-0.15	0.0-2.9	0.0-1.0	.20	.43		
	19-72	24-91	0-50	0-27	1.30-1.60	6-20	0.01-0.05	0.0-2.9	0.0-1.0	.17	.64		
TpB, TpC:													
Tunkhannock	0-7	24-52	28-50	7-27	1.20-1.40	2-6	0.08-0.15	0.0-2.9	2.0-4.0	.20	.28	4	6
	7-33	0-85	0-80	0-27	1.40-1.60	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.55		
	33-72	44-100	0-49	0-20	1.40-1.60	2-20	0.01-0.08	0.0-2.9	0.0-0.5	.17	.64		
Ud:													
Udorthents, refuse substratum	0-10	24-52	28-50	7-27	1.20-1.80	0.06-2	0.08-0.18	3.0-5.9	0.0-5.0	.20	.28	---	8
	10-72	---	---	---	---	---	---	3.0-5.9	0.0-5.0	---	---		
Ue:													
Udorthents, smoothed	0-4	44-85	0-49	0-20	1.20-1.80	0.06-20	0.05-0.13	0.0-2.9	0.0-5.0	.17	.24	---	6
	4-72	0-85	0-73	0-40	1.30-1.90	0.06-6	0.04-0.13	0.0-2.9	0.0-5.0	.32	.64		
UnA, UnB:													
Unadilla	0-12	0-50	50-80	0-17	1.20-1.50	0.6-2	0.18-0.21	0.0-2.9	2.0-7.0	.49	.49	4	5
	12-41	0-85	0-80	0-17	1.20-1.50	0.6-2	0.17-0.20	0.0-2.9	0.0-1.0	.64	.64		
	41-72	0-85	0-80	0-17	1.20-1.50	2-6	0.10-0.20	0.0-2.9	0.0-1.0	.64	.64		
VaB, VaC, VaD, VaE, VaF:													
Valois	0-10	32-52	28-50	7-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	2.0-6.0	.20	.28	4	5
	10-41	15-85	0-80	0-17	1.20-1.50	0.6-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.28		
	41-72	32-85	0-50	0-17	1.40-1.60	0.6-6	0.03-0.09	0.0-2.9	0.0-1.0	.24	.64		

Table 22.--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 Kw	Kf	T	Wind erodi- bility group
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*In/hr*	*In/in*	*Pct*	*Pct*				
VcB:													
Valois--------------	0-10	15-50	50-80	7-17	1.10-1.40	0.6-2	0.08-0.16	0.0-2.9	2.0-6.0	.24	.28	4	---
	10-41	15-85	0-80	0-17	1.20-1.50	0.6-2	0.07-0.14	0.0-2.9	0.0-1.0	.24	.28		
	41-72	32-85	0-50	0-17	1.40-1.60	0.6-6	0.03-0.09	0.0-2.9	0.0-1.0	.24	.64		
VlB, VlC, VlD, VlE:													
Vly-----------------	0-5	0-50	50-80	0-27	1.10-1.40	0.6-2	0.08-0.17	0.0-2.9	3.0-6.0	.24	.32	3	5
	5-23	0-52	28-80	0-27	1.20-1.50	0.6-2	0.04-0.12	0.0-2.9	0.0-2.0	.20	.64		
	23-27	---	---	---	---	0.00-0.2	---	---	0.0-0.0	---	---		
VoA, VoB, VoC:													
Volusia-------------	0-6	15-32	50-80	0-27	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	2.0-7.0	.28	.32	2	5
	6-19	15-52	28-80	18-27	1.30-1.60	0.6-2	0.09-0.16	0.0-2.9	0.0-1.0	.24	.37		
	19-42	15-52	28-80	18-35	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.43		
	42-85	15-52	28-80	18-27	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
W:													
Water.													
Wb:													
Wakeville-----------	0-7	0-50	50-80	0-17	1.15-1.40	0.6-2	0.18-0.21	0.0-2.9	2.0-6.0	.43	.43	5	5
	7-29	0-85	0-80	0-17	1.15-1.45	0.6-2	0.18-0.19	0.0-2.9	0.0-2.0	.49	.49		
	29-72	0-85	0-80	0-17	1.25-1.55	0.6-2	0.12-0.19	0.0-2.9	0.0-2.0	.49	.64		
WeA, WeB, WeC, WeD:													
Wassaic-------------	0-10	15-32	50-80	0-27	1.10-1.40	0.6-2	0.13-0.21	0.0-2.9	2.0-6.0	.28	.32	3	5
	10-21	15-52	28-80	0-27	1.20-1.50	0.2-2	0.09-0.19	0.0-2.9	0.0-2.0	.32	.32		
	21-31	15-82	0-80	18-35	1.10-1.50	0.2-2	0.09-0.19	0.0-2.9	0.0-1.0	.32	.32		
	31-35	---	---	---	---	0.00-0.06	---	---	0.0-0.0	---	---		
Wg:													
Wayland-------------	0-9	0-32	50-80	0-27	1.05-1.40	0.2-2	0.17-0.22	0.0-2.9	3.0-6.0	.43	.43	5	6
	9-36	0-32	40-80	18-35	1.10-1.60	0.06-0.2	0.16-0.20	0.0-2.9	1.0-3.0	.43	.43		
	36-72	---	---	27-35	1.25-1.55	0.06-0.2	0.08-0.19	0.0-2.9	1.0-2.0	.43	.55		
WlB, WlC, WlD:													
Wellsboro-----------	0-5	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	6
	5-23	15-52	28-80	0-17	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.28	.43		
	23-70	15-52	28-80	0-17	1.70-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.5	.28	---		
WmC:													
Wellsboro-----------	0-5	15-50	50-80	0-17	1.20-1.40	0.6-2	0.10-0.14	0.0-2.9	3.0-5.0	.24	.32	3	8
	5-23	15-52	28-80	0-17	1.30-1.50	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.28	.43		
	23-70	15-52	28-80	0-17	1.70-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-0.5	.28	---		

Table 22.--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 Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct				
WmC:													
Mardin--------------	0-12	15-50	50-80	0-17	1.10-1.40	0.6-2	0.11-0.17	0.0-2.9	3.0-7.0	.24	.32	2	8
	12-21	15-52	28-80	0-17	1.20-1.50	0.6-2	0.09-0.16	0.0-2.9	0.0-1.0	.24	.37		
	21-38	15-52	28-80	0-17	1.70-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
	38-72	15-52	28-80	0-17	1.65-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.64		
WpB, WpC, WpD:													
Willdin-------------	0-7	15-50	50-80	0-17	1.10-1.40	0.6-2	0.12-0.18	0.0-2.9	3.0-7.0	.24	.32	2	6
	7-17	15-52	28-80	0-17	1.20-1.50	0.6-2	0.09-0.17	0.0-2.9	0.0-1.0	.24	.37		
	17-44	15-52	28-80	0-17	1.65-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
	44-80	15-52	28-80	0-17	1.60-1.95	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.24	.55		
WsB, WsC:													
Willowemoc----------	0-2	---	---	---	0.30-0.40	0.6-2	0.08-0.19	0.0-3.0	65-85	---	---	3	5
	2-7	15-50	50-80	0-17	1.10-1.40	0.6-2	0.08-0.19	0.0-2.9	2.0-6.0	.24	.32		
	7-17	15-52	28-80	0-17	1.10-1.40	0.6-2	0.08-0.19	0.0-2.9	0.0-2.0	.24	.37		
	17-25	15-85	0-80	0-17	1.20-1.55	0.6-2	0.08-0.19	0.0-2.9	0.0-1.0	.24	.49		
	25-72	15-85	0-80	0-17	1.65-2.00	0.00-0.2	0.00-0.00	0.0-2.9	0.0-1.0	.20	.49		

Table 23.--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 carbon-ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
Ad:					
Alden	0-8	20-40	---	5.1-7.3	0
	8-25	4.0-17	---	5.6-7.3	0
	25-36	3.0-12	---	5.6-8.4	0-10
	36-72	3.0-12	---	5.6-8.4	0-10
At:					
Atherton	0-3	---	---	5.1-7.3	0
	3-24	---	---	5.6-7.8	0
	24-72	---	---	5.6-7.8	0
BfB, BfC, BfD, BfE:					
Bath	0-9	---	12-25	4.5-6.0	0
	9-30	---	5.0-12	4.5-6.0	0
	30-40	3.0-10	---	4.5-6.5	0
	40-72	3.0-9.0	---	5.1-8.4	0
BhC, BhE:					
Bath	0-9	---	12-25	4.5-6.0	0
	9-30	---	5.0-12	4.5-6.0	0
	30-40	3.0-10	---	4.5-6.5	0
	40-72	3.0-9.0	---	5.1-8.4	0
Lackawanna	0-6	---	10-30	4.5-6.0	0
	6-26	---	5.0-10	4.5-6.0	0
	26-70	---	5.0-10	4.5-6.0	0
Cb, Cc:					
Canandaigua	0-8	19-36	---	5.6-7.8	0
	8-32	4.0-10	---	5.6-7.8	0
	32-75	2.0-5.0	---	6.6-8.4	0-5
Cd:					
Carbondale	0-11	150-200	---	4.5-7.8	0
	11-38	150-230	---	4.5-7.8	0
	38-100	150-200	---	4.5-7.8	0
Ce:					
Carlisle	0-72	150-250	---	4.5-7.8	0
CfA, CfB:					
Castile	0-9	---	---	4.5-7.3	0
	9-24	---	---	4.5-6.5	0
	24-72	---	---	5.1-7.3	0
ChA, ChB, ChC, ChD:					
Chenango	0-7	---	12-28	4.5-6.0	0
	7-27	---	3.0-15	4.5-6.0	0
	27-72	3.0-12	---	5.1-7.8	0-2
ClE:					
Chenango	0-7	---	12-28	4.5-6.0	0
	7-27	---	3.0-15	4.5-6.0	0
	27-72	3.0-12	---	5.1-7.8	0-2

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate
	In	meq/100 g	meq/100 g	pH	Pct
ClE:					
Howard---------------	0-5	---	---	5.1-7.3	0
	5-9	---	---	5.1-7.3	0
	9-40	---	---	5.1-7.3	0-2
	40-85	---	---	6.6-8.4	2-15
Tunkhannock----------	0-7	---	15-20	3.6-6.0	0
	7-33	---	8.0-15	3.6-6.0	0
	33-72	---	5.0-10	3.6-6.0	0
CnA, CnB:					
Chenango, fan--------	0-7	---	12-28	4.5-6.0	0
	7-27	---	3.0-15	4.5-6.0	0
	27-72	3.0-12	---	5.1-7.8	0-2
Cp:					
Chippewa-------------	0-1	---	---	4.5-6.5	0
	1-8	18-35	---	4.5-6.5	0
	8-17	5.0-16	---	4.5-6.5	0
	17-47	5.0-12	---	5.1-7.3	0
	47-72	2.0-11	---	5.6-8.4	0-5
Norwich--------------	0-8	10-25	---	5.1-6.5	0-1
	8-23	10-25	---	5.1-6.5	0-1
	23-72	15-30	---	5.1-7.3	0-2
Cr:					
Chippewa-------------	0-1	---	---	4.5-6.5	0
	1-8	18-35	---	4.5-6.5	0
	8-17	5.0-16	---	4.5-6.5	0
	17-47	5.0-12	---	5.1-7.3	0
	47-72	2.0-11	---	5.6-8.4	0-5
Norwich--------------	0-8	10-25	---	5.1-6.5	0-1
	8-23	10-25	---	5.1-6.5	0-1
	23-72	15-30	---	5.1-7.3	0-2
CsB, CsC:					
Conesus--------------	0-9	15-25	---	5.1-7.3	0
	9-37	10-20	---	5.1-7.3	0-2
	37-72	4.0-11	---	6.6-8.4	2-15
DaB, DaC, DaD:					
Danley---------------	0-8	---	---	5.1-7.3	0
	8-15	---	---	5.1-6.5	0
	15-30	---	---	5.6-7.3	0
	30-37	---	---	5.6-8.4	0-5
	37-72	---	---	7.4-8.4	2-10
Nunda----------------	0-6	15-25	---	5.1-7.3	0
	6-13	8.0-14	---	5.1-7.3	0
	13-48	10-20	---	5.1-7.3	0-2
	48-72	4.0-11	---	6.1-8.4	1-10
DeB, DeC:					
Darien---------------	0-12	---	---	5.6-7.3	0
	12-42	---	---	6.1-7.3	0-2
	42-72	---	---	7.4-8.4	2-10

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
DeB, DeC:					
Burdett--------------	0-8	15-25	---	5.1-7.3	0
	8-15	6.0-14	---	5.1-7.3	0
	15-44	15-25	---	5.1-7.3	0-3
	44-72	8.0-14	---	6.1-8.4	1-10
Ed:					
Edwards--------------	0-50	150-230	---	4.5-7.8	0-5
	50-72	1.0-10	---	6.6-8.4	50-90
FaB:					
Farmington-----------	0-9	10-35	---	5.1-7.3	0-2
	9-18	5.0-20	---	5.6-7.8	0-5
	18-22	---	---	---	---
FeB, FeC, FeD, FeF:					
Farmington-----------	0-9	10-35	---	5.1-7.3	0-2
	9-18	5.0-20	---	5.6-7.8	0-5
	18-22	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---
Fg:					
Fluvaquents----------	0-11	20-40	---	5.1-7.8	0-5
	11-72	3.0-25	---	5.1-8.4	0-15
Udifluvents----------	0-11	---	---	5.1-7.8	0-5
	11-72	---	---	5.1-8.4	0-15
Fo:					
Fonda----------------	0-2	---	---	6.1-7.3	0
	2-10	30-60	---	6.1-7.3	0
	10-18	25-32	---	6.1-8.4	0-5
	18-28	22-30	---	6.1-8.4	0-10
	28-74	18-30	---	7.4-8.4	5-15
GrB:					
Greene---------------	0-8	---	18-35	4.5-5.5	0
	8-27	---	5.0-18	5.1-6.0	0
	27-39	2.0-11	---	5.1-6.0	0
	39-43	---	---	---	---
Tuller---------------	0-8	---	20-40	4.5-6.0	0
	8-14	---	10-20	4.5-6.0	0
	14-18	---	---	---	---
Hb:					
Hamplain-------------	0-9	10-25	---	5.1-7.3	0
	9-38	8.0-25	---	5.1-6.5	0
	38-78	5.0-20	---	5.1-6.5	0
HdC:					
Hawksnest------------	0-1	---	---	3.6-5.5	0
	1-7	---	12-25	3.6-5.5	0
	7-19	---	6.0-16	3.6-5.5	0
	19-23	---	---	---	---

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
HeA, HeB:					
Herkimer, fan--------	0-9	---	---	5.1-7.3	0
	9-19	---	---	5.1-7.3	0
	19-33	---	---	5.1-7.3	0
	33-72	---	---	6.6-8.4	0-10
HnB, HnC, HnD:					
Honeoye--------------	0-8	15-25	---	5.6-7.3	0
	8-29	10-20	---	5.6-7.8	0-5
	29-72	4.0-11	---	7.4-8.4	5-15
HoE:					
Honeoye--------------	0-8	15-25	---	5.6-7.3	0
	8-29	10-20	---	5.6-7.8	0-5
	29-72	4.0-11	---	7.4-8.4	5-15
Lansing--------------	0-9	15-25	---	5.1-7.3	0
	9-26	10-18	---	5.1-7.3	0
	26-49	10-20	---	5.1-7.3	0-2
	49-72	4.0-11	---	6.6-8.4	2-15
HrB, HrC, HrD:					
Howard---------------	0-5	---	---	5.1-7.3	0
	5-9	---	---	5.1-7.3	0
	9-40	---	---	5.1-7.3	0-2
	40-85	---	---	6.6-8.4	2-15
LaB, LaC, LaD, LaE:					
Lackawanna-----------	0-6	---	10-30	4.5-6.0	0
	6-26	---	5.0-10	4.5-6.0	0
	26-70	---	5.0-10	4.5-6.0	0
LeB, LeC, LeD:					
Lansing--------------	0-9	15-25	---	5.1-7.3	0
	9-26	10-18	---	5.1-7.3	0
	26-49	10-20	---	5.1-7.3	0-2
	49-72	4.0-11	---	6.6-8.4	2-15
LfB, LfC, LfD, LfE:					
Lewbath--------------	0-8	---	15-30	5.1-6.0	0
	8-21	---	18-25	5.1-6.0	0
	21-52	---	12-25	5.1-6.0	0
	52-72	12-25	---	4.5-6.5	0
LhC:					
Lewbeach-------------	0-9	---	10-22	4.5-7.3	0
	9-27	---	6.0-16	4.5-6.0	0
	27-72	---	3.0-10	4.5-6.0	0
LkB, LkC:					
Lima-----------------	0-12	15-25	---	5.6-7.8	0
	12-28	15-25	---	5.6-7.8	0-5
	28-72	8.0-14	---	7.4-8.4	2-15
LoB:					
Lordstown------------	0-8	---	---	4.5-7.3	0
	8-26	---	---	4.5-6.0	0
	26-28	---	---	5.1-6.0	0
	28-32	---	---	---	---

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
LoB:					
Arnot----------------	0-5	---	12-22	3.6-6.0	0
	5-19	---	3.0-13	3.6-6.0	0
	19-23	---	---	---	---
LpC, LpD:					
Lordstown------------	0-8	---	---	4.5-7.3	0
	8-26	---	---	4.5-6.0	0
	26-28	---	---	5.1-6.0	0
	28-32	---	---	---	---
Chadakoin------------	0-9	---	12-25	4.5-6.0	0
	9-19	---	6.0-16	4.5-6.0	0
	19-46	---	3.0-10	4.5-6.0	0
	46-57	2.0-9.0	---	5.1-6.5	0
	57-61	---	---	---	---
LrE:					
Lordstown------------	0-8	---	---	4.5-7.3	0
	8-26	---	---	4.5-6.0	0
	26-28	---	---	5.1-6.0	0
	28-32	---	---	---	---
Chadakoin------------	0-9	---	12-25	4.5-6.0	0
	9-19	---	6.0-16	4.5-6.0	0
	19-46	---	3.0-10	4.5-6.0	0
	46-57	2.0-9.0	---	5.1-6.5	0
	57-61	---	---	---	---
Manlius--------------	0-6	---	12-25	3.6-6.0	0
	6-17	---	3.0-13	3.6-6.0	0
	17-28	2.0-9.0	---	4.5-6.5	0
	28-32	---	---	---	---
Ly:					
Lyons----------------	0-9	---	---	5.6-7.3	0
	9-35	---	---	6.1-7.8	0-5
	35-72	---	---	6.6-8.4	0-10
MaA, MaB, MaC:					
Manheim--------------	0-9	16-30	---	5.6-7.3	0
	9-41	9.0-25	---	5.6-8.4	0-5
	41-72	8.0-15	---	6.6-8.4	1-10
McB, McC, McD:					
Manlius--------------	0-6	---	12-25	3.6-6.0	0
	6-17	---	3.0-13	3.6-6.0	0
	17-28	2.0-9.0	---	4.5-6.5	0
	28-32	---	---	---	---
MeB, MeC, MeD:					
Mardin---------------	0-12	---	12-25	3.6-6.5	0
	12-21	---	5.0-12	3.6-6.5	0
	21-38	3.0-10	---	4.5-7.3	0
	38-72	3.0-9.0	---	5.1-7.8	0

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
MmC, MmD:					
Mongaup	0-4	---	10-40	3.6-5.5	0
	4-29	---	10-40	3.6-6.0	0
	29-34	---	5.0-18	3.6-6.0	0
	34-38	---	---	---	---
Franklinville	0-2	---	---	4.5-6.5	0
	2-7	12-25	---	4.5-6.5	0
	7-40	---	6.0-16	4.5-6.0	0
	40-58	3.0-9.0	---	4.5-6.5	0
	58-62	---	---	---	---
MnB, MnE:					
Mongaup	0-4	---	10-40	3.6-5.5	0
	4-29	---	10-40	3.6-6.0	0
	29-34	---	5.0-18	3.6-6.0	0
	34-38	---	---	---	---
Hawksnest	0-1	---	---	3.6-5.5	0
	1-7	---	12-25	3.6-5.5	0
	7-19	---	6.0-16	3.6-5.5	0
	19-23	---	---	---	---
MoB, MoC:					
Morris	0-5	---	---	4.5-6.0	0
	5-18	---	---	4.5-6.0	0
	18-72	---	---	5.1-6.5	0
MpC:					
Morris	0-5	---	---	4.5-6.0	0
	5-18	---	---	4.5-6.0	0
	18-72	---	---	5.1-6.5	0
Volusia	0-6	15-25	---	4.5-6.0	0
	6-19	5.0-12	---	4.5-6.5	0
	19-42	3.0-10	---	4.5-6.5	0
	42-85	3.0-9.0	---	5.6-7.8	0
Np:					
Norchip	0-5	18-35	---	4.5-6.5	0
	5-13	18-35	---	4.5-6.5	0
	13-32	5.0-18	---	5.6-7.3	0
	32-72	5.0-12	---	6.1-7.3	0
ObB, ObC:					
Onteora	0-8	10-40	---	3.5-6.0	0
	8-14	5.0-15	---	3.5-6.0	0
	14-60	---	5.0-14	4.5-6.0	0
OeB, OeC:					
Ontusia	0-5	20-40	---	4.5-6.5	0
	5-14	15-35	---	4.5-6.5	0
	14-42	10-25	---	4.5-6.5	0
	42-72	10-25	---	5.1-6.5	0

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate
	In	meq/100 g	meq/100 g	pH	Pct
OgB, OgC, OgD, OgE:					
Oquaga----------------	0-1	---	---	3.6-6.0	0
	1-5	---	---	3.6-6.0	0
	5-13	---	---	3.6-6.0	0
	13-28	---	---	3.6-6.0	0
	28-32	---	---	---	---
Arnot-----------------	0-5	---	12-22	3.6-6.0	0
	5-19	---	3.0-13	3.6-6.0	0
	19-23	---	---	---	---
OpB, OpC, OpD:					
Oquaga----------------	0-1	---	---	3.6-6.0	0
	1-5	---	---	3.6-6.0	0
	5-13	---	---	3.6-6.0	0
	13-28	---	---	3.6-6.0	0
	28-32	---	---	---	---
Lordstown-------------	0-8	---	---	4.5-7.3	0
	8-26	---	---	4.5-6.0	0
	26-28	---	---	5.1-6.0	0
	28-32	---	---	---	---
Ot:					
Otego-----------------	0-13	10-25	---	5.1-7.3	0
	13-35	8.0-25	---	5.1-6.5	0
	35-60	8.0-25	---	5.1-6.5	0
	60-80	5.0-20	---	5.1-7.3	0
Pa:					
Palms-----------------	0-8	150-200	---	5.1-7.8	0
	8-46	150-200	---	5.1-7.8	0
	46-72	2.0-14	---	6.1-8.4	0-20
PdB:					
Patchin---------------	0-7	---	20-40	4.5-5.5	0
	7-32	---	20-40	4.5-5.5	0
	32-36	---	---	---	---
Pt:					
Pits, gravel----------	0-6	---	---	---	0-10
	6-72	---	---	---	0-10
Pits, sand------------	0-10	---	---	---	0-10
	10-72	---	---	---	0-10
Pu:					
Pits, quarry----------	0-60	---	---	---	---
Ra:					
Raynham---------------	0-9	10-25	---	5.1-7.3	0-2
	9-24	5.0-20	---	5.1-7.3	0-2
	24-72	5.0-25	---	5.6-8.4	0-5
Re:					
Red Hook--------------	0-12	---	---	5.1-6.5	0
	12-31	---	---	5.6-7.3	0-2
	31-72	---	---	5.6-7.8	0-5

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
RhA, RhB:					
Rhinebeck------------	0-14	15-32	---	5.1-7.3	0
	14-34	20-35	---	5.1-7.8	0-2
	34-72	15-30	---	6.1-8.4	1-10
RlA, RlB:					
Riverhead, loamy substratum----------	0-13	---	13-17	3.6-6.0	0
	13-39	---	6.0-13	3.6-6.0	0
	39-60	---	7.0-9.0	4.5-6.0	0
	60-72	5.0-15	---	4.5-7.3	0
Sa:					
Saprists-------------	0-72	90-160	---	5.1-7.8	0-5
Aquents--------------	0-10	15-110	---	5.1-7.8	0
	10-72	10-60	---	5.1-7.8	0-10
SbB:					
Scio-----------------	0-9	---	12-17	4.5-6.0	0
	9-27	---	7.0-11	4.5-6.0	0
	27-72	---	7.0-11	5.1-7.8	0
ScA, ScB:					
Scio-----------------	0-9	---	12-17	4.5-6.0	0
	9-27	---	7.0-11	4.5-6.0	0
	27-72	---	7.0-11	5.1-7.8	0
ThB:					
Torull---------------	0-7	---	15-55	4.5-6.0	0
	7-15	---	4.0-18	4.5-6.0	0
	15-19	---	---	---	---
Gretor---------------	0-9	---	18-35	4.5-6.0	0
	9-22	---	10-25	4.5-6.0	0
	22-29	---	9.0-22	5.1-6.5	0
	29-33	---	---	---	---
TkB, TkC, TkD:					
Towerville-----------	0-6	---	20-30	4.5-6.0	0
	6-28	---	10-25	4.5-6.0	0
	28-35	10-25	---	5.1-6.5	0
	35-39	---	---	---	---
TlB:					
Trestle--------------	0-9	12-25	---	5.1-6.0	0
	9-16	3.0-13	---	5.6-6.5	0
	16-72	2.0-8.0	---	5.6-6.5	0
Deposit--------------	0-9	---	---	5.1-7.3	0
	9-19	---	---	5.1-7.3	0
	19-72	---	---	5.1-6.5	0
TpB, TpC:					
Tunkhannock----------	0-7	---	15-20	3.6-6.0	0
	7-33	---	8.0-15	3.6-6.0	0
	33-72	---	5.0-10	3.6-6.0	0

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon-ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
Ud:					
Udorthents, refuse substratum----------	0-10	---	---	4.5-7.3	0
	10-72	---	---	---	---
Ue:					
Udorthents, smoothed-	0-4	---	---	4.5-7.3	0
	4-72	---	---	4.5-7.3	0-5
UnA, UnB:					
Unadilla-------------	0-12	---	12-28	4.5-7.3	0
	12-41	---	3.0-15	4.5-7.3	0
	41-72	---	3.0-15	5.1-6.0	0
VaB, VaC, VaD, VaE, VaF:					
Valois---------------	0-10	---	10-35	3.6-6.0	0
	10-41	---	5.0-18	3.6-6.0	0
	41-72	5.0-15	---	4.5-7.3	0-2
VcB:					
Valois---------------	0-10	---	10-35	3.6-6.0	0
	10-41	---	5.0-18	3.6-6.0	0
	41-72	5.0-15	---	4.5-7.3	0-2
VlB, VlC, VlD, VlE:					
Vly------------------	0-5	---	---	4.5-6.0	0
	5-23	---	---	4.5-6.0	0
	23-27	---	---	---	---
VoA, VoB, VoC:					
Volusia--------------	0-6	15-25	---	4.5-6.0	0
	6-19	5.0-12	---	4.5-6.5	0
	19-42	3.0-10	---	4.5-6.5	0
	42-85	3.0-9.0	---	5.6-7.8	0
W:					
Water.					
Wb:					
Wakeville------------	0-7	15-35	---	5.6-7.3	0
	7-29	6.0-20	---	5.6-7.3	0
	29-72	6.0-10	---	5.6-8.4	0-5
WeA, WeB, WeC, WeD:					
Wassaic--------------	0-10	---	---	5.6-7.3	0
	10-21	---	---	5.6-7.3	0
	21-31	---	---	5.6-7.8	0-5
	31-35	---	---	---	---
Wg:					
Wayland--------------	0-9	20-35	---	5.1-7.8	0
	9-36	10-25	---	5.1-8.4	0-1
	36-72	5.0-25	---	5.6-8.4	0-2
WlB, WlC, WlD:					
Wellsboro------------	0-5	---	10-20	4.5-6.0	0
	5-23	---	5.0-15	4.5-6.0	0
	23-70	---	5.0-15	4.5-6.0	0

Table 23.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction	Calcium carbon- ate
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*
WmC:					
Wellsboro------------	0-5	---	10-20	4.5-6.0	0
	5-23	---	5.0-15	4.5-6.0	0
	23-70	---	5.0-15	4.5-6.0	0
Mardin---------------	0-12	---	12-25	3.6-6.5	0
	12-21	---	5.0-12	3.6-6.5	0
	21-38	3.0-10	---	4.5-7.3	0
	38-72	3.0-9.0	---	5.1-7.8	0
WpB, WpC, WpD:					
Willdin--------------	0-7	---	10-35	4.5-6.0	0
	7-17	5.0-20	---	4.5-6.5	0
	17-44	10-15	---	4.5-6.5	0
	44-80	1.0-15	---	5.1-6.5	0
WsB, WsC:					
Willowemoc-----------	0-2	---	---	3.6-6.0	0
	2-7	---	---	3.6-6.0	0
	7-17	---	---	3.6-6.0	0
	17-25	---	---	3.6-6.0	0
	25-72	---	---	3.6-6.0	0

Table 24.--Water Features

[Depths 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	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
Ad:									
Alden----------------	D	January	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		February	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		March	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		April	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		May	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		June	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		November	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		December	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
At:									
Atherton-------------	B/D	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	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
BfB, BfC, BfD, BfE:									
Bath-----------------	C	January	2.0-3.2	2.2-3.3	---	---	None	---	None
		February	2.0-3.2	2.2-3.3	---	---	None	---	None
		March	2.0-3.2	2.2-3.3	---	---	None	---	None
		November	2.0-3.2	2.2-3.3	---	---	None	---	None
		December	2.0-3.2	2.2-3.3	---	---	None	---	None
BhC, BhE:									
Bath-----------------	C	January	2.0-3.2	2.2-3.3	---	---	None	---	None
		February	2.0-3.2	2.2-3.3	---	---	None	---	None
		March	2.0-3.2	2.2-3.3	---	---	None	---	None
		November	2.0-3.2	2.2-3.3	---	---	None	---	None
		December	2.0-3.2	2.2-3.3	---	---	None	---	None
Lackawanna-----------	C	January	2.0-2.9	2.1-3.0	---	---	None	---	None
		February	2.0-2.9	2.1-3.0	---	---	None	---	None
		March	2.0-2.9	2.1-3.0	---	---	None	---	None
		November	2.0-2.9	2.1-3.0	---	---	None	---	None
		December	2.0-2.9	2.1-3.0	---	---	None	---	None
Cb:									
Canandaigua----------	D	January	0.0-1.0	>6.0	---	---	None	---	None
		February	0.0-1.0	>6.0	---	---	None	---	None
		March	0.0-1.0	>6.0	---	---	None	---	None
		April	0.0-1.0	>6.0	---	---	None	---	None
		May	0.0-1.0	>6.0	---	---	None	---	None
		November	0.0-1.0	>6.0	---	---	None	---	None
		December	0.0-1.0	>6.0	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
Cc:									
Canandaigua	D	January	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		April	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		May	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
Cd:									
Carbondale	A/D	January	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		April	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		May	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
Ce:									
Carlisle	A/D	January	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		April	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		May	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-0.5	Very long	Frequent	---	None
CfA, CfB:									
Castile	B	March	1.5-2.0	>6.0	---	---	None	---	None
		April	1.5-2.0	>6.0	---	---	None	---	None
		May	1.5-2.0	>6.0	---	---	None	---	None
ChA, ChB, ChC, ChD:									
Chenango	A	Jan-Dec	---	---	---	---	None	---	None
ClE:									
Chenango	A	Jan-Dec	---	---	---	---	None	---	None
Howard	A	Jan-Dec	---	---	---	---	None	---	None
Tunkhannock	A	Jan-Dec	---	---	---	---	None	---	None
CnA, CnB:									
Chenango, fan	A	March	3.0-6.0	>6.0	---	---	None	Brief	Rare
		April	3.0-6.0	>6.0	---	---	None	Brief	Rare
		May	3.0-6.0	>6.0	---	---	None	Brief	Rare
Cp:									
Chippewa	D	January	0.0-0.5	0.8-1.7	---	---	None	---	None
		February	0.0-0.5	0.8-1.7	---	---	None	---	None
		March	0.0-0.5	0.8-1.7	---	---	None	---	None
		April	0.0-0.5	0.8-1.7	---	---	None	---	None
		May	0.0-0.5	0.8-1.7	---	---	None	---	None
		November	0.0-0.5	0.8-1.7	---	---	None	---	None
		December	0.0-0.5	0.8-1.7	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
Cp:									
Norwich	D	January	0.0-0.5	0.8-2.0	---	---	None	---	None
		February	0.0-0.5	0.8-2.0	---	---	None	---	None
		March	0.0-0.5	0.8-2.0	---	---	None	---	None
		April	0.0-0.5	0.8-2.0	---	---	None	---	None
		May	0.0-0.5	0.8-2.0	---	---	None	---	None
		November	0.0-0.5	0.8-2.0	---	---	None	---	None
		December	0.0-0.5	0.8-2.0	---	---	None	---	None
Cr:									
Chippewa	D	January	0.0-0.5	0.8-1.7	---	---	None	---	None
		February	0.0-0.5	0.8-1.7	---	---	None	---	None
		March	0.0-0.5	0.8-1.7	---	---	None	---	None
		April	0.0-0.5	0.8-1.7	---	---	None	---	None
		May	0.0-0.5	0.8-1.7	---	---	None	---	None
		November	0.0-0.5	0.8-1.7	---	---	None	---	None
		December	0.0-0.5	0.8-1.7	---	---	None	---	None
Norwich	D	January	0.0-0.5	0.8-2.0	---	---	None	---	None
		February	0.0-0.5	0.8-2.0	---	---	None	---	None
		March	0.0-0.5	0.8-2.0	---	---	None	---	None
		April	0.0-0.5	0.8-2.0	---	---	None	---	None
		May	0.0-0.5	0.8-2.0	---	---	None	---	None
		November	0.0-0.5	0.8-2.0	---	---	None	---	None
		December	0.0-0.5	0.8-2.0	---	---	None	---	None
CsB, CsC:									
Conesus	B	March	1.5-2.0	2.5-4.2	---	---	None	---	None
		April	1.5-2.0	2.5-4.2	---	---	None	---	None
		May	1.5-2.0	2.5-4.2	---	---	None	---	None
DaB, DaC, DaD:									
Danley	C	March	1.5-2.0	>6.0	---	---	None	---	None
		April	1.5-2.0	>6.0	---	---	None	---	None
		May	1.5-2.0	>6.0	---	---	None	---	None
Nunda	C	March	1.5-2.0	>6.0	---	---	None	---	None
		April	1.5-2.0	>6.0	---	---	None	---	None
		May	1.5-2.0	>6.0	---	---	None	---	None
DeB, DeC:									
Darien	C	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
		November	0.5-1.5	>6.0	---	---	None	---	None
		December	0.5-1.5	>6.0	---	---	None	---	None
Burdett	C	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
		November	0.5-1.5	>6.0	---	---	None	---	None
		December	0.5-1.5	>6.0	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
Ed:									
Edwards	B/D	January	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		April	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		May	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
FaB:									
Farmington	C	Jan-Dec	---	---	---	---	None	---	None
FeB, FeC, FeD, FeF:									
Farmington	C	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
Fg:									
Fluvaquents	D	January	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		February	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		March	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		April	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		May	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		June	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		July	---	---	---	---	None	Brief	Frequent
		August	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent
		October	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		November	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
		December	0.0-1.5	>6.0	0.0-0.5	Long	Frequent	Brief	Frequent
Udifluvents	B	January	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		February	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		March	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		April	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		May	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		June	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		July	---	---	---	---	None	Brief	Frequent
		August	---	---	---	---	None	Brief	Frequent
		September	---	---	---	---	None	Brief	Frequent
		October	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		November	2.0-6.0	>6.0	---	---	None	Brief	Frequent
		December	2.0-6.0	>6.0	---	---	None	Brief	Frequent
Fo:									
Fonda	D	January	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		February	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		March	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		April	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		May	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		June	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		November	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None
		December	0.0-0.5	>6.0	0.0-1.0	Long	Frequent	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
GrB:									
Greene	C	January	0.5-1.0	1.7-3.3	---	---	None	---	None
		February	0.5-1.0	1.7-3.3	---	---	None	---	None
		March	0.5-1.0	1.7-3.3	---	---	None	---	None
		April	0.5-1.0	1.7-3.3	---	---	None	---	None
		May	0.5-1.0	1.7-3.3	---	---	None	---	None
		June	0.5-1.0	1.7-3.3	---	---	None	---	None
		December	0.5-1.0	1.7-3.3	---	---	None	---	None
Tuller	D	January	0.0-1.0	0.8-1.7	---	---	None	---	None
		February	0.0-1.0	0.8-1.7	---	---	None	---	None
		March	0.0-1.0	0.8-1.7	---	---	None	---	None
		April	0.0-1.0	0.8-1.7	---	---	None	---	None
		May	0.0-1.0	0.8-1.7	---	---	None	---	None
		June	0.0-1.0	0.8-1.7	---	---	None	---	None
		November	0.0-1.0	0.8-1.7	---	---	None	---	None
		December	0.0-1.0	0.8-1.7	---	---	None	---	None
Hb:									
Hamplain	B	January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	3.5-6.0	>6.0	---	---	None	Brief	Occasional
		April	3.5-6.0	>6.0	---	---	None	Brief	Occasional
		May	3.5-6.0	>6.0	---	---	None	Brief	Occasional
		June	---	---	---	---	None	Brief	Occasional
		November	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional
HdC:									
Hawksnest	C/D	Jan-Dec	---	---	---	---	None	---	None
HeA, HeB:									
Herkimer, fan	B	March	3.0-6.0	>6.0	---	---	None	Brief	Rare
		April	3.0-6.0	>6.0	---	---	None	Brief	Rare
		May	3.0-6.0	>6.0	---	---	None	Brief	Rare
HnB, HnC, HnD:									
Honeoye	B	March	2.0-2.5	2.1-3.8	---	---	None	---	None
		April	2.0-2.5	2.1-3.8	---	---	None	---	None
		May	2.0-2.5	2.1-3.8	---	---	None	---	None
HoE:									
Honeoye	B	March	2.0-2.5	2.1-3.8	---	---	None	---	None
		April	2.0-2.5	2.1-3.8	---	---	None	---	None
		May	2.0-2.5	2.1-3.8	---	---	None	---	None
Lansing	B	Jan-Dec	---	---	---	---	None	---	None
HrB, HrC, HrD:									
Howard	A	Jan-Dec	---	---	---	---	None	---	None
LaB, LaC, LaD, LaE:									
Lackawanna	C	January	2.0-2.9	2.1-3.0	---	---	None	---	None
		February	2.0-2.9	2.1-3.0	---	---	None	---	None
		March	2.0-2.9	2.1-3.0	---	---	None	---	None
		November	2.0-2.9	2.1-3.0	---	---	None	---	None
		December	2.0-2.9	2.1-3.0	---	---	None	---	None
LeB, LeC, LeD:									
Lansing	B	Jan-Dec	---	---	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
LfB, LfC, LfD, LfE:									
Lewbath--------------	C	January	1.6-3.0	1.7-3.2	---	---	None	---	None
		February	1.6-3.0	1.7-3.2	---	---	None	---	None
		March	1.6-3.0	1.7-3.2	---	---	None	---	None
		November	1.6-3.0	1.7-3.2	---	---	None	---	None
		December	1.6-3.0	1.7-3.2	---	---	None	---	None
LhC:									
Lewbeach-------------	C	January	2.0-2.9	2.1-3.0	---	---	None	---	None
		February	2.0-2.9	2.1-3.0	---	---	None	---	None
		March	2.0-2.9	2.1-3.0	---	---	None	---	None
		November	2.0-2.9	2.1-3.0	---	---	None	---	None
		December	2.0-2.9	2.1-3.0	---	---	None	---	None
LkB, LkC:									
Lima-----------------	B	March	1.5-2.0	1.7-2.5	---	---	None	---	None
		April	1.5-2.0	1.7-2.5	---	---	None	---	None
		May	1.5-2.0	1.7-2.5	---	---	None	---	None
LoB:									
Lordstown------------	C	Jan-Dec	---	---	---	---	None	---	None
Arnot----------------	C/D	Jan-Dec	---	---	---	---	None	---	None
LpC, LpD:									
Lordstown------------	C	Jan-Dec	---	---	---	---	None	---	None
Chadakoin------------	B	February	4.0-6.0	>6.0	---	---	None	---	None
		March	4.0-6.0	>6.0	---	---	None	---	None
		April	4.0-6.0	>6.0	---	---	None	---	None
LrE:									
Lordstown------------	C	Jan-Dec	---	---	---	---	None	---	None
Chadakoin------------	B	February	4.0-6.0	>6.0	---	---	None	---	None
		March	4.0-6.0	>6.0	---	---	None	---	None
		April	4.0-6.0	>6.0	---	---	None	---	None
Manlius--------------	C	Jan-Dec	---	---	---	---	None	---	None
Ly:									
Lyons----------------	D	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	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
MaA, MaB, MaC:									
Manheim--------------	C	January	0.5-1.5	2.0-5.0	---	---	None	---	None
		February	0.5-1.5	2.0-5.0	---	---	None	---	None
		March	0.5-1.5	2.0-5.0	---	---	None	---	None
		April	0.5-1.5	2.0-5.0	---	---	None	---	None
		May	0.5-1.5	2.0-5.0	---	---	None	---	None
		November	0.5-1.5	2.0-5.0	---	---	None	---	None
		December	0.5-1.5	2.0-5.0	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
McB, McC, McD:									
Manlius	C	Jan-Dec	---	---	---	---	None	---	None
MeB, MeC, MeD:									
Mardin	C	January	1.2-2.0	1.3-2.2	---	---	None	---	None
		February	1.2-2.0	1.3-2.2	---	---	None	---	None
		March	1.2-2.0	1.3-2.2	---	---	None	---	None
		April	1.2-2.0	1.3-2.2	---	---	None	---	None
		May	1.2-2.0	1.3-2.2	---	---	None	---	None
		November	1.2-2.0	1.3-2.2	---	---	None	---	None
		December	1.2-2.0	1.3-2.2	---	---	None	---	None
MmC, MmD:									
Mongaup	C	Jan-Dec	---	---	---	---	None	---	None
Franklinville	B	Jan-Dec	---	---	---	---	None	---	None
MnB, MnE:									
Mongaup	C	Jan-Dec	---	---	---	---	None	---	None
Hawksnest	C/D	Jan-Dec	---	---	---	---	None	---	None
MoB, MoC:									
Morris	C	January	0.5-1.5	0.8-1.8	---	---	None	---	None
		February	0.5-1.5	0.8-1.8	---	---	None	---	None
		March	0.5-1.5	0.8-1.8	---	---	None	---	None
		April	0.5-1.5	0.8-1.8	---	---	None	---	None
		May	0.5-1.5	0.8-1.8	---	---	None	---	None
		November	0.5-1.5	0.8-1.8	---	---	None	---	None
		December	0.5-1.5	0.8-1.8	---	---	None	---	None
MpC:									
Morris	C	January	0.5-1.5	0.8-1.8	---	---	None	---	None
		February	0.5-1.5	0.8-1.8	---	---	None	---	None
		March	0.5-1.5	0.8-1.8	---	---	None	---	None
		April	0.5-1.5	0.8-1.8	---	---	None	---	None
		May	0.5-1.5	0.8-1.8	---	---	None	---	None
		November	0.5-1.5	0.8-1.8	---	---	None	---	None
		December	0.5-1.5	0.8-1.8	---	---	None	---	None
Volusia	C	January	0.5-1.5	0.8-1.7	---	---	None	---	None
		February	0.5-1.5	0.8-1.7	---	---	None	---	None
		March	0.5-1.5	0.8-1.7	---	---	None	---	None
		April	0.5-1.5	0.8-1.7	---	---	None	---	None
		May	0.5-1.5	0.8-1.7	---	---	None	---	None
		November	0.5-1.5	0.8-1.7	---	---	None	---	None
		December	0.5-1.5	0.8-1.7	---	---	None	---	None
Np:									
Norchip	D	January	0.0-1.0	0.8-1.7	---	---	None	---	None
		February	0.0-1.0	0.8-1.7	---	---	None	---	None
		March	0.0-1.0	0.8-1.7	---	---	None	---	None
		April	0.0-1.0	0.8-1.7	---	---	None	---	None
		May	0.0-1.0	0.8-1.7	---	---	None	---	None
		November	0.0-1.0	0.8-1.7	---	---	None	---	None
		December	0.0-1.0	0.8-1.7	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
ObB, ObC:									
Onteora	C	January	0.5-1.5	0.8-2.1	---	---	None	---	None
		February	0.5-1.5	0.8-2.1	---	---	None	---	None
		March	0.5-1.5	0.8-2.1	---	---	None	---	None
		April	0.5-1.5	0.8-2.1	---	---	None	---	None
		May	0.5-1.5	0.8-2.1	---	---	None	---	None
		November	0.5-1.5	0.8-2.1	---	---	None	---	None
		December	0.5-1.5	0.8-2.1	---	---	None	---	None
OeB, OeC:									
Ontusia	C	January	0.5-1.5	0.8-2.1	---	---	None	---	None
		February	0.5-1.5	0.8-2.1	---	---	None	---	None
		March	0.5-1.5	0.8-2.1	---	---	None	---	None
		April	0.5-1.5	0.8-2.1	---	---	None	---	None
		May	0.5-1.5	0.8-2.1	---	---	None	---	None
		November	0.5-1.5	0.8-2.1	---	---	None	---	None
		December	0.5-1.5	0.8-2.1	---	---	None	---	None
OgB, OgC, OgD, OgE:									
Oquaga	C	Jan-Dec	---	---	---	---	None	---	None
Arnot	C/D	Jan-Dec	---	---	---	---	None	---	None
OpB, OpC, OpD:									
Oquaga	C	Jan-Dec	---	---	---	---	None	---	None
Lordstown	C	Jan-Dec	---	---	---	---	None	---	None
Ot:									
Otego	B	January	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		February	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		March	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		April	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		May	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		June	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		November	1.5-2.5	>6.0	---	---	None	Brief	Occasional
		December	1.5-2.5	>6.0	---	---	None	Brief	Occasional
Pa:									
Palms	A/D	January	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		February	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		March	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		April	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		May	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		June	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		September	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		October	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		November	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		December	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	---	None
PdB:									
Patchin	D	January	0.0-0.5	1.7-3.3	---	---	None	---	None
		February	0.0-0.5	1.7-3.3	---	---	None	---	None
		March	0.0-0.5	1.7-3.3	---	---	None	---	None
		April	0.0-0.5	1.7-3.3	---	---	None	---	None
		May	0.0-0.5	1.7-3.3	---	---	None	---	None
		October	0.0-0.5	1.7-3.3	---	---	None	---	None
		November	0.0-0.5	1.7-3.3	---	---	None	---	None
		December	0.0-0.5	1.7-3.3	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
Pt:									
Pits, gravel and sand	A	Jan-Dec	---	---	---	---	None	---	None
Pu:									
Pits, quarry	---	Jan-Dec	---	---	---	---	None	---	None
Ra:									
Raynham	C	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
		November	0.5-1.5	>6.0	---	---	None	---	None
		December	0.5-1.5	>6.0	---	---	None	---	None
Re:									
Red Hook	C	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
		November	0.5-1.5	>6.0	---	---	None	---	None
		December	0.5-1.5	>6.0	---	---	None	---	None
RhA, RhB:									
Rhinebeck	D	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
RlA, RlB:									
Riverhead, loamy substratum	B	Jan-Dec	---	---	---	---	None	---	None
Sa:									
Saprists	A/D	January	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		February	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		March	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		April	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		May	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		June	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		October	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		November	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		December	0.0	>6.0	0.0-1.0	Very long	Frequent	---	None
Aquents	D	January	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		February	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		March	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		April	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		May	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		June	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		October	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		November	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None
		December	0.0-2.0	>6.0	0.0-1.0	Very long	Frequent	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
SbB:									
Scio	B	March	1.5-2.0	>6.0	---	---	None	---	None
		April	1.5-2.0	>6.0	---	---	None	---	None
		May	1.5-2.0	>6.0	---	---	None	---	None
ScA:									
Scio	B	March	1.5-2.0	>6.0	---	---	None	Brief	Rare
		April	1.5-2.0	>6.0	---	---	None	Brief	Rare
		May	1.5-2.0	>6.0	---	---	None	Brief	Rare
ScB:									
Scio	B	March	1.5-2.0	>6.0	---	---	None	---	None
		April	1.5-2.0	>6.0	---	---	None	---	None
		May	1.5-2.0	>6.0	---	---	None	---	None
ThB:									
Torull	D	January	0.0-1.0	0.8-1.7	---	---	None	---	None
		February	0.0-1.0	0.8-1.7	---	---	None	---	None
		March	0.0-1.0	0.8-1.7	---	---	None	---	None
		April	0.0-1.0	0.8-1.7	---	---	None	---	None
		May	0.0-1.0	0.8-1.7	---	---	None	---	None
		June	0.0-1.0	0.8-1.7	---	---	None	---	None
		November	0.0-1.0	0.8-1.7	---	---	None	---	None
		December	0.0-1.0	0.8-1.7	---	---	None	---	None
Gretor	C	January	0.5-1.0	1.7-3.3	---	---	None	---	None
		February	0.5-1.0	1.7-3.3	---	---	None	---	None
		March	0.5-1.0	1.7-3.3	---	---	None	---	None
		April	0.5-1.0	1.7-3.3	---	---	None	---	None
		May	0.5-1.0	1.7-3.3	---	---	None	---	None
		June	0.5-1.0	1.7-3.3	---	---	None	---	None
		December	0.5-1.0	1.7-3.3	---	---	None	---	None
TkB, TkC, TkD:									
Towerville	B	January	1.5-2.0	1.7-3.3	---	---	None	---	None
		February	1.5-2.0	1.7-3.3	---	---	None	---	None
		March	1.5-2.0	1.7-3.3	---	---	None	---	None
		April	1.5-2.0	1.7-3.3	---	---	None	---	None
		May	1.5-2.0	1.7-3.3	---	---	None	---	None
		December	1.5-2.0	1.7-3.3	---	---	None	---	None
TlB:									
Trestle	B	January	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		May	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		November	3.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	3.0-6.0	>6.0	---	---	None	Brief	Occasional
Deposit	B	January	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		February	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		March	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		April	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		May	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		November	1.5-2.0	>6.0	---	---	None	Brief	Occasional
		December	1.5-2.0	>6.0	---	---	None	Brief	Occasional
TpB, TpC:									
Tunkhannock	A	Jan-Dec	---	---	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
Ud:									
Udorthents, refuse substratum----------	A	Jan-Dec	---	---	---	---	None	---	None
Ue:									
Udorthents, smoothed-	A/D	January	3.0-6.0	>6.0	---	---	None	---	None
		February	3.0-6.0	>6.0	---	---	None	---	None
		March	3.0-6.0	>6.0	---	---	None	---	None
		April	3.0-6.0	>6.0	---	---	None	---	None
		May	3.0-6.0	>6.0	---	---	None	---	None
		June	3.0-6.0	>6.0	---	---	None	---	None
		November	3.0-6.0	>6.0	---	---	None	---	None
		December	3.0-6.0	>6.0	---	---	None	---	None
UnA, UnB:									
Unadilla-------------	B	Jan-Dec	---	---	---	---	None	---	None
VaB, VaC, VaD, VaE, VaF:									
Valois---------------	B	Jan-Dec	---	---	---	---	None	---	None
VcB:									
Valois---------------	B	Jan-Dec	---	---	---	---	None	---	None
VlB, VlC, VlD, VlE:									
Vly------------------	C	Jan-Dec	---	---	---	---	None	---	None
VoA, VoB, VoC:									
Volusia--------------	C	January	0.5-1.5	0.8-1.7	---	---	None	---	None
		February	0.5-1.5	0.8-1.7	---	---	None	---	None
		March	0.5-1.5	0.8-1.7	---	---	None	---	None
		April	0.5-1.5	0.8-1.7	---	---	None	---	None
		May	0.5-1.5	0.8-1.7	---	---	None	---	None
		November	0.5-1.5	0.8-1.7	---	---	None	---	None
		December	0.5-1.5	0.8-1.7	---	---	None	---	None
W:									
Water.									
Wb:									
Wakeville------------	B	January	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		February	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		March	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		April	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		May	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		June	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		November	0.5-1.5	>6.0	---	---	None	Brief	Occasional
		December	0.5-1.5	>6.0	---	---	None	Brief	Occasional
WeA, WeB, WeC, WeD:									
Wassaic--------------	B	March	1.6-3.0	1.7-3.3	---	---	None	---	None
		April	1.6-3.0	1.7-3.3	---	---	None	---	None

Table 24.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Freq-uency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
Wg:									
Wayland--------------	C/D	January	0.0-0.5	>6.0	---	---	None	Long	Frequent
		February	0.0-0.5	>6.0	---	---	None	Long	Frequent
		March	0.0-0.5	>6.0	---	---	None	Long	Frequent
		April	0.0-0.5	>6.0	---	---	None	Long	Frequent
		May	0.0-0.5	>6.0	---	---	None	Long	Frequent
		June	0.0-0.5	>6.0	---	---	None	Long	Frequent
		November	0.0-0.5	>6.0	---	---	None	Long	Frequent
		December	0.0-0.5	>6.0	---	---	None	Long	Frequent
WlB, WlC, WlD:									
Wellsboro------------	C	January	1.5-2.0	1.7-2.2	---	---	None	---	None
		February	1.5-2.0	1.7-2.2	---	---	None	---	None
		March	1.5-2.0	1.7-2.2	---	---	None	---	None
		April	1.5-2.0	1.7-2.2	---	---	None	---	None
		May	1.5-2.0	1.7-2.2	---	---	None	---	None
		November	1.5-2.0	1.7-2.2	---	---	None	---	None
		December	1.5-2.0	1.7-2.2	---	---	None	---	None
WmC:									
Wellsboro------------	C	January	1.5-2.0	1.7-2.2	---	---	None	---	None
		February	1.5-2.0	1.7-2.2	---	---	None	---	None
		March	1.5-2.0	1.7-2.2	---	---	None	---	None
		April	1.5-2.0	1.7-2.2	---	---	None	---	None
		May	1.5-2.0	1.7-2.2	---	---	None	---	None
		November	1.5-2.0	1.7-2.2	---	---	None	---	None
		December	1.5-2.0	1.7-2.2	---	---	None	---	None
Mardin---------------	C	January	1.2-2.0	1.3-2.2	---	---	None	---	None
		February	1.2-2.0	1.3-2.2	---	---	None	---	None
		March	1.2-2.0	1.3-2.2	---	---	None	---	None
		April	1.2-2.0	1.3-2.2	---	---	None	---	None
		May	1.2-2.0	1.3-2.2	---	---	None	---	None
		November	1.2-2.0	1.3-2.2	---	---	None	---	None
		December	1.2-2.0	1.3-2.2	---	---	None	---	None
WpB, WpC, WpD:									
Willdin--------------	C	January	1.2-2.0	1.3-2.2	---	---	None	---	None
		February	1.2-2.0	1.3-2.2	---	---	None	---	None
		March	1.2-2.0	1.3-2.2	---	---	None	---	None
		April	1.2-2.0	1.3-2.2	---	---	None	---	None
		May	1.2-2.0	1.3-2.2	---	---	None	---	None
		November	1.2-2.0	1.3-2.2	---	---	None	---	None
		December	1.2-2.0	1.3-2.2	---	---	None	---	None
WsB, WsC:									
Willowemoc-----------	C	January	1.5-2.0	1.7-2.2	---	---	None	---	None
		February	1.5-2.0	1.7-2.2	---	---	None	---	None
		March	1.5-2.0	1.7-2.2	---	---	None	---	None
		April	1.5-2.0	1.7-2.2	---	---	None	---	None
		May	1.5-2.0	1.7-2.2	---	---	None	---	None
		November	1.5-2.0	1.7-2.2	---	---	None	---	None
		December	1.5-2.0	1.7-2.2	---	---	None	---	None

Table 25.--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				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	*In*				
Ad:							
Alden	---	---	---	---	High	High	Low
At:							
Atherton	---	---	---	---	High	High	Low
BfB, BfC, BfD, BfE:							
Bath	Fragipan	26-40	---	Noncemented	Moderate	Moderate	Moderate
BhC, BhE:							
Bath	Fragipan	26-40	---	Noncemented	Moderate	Moderate	Moderate
Lackawanna	Fragipan	25-36	---	Noncemented	Moderate	Low	Moderate
Cb, Cc:							
Canandaigua	---	---	---	---	High	High	Low
Cd:							
Carbondale	---	---	---	---	High	High	Moderate
Ce:							
Carlisle	---	---	---	---	High	High	Low
CfA, CfB:							
Castile	---	---	---	---	High	Moderate	Moderate
ChA, ChB, ChC, ChD,							
Chenango	---	---	---	---	Moderate	Low	Moderate
ClE:							
Chenango	---	---	---	---	Moderate	Low	Moderate
Howard	---	---	---	---	Moderate	Low	Low
Tunkhannock	---	---	---	---	Moderate	Low	High
CnA, CnB:							
Chenango	---	---	---	---	Moderate	Low	Moderate
Cp:							
Chippewa	Fragipan	10-20	---	Noncemented	High	High	Moderate
Norwich	Fragipan	10-24	---	Noncemented	High	High	Moderate
Cr:							
Chippewa	Fragipan	10-20	---	Noncemented	High	High	Moderate
Norwich	Fragipan	10-24	---	Noncemented	High	High	Moderate
CsB, CsC:							
Conesus	Dense material	30-50	---	Noncemented	Moderate	Moderate	Low
DaB, DaC, DaD:							
Danley	---	---	---	---	High	High	Low
Nunda	---	---	---	---	High	Moderate	Low

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Depth to top	Thickness	Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Concrete
		In	In				
DeB, DeC:							
Darien	---	---	---	---	High	High	Low
Burdett	---	---	---	---	High	High	Low
Ed:							
Edwards	---	---	---	---	High	High	Low
FaB:							
Farmington	Bedrock (lithic)	10-20	---	---	Moderate	Low	Moderate
FeB, FeC, FeD, FeF:							
Farmington	Bedrock (lithic)	10-20	---	---	Moderate	Low	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---	---	---
Fg:							
Fluvaquents	---	---	---	---	High	High	High
Udifluvents	---	---	---	---	Moderate	High	High
Fo:							
Fonda	---	---	---	---	High	High	Low
GrB:							
Greene	Bedrock (lithic)	20-40	---	---	High	High	High
Tuller	Bedrock (lithic)	10-20	---	---	High	High	High
Hb:							
Hamplain	---	---	---	---	High	Moderate	Moderate
HdC:							
Hawksnest	Bedrock (lithic)	10-20	---	---	Moderate	Low	High
HeA, HeB:							
Herkimer, fan	---	---	---	---	Moderate	Moderate	Low
HnB, HnC, HnD:							
Honeoye	Dense material	25-46	---	Noncemented	Moderate	Low	Low
HoE:							
Honeoye	Dense material	25-46	---	Noncemented	Moderate	Low	Low
Lansing	---	---	---	---	Moderate	Low	Low
HrB, HrC, HrD:							
Howard	---	---	---	---	Moderate	Low	Low
LaB, LaC, LaD, LaE:							
Lackawanna	Fragipan	25-36	---	Noncemented	Moderate	Low	Moderate
LeB, LeC, LeD:							
Lansing	---	---	---	---	Moderate	Low	Low
LfB, LfC, LfD, LfE:							
Lewbath	Fragipan	20-38	---	Noncemented	Moderate	Moderate	Moderate
LhC:							
Lewbeach	Fragipan	25-36	---	Noncemented	Moderate	Moderate	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	*In*				
LkB, LkC:							
Lima	Dense material	20-30	---	Noncemented	Moderate	Moderate	Low
LoB:							
Lordstown	Bedrock (lithic)	20-40	---	---	Moderate	Low	High
Arnot	Bedrock (lithic)	10-20	---	---	Moderate	Low	High
LpC, LpD:							
Lordstown	Bedrock (lithic)	20-40	---	---	Moderate	Low	High
Chadakoin	Bedrock (lithic)	40-60	---	---	Moderate	Low	High
LrE:							
Lordstown	Bedrock (lithic)	20-40	---	---	Moderate	Low	High
Chadakoin	Bedrock (lithic)	40-60	---	---	Moderate	Low	High
Manlius	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
Ly:							
Lyons	---	---	---	---	High	High	Low
MaA, MaB, MaC:							
Manheim	Dense material	24-60	---	Noncemented	High	High	Low
McB, McC, McD:							
Manlius	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
MeB, MeC, MeD:							
Mardin	Fragipan	16-26	---	Noncemented	Moderate	Moderate	Low
MmC, MmD:							
Mongaup	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
Franklinville	Bedrock (lithic)	40-60	---	---	Moderate	Low	High
MnB, MnE:							
Mongaup	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
Hawksnest	Bedrock (lithic)	10-20	---	---	Moderate	Low	High
MoB, MoC:							
Morris	Fragipan	10-22	---	Noncemented	High	High	Moderate
MpC:							
Morris	Fragipan	10-22	---	Noncemented	High	High	Moderate
Volusia	Fragipan	10-20	---	Noncemented	High	High	Moderate
Np:							
Norchip	Fragipan	10-20	---	Noncemented	High	High	Moderate
ObB, ObC:							
Onteora	Fragipan	10-25	---	Noncemented	High	High	Moderate
OeB, OeC:							
Ontusia	Fragipan	10-25	---	Noncemented	High	High	Moderate
OgB, OgC, OgD, OgE:							
Oquaga	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	*In*				
OgB, OgC, OgD, OgE:							
Arnot	Bedrock (lithic)	10-20	---	---	Moderate	Low	High
OpB, OpC, OpD:							
Oquaga	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
Lordstown	Bedrock (lithic)	20-40	---	---	Moderate	Low	High
Ot:							
Otego	---	---	---	---	High	Moderate	Moderate
Pa:							
Palms	---	---	---	---	High	High	Moderate
PdB:							
Patchin	Bedrock (paralithic)	20-40	---	---	High	High	High
Pt:							
Pits, gravel and sand.							
Pu:							
Pits, quarry	Bedrock (lithic)	0	---	---	---	---	---
Ra:							
Raynham	---	---	---	---	High	High	Moderate
Re:							
Red Hook	---	---	---	---	High	High	Moderate
RhA, RhB:							
Rhinebeck	---	---	---	---	High	High	Low
RlA, RlB:							
Riverhead, loamy substratum	---	---	---	---	Moderate	Low	High
Sa:							
Saprists	---	---	---	---	High	High	Low
Aquents	---	---	---	---	High	High	High
SbB:							
Scio	---	---	---	---	High	Moderate	Moderate
ScA, ScB:							
Scio	---	---	---	---	High	Moderate	Moderate
ThB:							
Torull	Bedrock (lithic)	10-20	---	---	High	High	High
Gretor	Bedrock (lithic)	20-40	---	---	High	High	High
TkB, TkC, TkD:							
Towerville	Bedrock (lithic)	20-40	---	---	High	Moderate	High
TlB:							
Trestle	---	---	---	---	Moderate	Low	Moderate
Deposit	---	---	---	---	High	Moderate	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	*In*				
TpB, TpC:							
Tunkhannock------------	---	---	---	---	Moderate	Low	High
Ud:							
Udorthents, refuse substratum------------	---	---	---	---	High	Moderate	Moderate
Ue:							
Udorthents, smoothed---	---	---	---	---	Moderate	Moderate	Moderate
UnA, UnB:							
Unadilla---------------	---	---	---	---	High	Low	Moderate
VaB, VaC, VaD, VaE, VaF:							
Valois-----------------	---	---	---	---	Moderate	Low	High
VcB:							
Valois-----------------	---	---	---	---	Moderate	Low	High
VlB, VlC, VlD, VlE:							
Vly--------------------	Bedrock (lithic)	20-40	---	---	Moderate	Low	Moderate
VoA, VoB, VoC:							
Volusia----------------	Fragipan	10-20	---	Noncemented	High	High	Moderate
W:							
Water.							
Wb:							
Wakeville--------------	---	---	---	---	High	Moderate	Low
WeA, WeB, WeC, WeD:							
Wassaic----------------	Bedrock (lithic)	20-40	---	---	Moderate	Moderate	Low
Wg:							
Wayland----------------	---	---	---	---	High	High	Low
WlB, WlC, WlD:							
Wellsboro--------------	Fragipan	20-26	---	Noncemented	High	High	Moderate
WmC:							
Wellsboro--------------	Fragipan	20-26	---	Noncemented	High	High	Moderate
Mardin-----------------	Fragipan	16-26	---	Noncemented	Moderate	Moderate	Low
WpB, WpC, WpD:							
Willdin----------------	Fragipan	16-26	---	Noncemented	Moderate	Moderate	Moderate
WsB, WsC:							
Willowemoc-------------	Fragipan	20-26	---	Noncemented	High	High	Moderate

Table 26.--Taxonomic Classification of the Soils

[Classification is based on the fourth edition of the Keys to Soil Taxonomy, 1990]

Soil name	Family or higher taxonomic class
Alden	Mollic Haplaquepts, fine-loamy, mixed, nonacid, mesic
Aquents	Aquents
Arnot	Lithic Dystrochrepts, loamy-skeletal, mixed, mesic
Atherton	Aeric Haplaquepts, fine-loamy, mixed, nonacid, mesic
Bath	Typic Fragiochrepts, coarse-loamy, mixed, mesic
Burdett	Aeric Ochraqualfs, fine-loamy, mixed, mesic
Canandaigua	Mollic Haplaquepts, fine-silty, mixed, nonacid, mesic
Carbondale	Hemic Borosaprists, euic
Carlisle	Typic Medisaprists, euic, mesic
Castile	Aquic Dystrochrepts, loamy-skeletal, mixed, mesic
Chadakoin	Typic Dystrochrepts, coarse-loamy, mixed, mesic
Chenango	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Chippewa	Typic Fragiaquepts, fine-loamy, mixed, mesic
Conesus	Glossoboric Hapludalfs, fine-loamy, mixed, mesic
Danley	Glossaquic Hapludalfs, fine-loamy, mixed, mesic
Darien	Aeric Ochraqualfs, fine-loamy, mixed, mesic
Deposit	Fluvaquentic Dystrochrepts, loamy-skeletal, mixed, mesic
Edwards	Limnic Medisaprists, marly, euic, mesic
Farmington	Lithic Eutrochrepts, loamy, mixed, mesic
Fluvaquents	Fluvaquents
Fonda	Mollic Haplaquepts, fine, illitic, nonacid, mesic
Franklinville	Typic Dystrochrepts, coarse-loamy, mixed, frigid
Greene	Aeric Haplaquepts, fine-loamy, mixed, acid, mesic
Gretor	Aeric Haplaquepts, fine-loamy, mixed, acid, frigid
Hamplain	Fluventic Dystrochrepts, coarse-silty, mixed, mesic
Hawksnest	Lithic Dystrochrepts, loamy, mixed, frigid
Herkimer	Dystric Eutrochrepts, coarse-loamy, mixed, mesic
Honeoye	Glossoboric Hapludalfs, fine-loamy, mixed, mesic
Howard	Glossoboric Hapludalfs, loamy-skeletal, mixed, mesic
Lackawanna	Typic Fragiochrepts, coarse-loamy, mixed, mesic
Lansing	Glossoboric Hapludalfs, fine-loamy, mixed, mesic
Lewbath	Typic Fragiochrepts, coarse-loamy, mixed, frigid
Lewbeach	Typic Fragiochrepts, coarse-loamy, mixed, frigid
Lima	Glossoboric Hapludalfs, fine-loamy, mixed, mesic
Lordstown	Typic Dystrochrepts, coarse-loamy, mixed, mesic
Lyons	Mollic Haplaquepts, fine-loamy, mixed, nonacid, mesic
Manheim	Udollic Ochraqualfs, fine-loamy, mixed, mesic
Manlius	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Mardin	Typic Fragiochrepts, coarse-loamy, mixed, mesic
Mongaup	Typic Dystrochrepts, coarse-loamy, mixed, frigid
Morris	Aeric Fragiaquepts, coarse-loamy, mixed, mesic
Norchip	Aeric Fragiaquepts, fine-loamy, mixed, frigid
Norwich	Typic Fragiaquepts, fine-loamy, mixed, mesic
Nunda	Glossaquic Hapludalfs, fine-loamy, mixed, mesic
Onteora	Aquic Fragiochrepts, coarse-loamy, mixed, frigid
Ontusia	Aeric Fragiaquepts, fine-loamy, mixed, frigid
Oquaga	Typic Dystrochrepts, loamy-skeletal, mixed, mesic
Otego	Fluvaquentic Dystrochrepts, coarse-silty, mixed, mesic
Palms	Terric Medisaprists, loamy, mixed, euic, mesic
Patchin	Aeric Haplaquepts, fine-loamy, mixed, acid, mesic
Raynham	Aeric Haplaquepts, coarse-silty, mixed, nonacid, mesic
Red Hook	Aeric Haplaquepts, coarse-loamy, mixed, nonacid, mesic
Rhinebeck	Aeric Ochraqualfs, fine, illitic, mesic
Riverhead	Typic Dystrochrepts, coarse-loamy, mixed, mesic
Saprists	Saprists
Scio	Aquic Dystrochrepts, coarse-silty, mixed, mesic
Torull	Lithic Haplaquepts, loamy, mixed, acid, frigid
Towerville	Aquic Dystrochrepts, fine-loamy, mixed, mesic
Trestle	Fluventic Dystrochrepts, loamy-skeletal, mixed, mesic
Tuller	Lithic Haplaquepts, loamy, mixed, acid, mesic
Tunkhannock	Typic Dystrochrepts, loamy-skeletal, mixed, mesic

Table 26.--Taxonomic Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Udifluvents	Udifluvents
Udorthents, refuse substratum	Udorthents
Udorthents, smoothed	Udorthents
Unadilla	Typic Dystrochrepts, coarse-silty, mixed, mesic
Valois	Coarse-Loamy, mesic typic dystrochrepts
Valois	Typic Dystrochrepts, coarse-loamy, mixed, mesic
Vly	Typic Dystrochrepts, loamy-skeletal, mixed, frigid
Volusia	Aeric Fragiaquepts, fine-loamy, mixed, mesic
Wakeville	Aeric Fluvaquents, coarse-silty, mixed, nonacid, mesic
Wassaic	Glossoboric Hapludalfs, fine-loamy, mixed, mesic
Wayland	Mollic Fluvaquents, fine-silty, mixed, nonacid, mesic
Wellsboro	Typic Fragiochrepts, coarse-loamy, mixed, mesic
Willdin	Typic Fragiochrepts, coarse-loamy, mixed, frigid
Willowemoc	Typic Fragiochrepts, coarse-loamy, mixed, frigid

Table 27.--Relationships Between Soil Series, Parent Material, Landscape Position, Temperature, and Drainage Class

Soil characteristics	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	Soils on upland till plains					
Very deep soils that have a fragipan; formed in medium textured, brownish glacial till; mean annual temperature more than 45°F		Bath	Mardin	Volusia	Chippewa	Chippewa
Very deep soils that have a fragipan; formed in medium textured, reddish glacial till; mean annual temperature more than 45°F		Lackawanna	Wellsboro	Morris	Norwich	Norwich
Very deep soils that have a fragipan; formed in medium textured, brownish glacial till; mean annual temperature less than 45°F		Lewbath	Willdin	Ontusia	Norchip	Norchip
Very deep soils that have a fragipan; formed in medium textured, reddish glacial till; mean annual temperature less than 45°F		Lewbeach	Willowemoc	Onteora	Norchip	Norchip
Very deep soils that formed in medium textured or moderately coarse textured, brownish glacial till; mean annual temperature more than 45°F		Valois				Alden
Very deep soils that formed in medium textured or moderately fine textured glacial till that has carbonates within 32" of the surface; mean annual temperature more than 47°F		Honeoye	Lima	Manheim	Lyons	Lyons
Very deep soils that formed in medium textured or moderately fine textured glacial till that has carbonates below a depth of 32"; mean annual temperature more than 45°F		Lansing	Conesus	Manheim	Lyons	Lyons
Very deep soils that formed in moderately fine textured glacial till that has 27 to 35% clay; mean annual temperature more than 45°F			Danley Nunda	Darien Burdett		
Deep soils that formed in medium textured, brownish glacial till over interbedded sandstone, shale, and siltstone; mean annual temperature more than 45°F		Chadakoin				

Table 27.--Relationships Between Soil Series, Parent Material, Landscape Position, Temperature, and Drainage Class--Continued

Soil characteristics	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	Soils on upland till plains					
Deep soils that formed in medium textured, brownish glacial till over interbedded sandstone, shale, and siltstone; mean annual temperature less than 45°F		Franklinville				
Moderately deep soils that formed in medium textured, brownish glacial till over limestone		Wassaic	Wassaic			
Moderately deep soils that formed in medium textured, brownish glacial till over shale; mean annual temperature more than 45°F	Manlius	Manlius	Towerville		Patchin	
Moderately deep soils that formed in medium textured, brownish glacial till over interbedded sandstone, siltstone, and shale; mean annual temperature more than 45°F		Lordstown		Greene		
Moderately deep soils that formed in medium textured, reddish glacial till over interbedded sandstone, siltstone, and shale; mean annual temperature more than 45°F	Oquaga	Oquaga				
Moderately deep soils that formed in medium textured, brownish glacial till over interbedded sandstone, siltstone, and shale; mean annual temperature less than 45°F		Mongaup		Gretor		
Moderately deep soils that formed in medium textured, reddish glacial till over interbedded sandstone, siltstone, and shale; mean annual temperature less than 45°F	Vly	Vly				
Shallow soils that formed in medium textured, brownish or reddish glacial till over interbedded sandstone, shale, and siltstone; mean annual temperature more than 45°F	Arnot	Arnot		Tuller	Tuller	
Shallow soils that formed in medium textured, brownish glacial till over limestone	Farmington	Farmington				

Table 27.--Relationships Between Soil Series, Parent Material, Landscape Position, Temperature, and Drainage Class--Continued

Soil characteristics	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	Soils on upland till plains					
Shallow soils that formed in medium textured, brownish glacial till over interbedded sandstone, shale, and siltstone; mean annual temperature less than 45°F	Hawksnest	Hawksnest		Torull	Torull	
Shallow soils that formed in medium textured, reddish glacial till over interbedded sandstone, shale, and siltstone; mean annual temperature less than 45°F						
	Soils on outwash plains, kames, and terraces					
Very deep, medium textured and moderately coarse textured soils that formed in brownish glaciofluvial deposits	Chenango	Chenango	Castile	Red Hook	Atherton	Atherton
Very deep, medium textured and moderately coarse textured soils that formed in reddish glaciofluvial deposits	Tunkhannock	Tunkhannock				
Very deep, medium textured and moderately coarse textured soils that formed in brownish glaciofluvial deposits with clay accumulation in the subsoil	Howard	Howard				
Very deep soils that formed in moderately coarse textured, nongravelly, brownish sandy deposits		Riverhead				
	Soils on alluvial fans					
Very deep soils that formed in medium textured or moderately coarse textured, brownish material over sand and gravel	Chenango	Chenango				
Very deep soils that formed in medium textured or moderately coarse textured, dark colored material derived from shale		Herkimer	Herkimer			
	Soils on lacustrine plains					
Very deep soils that formed in medium textured, brownish silty deposits		Unadilla	Scio	Raynham	Canandaigua	Canandaigua

Table 27.--Relationships Between Soil Series, Parent Material, Landscape Position, Temperature, and Drainage Class--Continued

Soil characteristics	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	Soils on lacustrine plains					
Very deep soils that formed in fine textured deposits				Rhinebeck		Fonda
	Soils on flood plains in valleys					
Very deep, medium textured and moderately coarse textured deposits along high gradient streams		Trestle	Deposit			
Very deep soils that formed in medium textured, brownish sediments		Hamplain	Otego	Wakeville	Wayland	Wayland
Very deep soils that formed in coarse textured to moderately fine textured, alluvial sediments	Udifluvents	Udifluvents	Udifluvents	Fluv- aquents	Fluv- aquents	Fluv- aquents
	Soils in swamps and bogs					
Very deep, medium textured, gray mineral material						Aquents
Very deep, well decomposed organic material more than 16 inches thick						Saprists
Very deep soils that formed in well decomposed organic material 16 to 51 inches thick						Palms
Very deep soils that formed in well decomposed organic material more than 51 inches thick; mean annual temperature more than 45°F						Carlisle
Very deep soils that formed in organic material more than 51 inches thick; mean annual temperature less than 45°F						Carbondale
	Soils disturbed by human activities on glacial till, outwash, and lacustrine plains					
Deep and very deep, moderately fine textured to coarse textured, mixed soil materials	Udorthents	Udorthents	Udorthents			

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